

# Babel, a multilingual package for use with L<sup>A</sup>T<sub>E</sub>X's standard document classes\*

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## Abstract

The standard distribution of L<sup>A</sup>T<sub>E</sub>X contains a number of document classes that are meant to be used, but also serve as examples for other users to create their own document classes. These document classes have become very popular among L<sup>A</sup>T<sub>E</sub>X users. But it should be kept in mind that they were designed for American tastes and typography. At one time they contained a number of hard-wired texts. This report describes **babel**, a package that makes use of the new capabilities of T<sub>E</sub>X version 3 to provide an environment in which documents can be typeset in a non-American language, or in more than one language.

## Contents

<b>1</b>	<b>The user interface</b>	<b>4</b>	6.2	Support for saving macro definitions . . . . .	13
1.1	Languages supported by Babel . . . . .	5	6.3	Support for extending macros . . . . .	14
1.2	Workarounds . . . . .	8	6.4	Macros common to a number of languages . . .	14
<b>2</b>	<b>Changes for L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub></b>	<b>8</b>	<b>7</b>	<b>Compatibility with <code>german.sty</code></b>	<b>14</b>
<b>3</b>	<b>Changes in <b>Babel</b> version 3.7</b>	<b>8</b>	<b>8</b>	<b>Compatibility with <code>ngerman.sty</code></b>	<b>14</b>
<b>4</b>	<b>Changes in <b>Babel</b> version 3.6</b>	<b>9</b>	<b>9</b>	<b>Compatibility with the french package</b>	<b>15</b>
<b>5</b>	<b>Changes in <b>Babel</b> version 3.5</b>	<b>10</b>	<b>10</b>	<b>Identification</b>	<b>15</b>
<b>6</b>	<b>The interface between the core of <b>babel</b> and the language definition files</b>	<b>11</b>	<b>11</b>	<b>The Package File</b>	<b>16</b>
6.1	Support for active characters . . . . .	13	11.1	Language options . . . . .	16

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\*During the development ideas from Nico Poppelier, Piet van Oostrum and many others have been used. Bernd Raichle has provided many helpful suggestions.

<b>12 The Kernel of Babel</b>	<b>19</b>	<b>21 The German language</b>	<b>89</b>
12.1 Encoding issues (part 1)	20	<b>22 The German language – new orthography</b>	<b>94</b>
12.2 Multiple languages	21	<b>23 The Breton language</b>	<b>98</b>
12.3 Support for active characters	35	<b>24 The Welsh language</b>	<b>102</b>
12.4 Shorthands	36	<b>25 The Irish language</b>	<b>104</b>
12.5 Language attributes	46	<b>26 The Scottish language</b>	<b>106</b>
12.6 Support for saving macro definitions	49	<b>27 The Greek language</b>	<b>108</b>
12.7 Support for extending macros	50	27.1 Typing conventions	108
12.8 Macros common to a number of languages	50	27.2 Greek numbering	108
12.9 Making glyphs available	51	<b>28 The French language</b>	<b>117</b>
12.10 Quotation marks	51	<b>29 T<sub>E</sub>Xnical details</b>	<b>126</b>
12.11 Letters	53	29.1 Initial setup	126
12.12 Shorthands for quotation marks	54	29.2 Caption names	129
12.13 Umlauts and trema's	55	29.3 Punctuation	131
12.14 The redefinition of the style commands	56	29.4 French quotation marks	132
12.14.1 Redefinition of macros	57	29.5 French lists	134
12.15 Cross referencing macros	61	29.6 French indentation of sections	137
12.16 marks	65	29.7 Formatting footnotes	137
12.17 Encoding issues (part 2)	66	29.8 Formatting numbers	139
12.18 Preventing clashes with other packages	67	29.9 Dots...	141
12.18.1 <code>ifthen</code>	67	29.10 Global layout	142
12.18.2 <code>varioref</code>	67	29.11 Extra utilities	143
12.18.3 <code>hhline</code>	68	29.12 Date and clean up	146
12.18.4 General	68	<b>30 The Italian language</b>	<b>148</b>
<b>13 Local Language Configuration</b>	<b>69</b>	30.1 Support for etymological hyphenation	150
<b>14 Driver files for the documented source code</b>	<b>70</b>	30.2 Facilities required by the ISO 31/XI regulations	153
<b>15 Conclusion</b>	<b>74</b>	30.3 Accents	153
<b>16 Acknowledgements</b>	<b>74</b>	30.4 <i>Caporali</i> or French double quotes	154
<b>17 The Esperanto language</b>	<b>75</b>	30.5 Finishing commands	156
<b>18 The Interlingua language</b>	<b>78</b>	<b>31 The Latin language</b>	<b>158</b>
<b>19 The Dutch language</b>	<b>80</b>	<b>32 Latin shortcuts</b>	<b>162</b>
<b>20 The English language</b>	<b>85</b>	<b>33 Etymological hyphenation</b>	<b>164</b>
		<b>34 The Portuguese language</b>	<b>166</b>

<b>35 The Spanish language</b>	<b>171</b>	<b>57 The Lower Sorbian language</b>	<b>319</b>
35.1 The Code . . . . .	173		
<b>36 The Catalan language</b>	<b>192</b>	<b>58 The Upper Sorbian language</b>	<b>321</b>
<b>37 The Galician language</b>	<b>200</b>	<b>59 The Turkish language</b>	<b>325</b>
<b>38 The Basque language</b>	<b>204</b>	<b>60 The Hebrew language</b>	<b>328</b>
<b>39 The Romanian language</b>	<b>208</b>	60.1 Acknowledgement . . . . .	328
<b>40 The Danish language</b>	<b>210</b>	60.2 The DOCSTRIP modules . . . . .	329
<b>41 The Icelandic language</b>	<b>213</b>	60.3 Hebrew language definitions . . . . .	329
41.1 Overview . . . . .	213	60.3.1 Hebrew numerals . . . . .	333
41.2 T <sub>E</sub> Xnical details . . . . .	214	60.4 Right to left support . . . . .	340
41.3 Captionnames and date . . . . .	215	60.4.1 Switching from LR to RL mode and back . . . . .	340
41.4 Icelandic quotation marks . . . . .	216	60.4.2 Counters . . . . .	343
41.5 Old Icelandic . . . . .	217	60.4.3 Preserving logos . . . . .	344
41.6 Formatting numbers . . . . .	218	60.4.4 List environments . . . . .	345
41.7 Extra utilities . . . . .	220	60.4.5 Tables of moving stuff . . . . .	345
<b>42 The Norwegian language</b>	<b>222</b>	60.4.6 Two-column mode . . . . .	350
<b>43 The Swedish language</b>	<b>227</b>	60.4.7 Footnotes . . . . .	351
<b>44 The North Sami language</b>	<b>231</b>	60.4.8 Headings and two-side support . . . . .	351
44.1 The code of <code>samin.dtx</code> . . . . .	231	60.4.9 Postscript Problems . . . . .	354
<b>45 The Finnish language</b>	<b>233</b>	60.4.10 Miscellaneous internal L <sup>A</sup> T <sub>E</sub> X macros . . . . .	355
<b>46 The Hungarian language</b>	<b>236</b>	60.4.11 Bibliography and citations . . . . .	357
<b>47 The Estonian language</b>	<b>254</b>	60.4.12 Additional bidirectional commands . . . . .	359
47.1 Implementation . . . . .	254	60.5 Hebrew calendar . . . . .	360
<b>48 The Croatian language</b>	<b>258</b>	60.5.1 Introduction . . . . .	361
<b>49 The Czech language</b>	<b>260</b>	60.5.2 Registers, Commands, Formatting Macros . . . . .	362
<b>50 The Polish language</b>	<b>262</b>	60.5.3 Auxiliary Macros . . . . .	364
<b>51 The Serbocroatian language</b>	<b>268</b>	60.5.4 Gregorian Part . . . . .	365
<b>52 The Slovak language</b>	<b>271</b>	60.5.5 Hebrew Part . . . . .	366
<b>53 The Slovenian language</b>	<b>276</b>	<b>61 Hebrew input encodings</b>	<b>371</b>
<b>54 The Russian language</b>	<b>279</b>	61.1 Default definitions for characters . . . . .	372
<b>55 The Bulgarian language</b>	<b>293</b>	61.2 The SI-960 encoding . . . . .	373
<b>56 The Ukrainian language</b>	<b>305</b>	61.3 The ISO 8859-8 encoding and the MS Windows cp1255 encoding . . . . .	373

61.4	The IBM code page 862 .	376	62.6.1	Hebrew default font	388
<b>62</b>	<b>Hebrew font encodings</b>	<b>378</b>	62.6.2	Hebrew sans-serif font . . . . .	388
62.1	THIS SECTION IS OUT OF DATE. UPDATE DOCS TO MATCH HE8 ENCODING . . . . .	378	62.6.3	Hebrew type-writer font . . . .	389
62.2	The DOCSTRIP modules .	378	62.6.4	8Bit OmegaHebrew font . . . . .	389
62.3	The LHEencoding definition file . . . . .	379	62.6.5	8Bit Aharoni font	390
62.4	The font definition files (in LHE encoding) . . . . .	381	62.6.6	8Bit David font . .	390
62.4.1	Hebrew default font	381	62.6.7	8Bit Drugulin font	390
62.4.2	Hebrew sans-serif font . . . . .	381	62.6.8	8Bit Ellinia font	391
62.4.3	Hebrew type-writer font . . . .	382	62.6.9	8Bit FrankRuehl font . . . . .	391
62.4.4	Hebrew classic font	383	62.6.10	8Bit KtavYad font	391
62.4.5	Hebrew shalom fonts . . . . .	383	62.6.11	8Bit MiriamMono font . . .	391
62.4.6	Hebrew frank-ruehl font . . . . .	384	62.6.12	8Bit Nachlieli font	392
62.4.7	Hebrew carmel font	385	62.6.13	Hebrew font switching commands . . . . .	392
62.4.8	Hebrew redis font .	385	<b>63</b>	<b>Hebrew in L<sup>A</sup>T<sub>E</sub>X 2.09 compatibility mode</b>	<b>395</b>
62.5	The HE8encoding definition file . . . . .	386	63.1	The DOCSTRIP modules .	395
62.5.1	CHECK HERE FOR HE8 UPDATES . . . . .	386	63.2	Obsolete style files . . . .	396
62.6	The font definition files (in HE8 encoding) . . . . .	388	<b>64</b>	<b>The Bahasa language</b>	<b>397</b>
			<b>65</b>	<b>Not renaming hyphen.tex</b>	<b>399</b>
			<b>66</b>	<b>Support for formats based on PLAIN<math>\TeX</math></b>	<b>400</b>

## 1 The user interface

The user interface of this package is quite simple. It consists of a set of commands that switch from one language to another, and a set of commands that deal with shorthands. It is also possible to find out what the current language is.

<code>\selectlanguage</code>	When a user wants to switch from one language to another he can do so using the macro <code>\selectlanguage</code> . This macro takes the language, defined previously by a language definition file, as its argument. It calls several macros that should be defined in the language definition files to activate the special definitions for the language chosen.
<code>otherlanguage</code>	The environment <code>otherlanguage</code> does basically the same as <code>\selectlanguage</code> , except the language change is local to the environment. This environment is required for intermixing left-to-right typesetting with right-to-left typesetting. The language to switch to is specified as an argument to <code>\begin{otherlanguage}</code> .
<code>\foreignlanguage</code>	The command <code>\foreignlanguage</code> takes two arguments; the second argument is a phrase to be typeset according to the rules of the language named in its first argument. This command only switches the extra definitions and the hyphenation

	rules for the language, <i>not</i> the names and dates.
<code>otherlanguage*</code>	In the environment <code>otherlanguage*</code> only the typesetting is done according to the rules of the other language, but the text-strings such as ‘figure’, ‘table’, etc. are left as they were set outside this environment.
<code>hyphenrules</code>	The environment <code>hyphenrules</code> can be used to select <i>only</i> the hyphenation rules to be used. This can for instance be used to select ‘nohyphenation’, provided that in <code>language.dat</code> the ‘language’ nohyphenation is defined by loading <code>serohyph.tex</code> .
<code>\language</code>	The control sequence <code>\language</code> contains the name of the current language.
<code>\iflanguage</code>	If more than one language is used, it might be necessary to know which language is active at a specific time. This can be checked by a call to <code>\iflanguage</code> . This macro takes three arguments. The first argument is the name of a language; the second and third arguments are the actions to take if the result of the test is <code>true</code> or <code>false</code> respectively.
<code>\usesshorthands</code>	The command <code>\usesshorthands</code> initiates the definition of user-defined shorthand sequences. It has one argument, the character that starts these personal shorthands.
<code>\defineshorthand</code>	The command <code>\defineshorthand</code> takes two arguments: the first is a one- or two-character shorthand sequence, and the second is the code the shorthand should expand to.
<code>\aliasshorthand</code>	The command <code>\aliasshorthand</code> can be used to let another character perform the same functions as the default shorthand character. If one prefers for example to use the character / over " in typing polish texts, this can be achieved by entering <code>\aliasshorthand{"}{/}</code> . <i>Please note</i> that the substitute shorthand character must have been declared in the preamble of your document, using a command such as <code>\usesshorthands{/}</code> in this example.
<code>\languageshorthands</code>	The command <code>\languageshorthands</code> can be used to switch the shorthands on the language level. It takes one argument, the name of a language. Note that for this to work the language should have been specified as an option when loading the <code>babel</code> package.
<code>\shorthandon</code> <code>\shorthandoff</code>	It is sometimes necessary to switch a shorthand character off temporarily, because it must be used in an entirely different way. For this purpose, the user commands <code>\shorthandoff</code> and <code>\shorthandon</code> are provided. They each take a list of characters as their arguments. The command <code>\shorthandoff</code> sets the <code>\catcode</code> for each of the characters in its argument to other (12); the command <code>\shorthandon</code> sets the <code>\catcode</code> to active (13). Both commands only work on ‘known’ shorthand characters. If a character is not known to be a shorthand character its category code will be left unchanged.
<code>\languageattribute</code>	This is a user-level command, to be used in the preamble of a document (after <code>\usepackage[...]{babel}</code> ), that declares which attributes are to be used for a given language. It takes two arguments: the first is the name of the language; the second, a (list of) attribute(s) to used. The command checks whether the language is known in this document and whether the attribute(s) are known for this language.

## 1.1 Languages supported by Babel

In the following table all the languages supported by `Babel` are listed, together with the names of the options with which you can load `babel` for each language.



Language	Option(s)
Afrikaans	afrikaans
Bahasa	bahasa
Basque	basque
Breton	breton
Bulgarian	bulgarian
Catalan	catalan
Croatian	croatian
Czech	czech
Danish	danish
Dutch	dutch
English	english, USenglish, american, UKenglish, british, canadian, australian, newzealand
Esperanto	esperanto
Estonian	estonian
Finnish	finnish
French	french, francais, canadien, acadian
Galician	galician
German	austrian, german, germanb, ngerman, naustrian
Greek	greek, polutonikogreek
Hebrew	hebrew
Hungarian	magyar, hungarian
Icelandic	icelandic
Interlingua	interlingua
Irish Gaelic	irish
Italian	italian
Latin	latin
Lower Sorbian	lowersorbian
North Sami	samin
Norwegian	norsk, nynorsk
Polish	polish
Portuguese	portuges, portuguese, brazilian, brazil
Romanian	romanian
Russian	russian
Scottish Gaelic	scottish
Spanish	spanish
Slovakian	slovak
Slovenian	slovene
Swedish	swedish
Serbian	serbian
Turkish	turkish
Ukrainian	ukrainian
Upper Sorbian	upper sorbian
Welsh	welsh

For some languages **babel** supports the options **activeacute** and **activegrave**; for typesetting Russian texts, **babel** knows about the options **LWN** and **LCY** to specify the fontencoding of the cyrillic font used. Currently only **LWN** is supported.

## 1.2 Workarounds

If you use the document class `book` and you use `\ref` inside the argument of `\chapter`, L<sup>A</sup>T<sub>E</sub>X will keep complaining about an undefined label. The reason is that the argument of `\ref` is passed through `\uppercase` at some time during processing. To prevent such problems, you could revert to using uppercase labels, or you can use `\lowercase{\ref{foo}}` inside the argument of `\chapter`.

## 2 Changes for L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>

With the advent of L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> the interface to `babel` in the preamble of the document has changed. With L<sup>A</sup>T<sub>E</sub>X 2.09 one used to call up the `babel` system with a line such as:

```
\documentstyle[dutch,english]{article}
```

which would tell L<sup>A</sup>T<sub>E</sub>X that the document would be written in two languages, Dutch and English, and that English would be the first language in use.

The L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> way of providing the same information is:

```
\documentclass{article}
\usepackage[dutch,english]{babel}
```

or, making `dutch` and `english` global options in order to let other packages detect and use them:

```
\documentclass[dutch,english]{article}
\usepackage{babel}
\usepackage{varioref}
```

In this last example, the package `varioref` will also see the options and will be able to use them.

## 3 Changes in Babel version 3.7

In Babel version 3.7 a number of bugs that were found in version 3.6 are fixed. Also a number of changes and additions have occurred:

- Shorthands are expandable again. The disadvantage is that one has to type `'{a}` when the acute accent is used as a shorthand character. The advantage is that a number of other problems (such as the breaking of ligatures, etc.) have vanished.
- Two new commands, `\shorthandon` and `\shorthandoff` have been introduced to enable to temporarily switch off one or more shorthands.
- Support for typesetting Greek has been enhanced. Code from the `kdgreek` package (suggested by the author) was added and `\greeknumeral` has been added.
- Support for typesetting Basque is now available thanks to Juan Aguirregabiria.



- Support for typesetting Serbian with Latin script is now available thanks to Dejan Muhamedagić and Jankovic Slobodan.
- Support for typesetting Hebrew (and potential support for typesetting other right-to-left written languages) is now available thanks to Rama Porrat and Boris Lavva.
- Support for typesetting Bulgarian is now available thanks to Georgi Boshnakov.
- Support for typesetting Latin is now available, thanks to Claudio Beccari and Krzysztof Konrad Żelechowski.
- Support for typesetting North Sami is now available, thanks to Regnor Jernsletten.
- The options `canadian`, `canadien` and `acadien` have been added for Canadian English and French use.
- A language attribute has been added to the `\mark...` commands in order to make sure that a Greek header line comes out right on the last page before a language switch.
- Hyphenation pattern files are now read *inside a group*; therefore any changes a pattern file needs to make to lowercase codes, uppercase codes, and category codes are kept local to that group. If they are needed for the language, these changes will need to be repeated and stored in `\extras...`
- The concept of language attributes is introduced. It is intended to give the user some control over the features a language-definition file provides. Its first use is for the Greek language, where the user can choose the *πολυτονικό* (“Polutoniko” or multi-accented) Greek way of typesetting texts. These attributes will possibly find wider use in future releases.
- The environment `hyphenrules` is introduced.
- The syntax of the file `language.dat` has been extended to allow (optionally) specifying the font encoding to be used while processing the patterns file.
- The command `\providehyphenmins` should now be used in language definition files in order to be able to keep any settings provided by the pattern file.

## 4 Changes in Babel version 3.6

In Babel version 3.6 a number of bugs that were found in version 3.5 are fixed. Also a number of changes and additions have occurred:

- A new environment `otherlanguage*` is introduced. it only switches the ‘specials’, but leaves the ‘captions’ untouched.
- The shorthands are no longer fully expandable. Some problems could only be solved by peeking at the token following an active character. The advantage is that `'{\a` works as expected for languages that have the `'` active.

- Support for typesetting french texts is much enhanced; the file `francais.ldf` is now replaced by `frenchb.ldf` which is maintained by Daniel Flipo.
- Support for typesetting the russian language is again available. The language definition file was originally developed by Olga Lapko from CyrTUG. The fonts needed to typeset the russian language are now part of the `babel` distribution. The support is not yet up to the level which is needed according to Olga, but this is a start.
- Support for typesetting greek texts is now also available. What is offered in this release is a first attempt; it will be enhanced later on by Yannis Haralambous.
- in `babel` 3.6j some hooks have been added for the development of support for Hebrew typesetting.
- Support for typesetting texts in Afrikaans (a variant of Dutch, spoken in South Africa) has been added to `dutch.ldf`.
- Support for typesetting Welsh texts is now available.
- A new command `\aliasshorthand` is introduced. It seems that in Poland various conventions are used to type the necessary Polish letters. It is now possible to use the character `/` as a shorthand character instead of the character `"`, by issuing the command `\aliasshorthand{"}{/}`.
- The shorthand mechanism now deals correctly with characters that are already active.
- Shorthand characters are made active at `\begin{document}`, not earlier. This is to prevent problems with other packages.
- A *preambleonly* command `\substitutefontfamily` has been added to create `.fd` files on the fly when the font families of the Latin text differ from the families used for the Cyrillic or Greek parts of the text.
- Three new commands `\LdfInit`, `\ldf@quit` and `\ldf@finish` are introduced that perform a number of standard tasks.
- In `babel` 3.6k the language Ukrainian has been added and the support for Russian typesetting has been adapted to the package 'cyrillic' to be released with the December 1998 release of L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>.

## 5 Changes in Babel version 3.5

In Babel version 3.5 a lot of changes have been made when compared with the previous release. Here is a list of the most important ones:

- the selection of the language is delayed until `\begin{document}`, which means you must add appropriate `\selectlanguage` commands if you include `\hyphenation` lists in the preamble of your document.
- `babel` now has a `language` environment and a new command `\foreignlanguage`;

- the way active characters are dealt with is completely changed. They are called ‘shorthands’; one can have three levels of shorthands: on the user level, the language level, and on ‘system level’. A consequence of the new way of handling active characters is that they are now written to auxiliary files ‘verbatim’;
- A language change now also writes information in the `.aux` file, as the change might also affect typesetting the table of contents. The consequence is that an `.aux` file generated by a LaTeX format with babel preloaded gives errors when read with a LaTeX format without babel; but I think this probably doesn’t occur;
- babel is now compatible with the `inputenc` and `fontenc` packages;
- the language definition files now have a new extension, `ldf`;
- the syntax of the file `language.dat` is extended to be compatible with the `french` package by Bernard Gaulle;
- each language definition file looks for a configuration file which has the same name, but the extension `.cfg`. It can contain any valid L<sup>A</sup>T<sub>E</sub>X code.

## 6 The interface between the core of babel and the language definition files

In the core of the babel system, several macros are defined for use in language definition files. Their purpose is to make a new language known.

`\addlanguage` The macro `\addlanguage` is a non-outer version of the macro `\newlanguage`, defined in `plain.tex` version 3.x. For older versions of `plain.tex` and `lplain.tex` a substitute definition is used.

`\adddialect` The macro `\adddialect` can be used when two languages can (or must) use the same hyphenation patterns. This can also be useful for languages for which no patterns are preloaded in the format. In such cases the default behaviour of the babel system is to define this language as a ‘dialect’ of the language for which the patterns were loaded as `\language0`.

The language definition files must conform to a number of conventions, because these files have to fill in the gaps left by the common code in `babel.def`, i.e., the definitions of the macros that produce texts. Also the language-switching possibility which has been built into the babel system has its implications.

The following assumptions are made:

- Some of the language-specific definitions might be used by plain T<sub>E</sub>X users, so the files have to be coded so that they can be read by both L<sup>A</sup>T<sub>E</sub>X and plain T<sub>E</sub>X. The current format can be checked by looking at the value of the macro `\fmtname`.
- The common part of the babel system redefines a number of macros and environments (defined previously in the document style) to put in the names of macros that replace the previously hard-wired texts. These macros have to be defined in the language definition files.

- The language definition files define five macros, used to activate and deactivate the language-specific definitions. These macros are `\<lang>hyphenmins`, `\captions<lang>`, `\date<lang>`, `\extras<lang>` and `\noextras<lang>`; where `<lang>` is either the name of the language definition file or the name of the  $\text{\LaTeX}$  option that is to be used. These macros and their functions are discussed below.
- When a language definition file is loaded, it can define `\l@<lang>` to be a dialect of `\language0` when `\l@<lang>` is undefined.
- The language definition files can be read in the preamble of the document, but also in the middle of document processing. This means that they have to function independently of the current `\catcode` of the `@` sign.

<code>\providehyphenmins</code>	The macro <code>\providehyphenmins</code> should be used in the language definition files to set the <code>\lefthyphenmin</code> and <code>\righthyphenmin</code> . This macro will check whether these parameters were provided by the hyphenation file before it takes any action.
<code>\langhyphenmins</code>	The macro <code>\&lt;lang&gt;hyphenmins</code> is used to store the values of the <code>\lefthyphenmin</code> and <code>\righthyphenmin</code> .
<code>\captionslang</code>	The macro <code>\captions&lt;lang&gt;</code> defines the macros that hold the texts to replace the original hard-wired texts.
<code>\datelang</code>	The macro <code>\date&lt;lang&gt;</code> defines <code>\today</code> and
<code>\extraslang</code>	The macro <code>\extras&lt;lang&gt;</code> contains all the extra definitions needed for a specific language.
<code>\noextraslang</code>	Because we want to let the user switch between languages, but we do not know what state $\text{\TeX}$ might be in after the execution of <code>\extras&lt;lang&gt;</code> , a macro that brings $\text{\TeX}$ into a predefined state is needed. It will be no surprise that the name of this macro is <code>\noextras&lt;lang&gt;</code> .
<code>\bbl@declare@ttribute</code>	This is a command to be used in the language definition files for declaring a language attribute. It takes three arguments: the name of the language, the attribute to be defined, and the code to be executed when the attribute is to be used.
<code>\main@language</code>	To postpone the activation of the definitions needed for a language until the beginning of a document, all language definition files should use <code>\main@language</code> instead of <code>\selectlanguage</code> . This will just store the name of the language, and the proper language will be activated at the start of the document.
<code>\ProvidesLanguage</code>	The macro <code>\ProvidesLanguage</code> should be used to identify the language definition files. Its syntax is similar to the syntax of the $\text{\LaTeX}$ command <code>\ProvidesPackage</code> .
<code>\LdfInit</code>	The macro <code>\LdfInit</code> performs a couple of standard checks that must be made at the beginning of a language definition file, such as checking the category code of the <code>@</code> -sign, preventing the <code>.ldf</code> file from being processed twice, etc.
<code>\ldf@quit</code>	The macro <code>\ldf@quit</code> does work needed if a <code>.ldf</code> file was processed earlier. This includes resetting the category code of the <code>@</code> -sign, preparing the language to be activated at <code>\begin{document}</code> time, and ending the input stream.
<code>\ldf@finish</code>	The macro <code>\ldf@finish</code> does work needed at the end of each <code>.ldf</code> file. This includes resetting the category code of the <code>@</code> -sign, loading a local configuration file, and preparing the language to be activated at <code>\begin{document}</code> time.
<code>\loadlocalcfg</code>	After processing a language definition file, $\text{\LaTeX}$ can be instructed to load a local configuration file. This file can, for instance, be used to add strings to

`\captions⟨lang⟩` to support local document classes. The user will be informed that this configuration file has been loaded. This macro is called by `\ldf@finish`.

`\substitutefontfamily` This command takes three arguments, a font encoding and two font family names. It creates a font description file for the first font in the given encoding. This `.fd` file will instruct  $\text{\LaTeX}$  to use a font from the second family when a font from the first family in the given encoding seems to be needed.

## 6.1 Support for active characters

In quite a number of language definition files, active characters are introduced. To facilitate this, some support macros are provided.

`\initiate@active@char` The internal macro `\initiate@active@char` is used in language definition files to instruct  $\text{\LaTeX}$  to give a character the category code ‘active’. When a character has been made active it will remain that way until the end of the document. Its definition may vary.

`\bbl@activate` The command `\bbl@activate` is used to change the way an active character expands. `\bbl@activate` ‘switches on’ the active behaviour of the character. `\bbl@deactivate` lets the active character expand to its former (mostly) non-active self.

`\declare@shorthand` The macro `\declare@shorthand` is used to define the various shorthands. It takes three arguments: the name for the collection of shorthands this definition belongs to; the character (sequence) that makes up the shorthand, i.e. `~` or `"a`; and the code to be executed when the shorthand is encountered.

`\bbl@add@special` The  $\text{\TeX}$ book states: “Plain  $\text{\TeX}$  includes a macro called `\dospecials` that is essentially a set macro, representing the set of all characters that have a special category code.” [1, p. 380] It is used to set text ‘verbatim’. To make this work if more characters get a special category code, you have to add this character to the macro `\dospecial`.  $\text{\LaTeX}$  adds another macro called `@sanitize` representing the same character set, but without the curly braces. The macros `\bbl@add@special⟨char⟩` and `\bbl@remove@special⟨char⟩` add and remove the character `⟨char⟩` to these two sets.

## 6.2 Support for saving macro definitions

Language definition files may want to *redefine* macros that already exist. Therefore a mechanism for saving (and restoring) the original definition of those macros is provided. We provide two macros for this<sup>1</sup>.

`\babel@save` To save the current meaning of any control sequence, the macro `\babel@save` is provided. It takes one argument, `⟨cname⟩`, the control sequence for which the meaning has to be saved.

`\babel@savevariable` A second macro is provided to save the current value of a variable. In this context, anything that is allowed after the `\the` primitive is considered to be a variable. The macro takes one argument, the `⟨variable⟩`.

The effect of the preceding macros is to append a piece of code to the current definition of `\originalTeX`. When `\originalTeX` is expanded, this code restores the previous definition of the control sequence or the previous value of the variable.

<sup>1</sup>This mechanism was introduced by Bernd Raichle.

### 6.3 Support for extending macros

`\addto` The macro `\addto{<control sequence>}{<TeX code>}` can be used to extend the definition of a macro. The macro need not be defined. This macro can, for instance, be used in adding instructions to a macro like `\extrasenglish`.

### 6.4 Macros common to a number of languages

`\allowhyphens` In a couple of European languages compound words are used. This means that when TeX has to hyphenate such a compound word, it only does so at the ‘-’ that is used in such words. To allow hyphenation in the rest of such a compound word, the macro `\allowhyphens` can be used.

`\set@low@box` For some languages, quotes need to be lowered to the baseline. For this purpose the macro `\set@low@box` is available. It takes one argument and puts that argument in an `\hbox`, at the baseline. The result is available in `\box0` for further processing.

`\save@sf@q` Sometimes it is necessary to preserve the `\spacefactor`. For this purpose the macro `\save@sf@q` is available. It takes one argument, saves the current spacefactor, executes the argument, and restores the spacefactor.

`\bbl@frenchspacing`  
`\bbl@nonfrenchspacing` The commands `\bbl@frenchspacing` and `\bbl@nonfrenchspacing` can be used to properly switch French spacing on and off.

## 7 Compatibility with `german.sty`

The file `german.sty` has been one of the sources of inspiration for the `babel` system. Because of this I wanted to include `german.sty` in the `babel` system. To be able to do that I had to allow for one incompatibility: in the definition of the macro `\selectlanguage` in `german.sty` the argument is used as the *<number>* for an `\ifcase`. So in this case a call to `\selectlanguage` might look like `\selectlanguage{<german>}`.

In the definition of the macro `\selectlanguage` in `babel.def` the argument is used as a part of other macronames, so a call to `\selectlanguage` now looks like `\selectlanguage{<german>}`. Notice the absence of the escape character. As of version 3.1a of `babel` both syntaxes are allowed.

All other features of the original `german.sty` have been copied into a new file, called `germanb.sty`<sup>2</sup>.

Although the `babel` system was developed to be used with L<sup>A</sup>T<sub>E</sub>X, some of the features implemented in the language definition files might be needed by plain TeX users. Care has been taken that all files in the system can be processed by plain TeX.

## 8 Compatibility with `ngerman.sty`

When used with the options `ngerman` or `naustrian`, `babel` will provide all features of the package `ngerman`. There is however one exception: The commands for special hyphenation of double consonants (“ff etc.) and ck (“ck), which are no longer required with the new German orthography, are undefined. With the `ngerman`

---

<sup>2</sup>The ‘b’ is added to the name to distinguish the file from Partls’ file.

package, however, these commands will generate appropriate warning messages only.

## 9 Compatibility with the french package

It has been reported to me that the package `french` by Bernard Gaulle (`gaulle@idris.fr`) works together with `babel`. On the other hand, it seems *not* to work well together with a lot of other packages. Therefore I have decided to no longer load `french.ldf` by default. Instead, when you want to use the package by Bernard Gaulle, you will have to request it specifically, by passing either `frenchle` or `frenchpro` as an option to `babel`.

## 10 Identification

The file `babel.sty`<sup>3</sup> is meant for L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, therefor we make sure that the format file used is the right one.

`\ProvidesLanguage` The identification code for each file is something that was introduced in L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>. When the command `\ProvidesFile` does not exist, a dummy definition is provided temporarily. For use in the language definition file the command `\ProvidesLanguage` is defined by `babel`.

```

10.1 \*!package)
10.2 \ifx\ProvidesFile\@undefined
10.3   \def\ProvidesFile#1[#2 #3 #4]{%
10.4     \wlog{File: #1 #4 #3 <#2>}}%
10.5 \*kernel & patterns)
10.6   \toks8{Babel <#3> and hyphenation patterns for }%
10.7 \*kernel & patterns)
10.8   \let\ProvidesFile\@undefined
10.9   }
```

As an alternative for `\ProvidesFile` we define `\ProvidesLanguage` here to be used in the language definition files.

```

10.10 \*kernel)
10.11   \def\ProvidesLanguage#1[#2 #3 #4]{%
10.12     \wlog{Language: #1 #4 #3 <#2>}}%
10.13   }
10.14 \else
```

In this case we save the original definition of `\ProvidesFile` in `\bbl@tempa` and restore it after we have stored the version of the file in `\toks8`.

```

10.15 \*kernel & patterns)
10.16   \let\bbl@tempa\ProvidesFile
10.17   \def\ProvidesFile#1[#2 #3 #4]{%
10.18     \toks8{Babel <#3> and hyphenation patterns for }%
10.19     \bbl@tempa#1[#2 #3 #4]%
10.20     \let\ProvidesFile\bbl@tempa}
10.21 \*kernel & patterns)
```

---

<sup>3</sup>The file described in this section is called `babel.dtx`, has version number v3.8e and was last revised on 2005/03/24.

When `\ProvidesFile` is defined we give `\ProvidesLanguage` a similar definition.

```

10.22 \def\ProvidesLanguage#1{%
10.23   \begingroup
10.24     \catcode'\ 10 %
10.25     \makeother\/%
10.26     \@ifnextchar[%]
10.27       {\@provideslanguage{#1}}{\@provideslanguage{#1}[]}}
10.28 \def\@provideslanguage#1[#2]{%
10.29   \wlog{Language: #1 #2}%
10.30   \expandafter\xdef\csname ver@#1.ldf\endcsname{#2}%
10.31   \endgroup}
10.32 </kernel>
10.33 \fi
10.34 </!package>

```

Identify each file that is produced from this source file.

```

10.35 <+package>\ProvidesPackage{babel}
10.36 <+core>\ProvidesFile{babel.def}
10.37 <+kernel & patterns>\ProvidesFile{hyphen.cfg}
10.38 <+kernel&!patterns>\ProvidesFile{switch.def}
10.39 <+driver&!user>\ProvidesFile{babel.drv}
10.40 <+driver & user>\ProvidesFile{user.drv}
10.41       [2005/03/24 v3.8e %
10.42 <+package>   The Babel package]
10.43 <+core>       Babel common definitions]
10.44 <+kernel>     Babel language switching mechanism]
10.45 <+driver>]

```

## 11 The Package File

In order to make use of the features of  $\text{\LaTeX} 2_{\epsilon}$ , the `babel` system contains a package file, `babel.sty`. This file is loaded by the `\usepackage` command and defines all the language options known in the `babel` system. It also takes care of a number of compatibility issues with other packages.

### 11.1 Language options

```

11.1 (*package)
11.2 \ifx\LdfInit\@undefined\input babel.def\relax\fi

```

For all the languages supported we need to declare an option.

```

11.3 \DeclareOption{acadian}{\input{frenchb.ldf}}
11.4 \DeclareOption{afrikaans}{\input{dutch.ldf}}
11.5 \DeclareOption{american}{\input{english.ldf}}
11.6 \DeclareOption{australian}{\input{english.ldf}}

```

Austrian is really a dialect of German.

```

11.7 \DeclareOption{austrian}{\input{germanb.ldf}}
11.8 \DeclareOption{bahasa}{\input{bahasa.ldf}}
11.9 \DeclareOption{basque}{\input{basque.ldf}}
11.10 \DeclareOption{brazil}{\input{portuges.ldf}}
11.11 \DeclareOption{brazilian}{\input{portuges.ldf}}
11.12 \DeclareOption{breton}{\input{breton.ldf}}

```



```

11.13 \DeclareOption{british}{\input{english.ldf}}
11.14 \DeclareOption{bulgarian}{\input{bulgarian.ldf}}
11.15 \DeclareOption{canadian}{\input{english.ldf}}
11.16 \DeclareOption{canadien}{\input{frenchb.ldf}}
11.17 \DeclareOption{catalan}{\input{catalan.ldf}}
11.18 \DeclareOption{croatian}{\input{croatian.ldf}}
11.19 \DeclareOption{czech}{\input{czech.ldf}}
11.20 \DeclareOption{danish}{\input{danish.ldf}}
11.21 \DeclareOption{dutch}{\input{dutch.ldf}}

11.22 \DeclareOption{english}{\input{english.ldf}}
11.23 \DeclareOption{esperanto}{\input{esperanto.ldf}}
11.24 \DeclareOption{estonian}{\input{estonian.ldf}}
11.25 \DeclareOption{finnish}{\input{finnish.ldf}}

```

The babel support of French used to be stored in `francais.ldf`; therefor the L<sup>A</sup>T<sub>E</sub>X 2.09 option used to be `francais`. The hyphenation patterns may be loaded as either ‘french’ or as ‘francais’.

```

11.26 \DeclareOption{francais}{\input{frenchb.ldf}}
11.27 \DeclareOption{frenchb}{\input{frenchb.ldf}}

```

With L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> we can now also use the option `french` and still call the file `frenchb.ldf`.

```

11.28 \DeclareOption{french}{\input{frenchb.ldf}}%
11.29 \DeclareOption{galician}{\input{galician.ldf}}
11.30 \DeclareOption{german}{\input{germanb.ldf}}
11.31 \DeclareOption{germanb}{\input{germanb.ldf}}

11.32 \DeclareOption{greek}{\input{greek.ldf}}
11.33 \DeclareOption{polutonikogreek}{%
11.34   \input{greek.ldf}%
11.35   \languageattribute{greek}{polutoniko}}

11.36 \DeclareOption{hebrew}{%
11.37   \input{rlbabel.def}%
11.38   \input{hebrew.ldf}}

```

`hungarian` is just a synonym for `magyar`

```

11.39 \DeclareOption{hungarian}{\input{magyar.ldf}}
11.40 \DeclareOption{icelandic}{\input{icelandic.ldf}}
11.41 \DeclareOption{interlingua}{\input{interlingua.ldf}}
11.42 \DeclareOption{irish}{\input{irish.ldf}}
11.43 \DeclareOption{italian}{\input{italian.ldf}}
11.44 \DeclareOption{latin}{\input{latin.ldf}}
11.45 \DeclareOption{lowersorbian}{\input{lsorbian.ldf}}
11.46 %^A\DeclareOption{kannada}{\input{kannada.ldf}}
11.47 \DeclareOption{magyar}{\input{magyar.ldf}}
11.48 %^A\DeclareOption{nagari}{\input{nagari.ldf}}

```

‘New’ German orthography, including Austrian variant:

```

11.49 \DeclareOption{naustrian}{\input{ngermanb.ldf}}
11.50 \DeclareOption{newzealand}{\input{english.ldf}}
11.51 \DeclareOption{ngerman}{\input{ngermanb.ldf}}
11.52 \DeclareOption{norsk}{\input{norsk.ldf}}
11.53 \DeclareOption{samin}{\input{samin.ldf}}

```

For Norwegian two spelling variants are provided.

```

11.54 \DeclareOption{nynorsk}{\input{norsk.ldf}}
11.55 \DeclareOption{polish}{\input{polish.ldf}}

```

```

11.56 \DeclareOption{portuges}{\input{portuges.ldf}}
11.57 \DeclareOption{portuguese}{\input{portuges.ldf}}
11.58 \DeclareOption{romanian}{\input{romanian.ldf}}
11.59 \DeclareOption{russian}{\input{russianb.ldf}}
11.60 %~A\DeclareOption{sanskrit}{\input{sanskrit.ldf}}
11.61 \DeclareOption{scottish}{\input{scottish.ldf}}
11.62 \DeclareOption{serbian}{\input{serbian.ldf}}
11.63 \DeclareOption{slovak}{\input{slovak.ldf}}
11.64 \DeclareOption{slovene}{\input{slovene.ldf}}
11.65 \DeclareOption{spanish}{\input{spanish.ldf}}
11.66 \DeclareOption{swedish}{\input{swedish.ldf}}
11.67 %~A\DeclareOption{tamil}{\input{tamil.ldf}}
11.68 \DeclareOption{turkish}{\input{turkish.ldf}}
11.69 \DeclareOption{ukrainian}{\input{ukraineb.ldf}}
11.70 \DeclareOption{uppersorbian}{\input{usorbian.ldf}}
11.71 \DeclareOption{welsh}{\input{welsh.ldf}}
11.72 \DeclareOption{UKenglish}{\input{english.ldf}}
11.73 \DeclareOption{USenglish}{\input{english.ldf}}

```

For all those languages for which the option name is the same as the name of the language specific file we specify a default option, which tries to load the file specified. If this doesn't succeed an error is signalled.

```

11.74 \DeclareOption*{%
11.75   \InputIfFileExists{\CurrentOption.ldf}{\}%
11.76   \PackageError{babel}{%
11.77     Language definition file \CurrentOption.ldf not found}{%
11.78     Maybe you misspelled the language option?}}%
11.79 }

```

Another way to extend the list of 'known' options for `babel` is to create the file `bblopts.cfg` in which one can add option declarations.

```

11.80 \InputIfFileExists{bblopts.cfg}{%
11.81   \typeout{*****~J%
11.82     * Local config file bblopts.cfg used~J%
11.83     *}%
11.84 }{}

```

Apart from all the language options we also have a few options that influence the behaviour of language definition files.

The following options don't do anything themselves, they are just defined in order to make it possible for language definition files to check if one of them was specified by the user.

```

11.85 \DeclareOption{activeacute}{}
11.86 \DeclareOption{activegrave}{}

```

The next option tells `babel` to leave shorthand characters active at the end of processing the package. This is *not* the default as it can cause problems with other packages, but for those who want to use the shorthand characters in the preamble of their documents this can help.

```

11.87 \DeclareOption{KeepShorthandsActive}{}

```

The options have to be processed in the order in which the user specified them:

```

11.88 \ProcessOptions*

```

In order to catch the case where the user forgot to specify a language we check whether `\bbl@main@language`, has become defined. If not, no language has been loaded and an error message is displayed.

```

11.89 \ifx\bbl@main@language\@undefined
11.90 \PackageError{babel}{%
11.91   You haven't specified a language option}{%
11.92   You need to specify a language, either as a global
11.93   option\MessageBreak
11.94   or as an optional argument to the \string\usepackage\space
11.95   command; \MessageBreak
11.96   You shouldn't try to proceed from here, type x to quit.}

```

To prevent undefined command errors when the user insists on continuing we load `babel.def` here. He should expect more errors though.

```

11.97 \input{babel.def}
11.98 \fi

```

`\substitutefontfamily` The command `\substitutefontfamily` creates an `.fd` file on the fly. The first argument is an encoding mnemonic, the second and third arguments are font family names.

```

11.99 \def\substitutefontfamily#1#2#3{%
11.100 \lowercase{\immediate\openout15=#1#2.fd\relax}%
11.101 \immediate\write15{%
11.102   \string\ProvidesFile{#1#2.fd}%
11.103   [\the\year/\two@digits{\the\month}/\two@digits{\the\day}
11.104   \space generated font description file]^^J
11.105   \string\DeclareFontFamily{#1}{#2}{ }^^J
11.106   \string\DeclareFontShape{#1}{#2}{m}{n}{<->ssub * #3/m/n}{ }^^J
11.107   \string\DeclareFontShape{#1}{#2}{m}{it}{<->ssub * #3/m/it}{ }^^J
11.108   \string\DeclareFontShape{#1}{#2}{m}{sl}{<->ssub * #3/m/sl}{ }^^J
11.109   \string\DeclareFontShape{#1}{#2}{m}{sc}{<->ssub * #3/m/sc}{ }^^J
11.110   \string\DeclareFontShape{#1}{#2}{b}{n}{<->ssub * #3/bx/n}{ }^^J
11.111   \string\DeclareFontShape{#1}{#2}{b}{it}{<->ssub * #3/bx/it}{ }^^J
11.112   \string\DeclareFontShape{#1}{#2}{b}{sl}{<->ssub * #3/bx/sl}{ }^^J
11.113   \string\DeclareFontShape{#1}{#2}{b}{sc}{<->ssub * #3/bx/sc}{ }^^J
11.114   }%
11.115 \closeout15
11.116 }

```

This command should only be used in the preamble of a document.

```

11.117 \@onlypreamble\substitutefontfamily
11.118 </package>

```

## 12 The Kernel of Babel

The kernel of the `babel` system is stored in either `hyphen.cfg` or `switch.def` and `babel.def`. The file `hyphen.cfg` is a file that can be loaded into the format, which is necessary when you want to be able to switch hyphenation patterns. The file `babel.def` contains some  $\text{\TeX}$  code that can be read in at run time. When `babel.def` is loaded it checks if `hyphen.cfg` is in the format; if not the file `switch.def` is loaded.

Because plain  $\text{\TeX}$  users might want to use some of the features of the `babel` system too, care has to be taken that plain  $\text{\TeX}$  can process the files. For this reason the current format will have to be checked in a number of places. Some of the code below is common to plain  $\text{\TeX}$  and  $\text{\LaTeX}$ , some of it is for the  $\text{\LaTeX}$  case only.

When the command `\AtBeginDocument` doesn't exist we assume that we are dealing with a plain-based format. In that case the file `plain.def` is needed.

```
12.1 <*kernel | core>
12.2 \ifx\AtBeginDocument\@undefined
```

But we need to use the second part of `plain.def` (when we load it from `switch.def`) which we can do by defining `\adddialect`.

```
12.3 <kernel&!patterns> \def\adddialect{}
12.4 \input plain.def\relax
12.5 \fi
12.6 </kernel | core>
```

Check the presence of the command `\iflanguage`, if it is undefined read the file `switch.def`.

```
12.7 <*core>
12.8 \ifx\iflanguage\@undefined
12.9 \input switch.def\relax
12.10 \fi
12.11 </core>
```

## 12.1 Encoding issues (part 1)

The first thing we need to do is to determine, at `\begin{document}`, which latin fontencoding to use.

`\latinencoding` When text is being typeset in an encoding other than 'latin' (OT1 or T1), it would be nice to still have Roman numerals come out in the Latin encoding. So we first assume that the current encoding at the end of processing the package is the Latin encoding.

```
12.12 <*core>
12.13 \AtEndOfPackage{\edef\latinencoding{\cf@encoding}}
```

But this might be overruled with a later loading of the package `fontenc`. Therefore we check at the execution of `\begin{document}` whether it was loaded with the T1 option. The normal way to do this (using `\@ifpackageloaded`) is disabled for this package. Now we have to revert to parsing the internal macro `\@filelist` which contains all the filenames loaded.

```
12.14 \AtBeginDocument{%
12.15 \gdef\latinencoding{OT1}%
12.16 \ifx\cf@encoding\bbl@t@one
12.17 \xdef\latinencoding{\bbl@t@one}%
12.18 \else
12.19 \@ifl@aded{def}{t1enc}{\xdef\latinencoding{\bbl@t@one}}{}%
12.20 \fi
12.21 }
```

`\latintext` Then we can define the command `\latintext` which is a declarative switch to a latin font-encoding.

```
12.22 \DeclareRobustCommand{\latintext}{%
12.23 \fontencoding{\latinencoding}\selectfont
12.24 \def\encodingdefault{\latinencoding}}
```

`\textlatin` This command takes an argument which is then typeset using the requested font encoding. In order to avoid many encoding switches it operates in a local scope.

```

12.25 \ifx\@undefined\DeclareTextFontCommand
12.26   \DeclareRobustCommand{\textlatin}[1]{\leavevmode{\latintext #1}}
12.27 \else
12.28   \DeclareTextFontCommand{\textlatin}{\latintext}
12.29 \fi
12.30 \<core>

```

We also need to redefine a number of commands to ensure that the right font encoding is used, but this can't be done before `babel.def` is loaded.

## 12.2 Multiple languages

With T<sub>E</sub>X version 3.0 it has become possible to load hyphenation patterns for more than one language. This means that some extra administration has to be taken care of. The user has to know for which languages patterns have been loaded, and what values of `\language` have been used.

Some discussion has been going on in the T<sub>E</sub>X world about how to use `\language`. Some have suggested to set a fixed standard, i. e., patterns for each language should *always* be loaded in the same location. It has also been suggested to use the ISO list for this purpose. Others have pointed out that the ISO list contains more than 256 languages, which have *not* been numbered consecutively.

I think the best way to use `\language`, is to use it dynamically. This code implements an algorithm to do so. It uses an external file in which the person who maintains a T<sub>E</sub>X environment has to record for which languages he has hyphenation patterns *and* in which files these are stored<sup>4</sup>. When hyphenation exceptions are stored in a separate file this can be indicated by naming that file *after* the file with the hyphenation patterns.

This “configuration file” can contain empty lines and comments, as well as lines which start with an equals (=) sign. Such a line will instruct L<sup>A</sup>T<sub>E</sub>X that the hyphenation patterns just processed have to be known under an alternative name. Here is an example:

```

% File      : language.dat
% Purpose   : tell iniTeX what files with patterns to load.
english     english.hyphenations
=british

dutch       hyphen.dutch exceptions.dutch % Nederlands
german      hyphen.ger

```

As the file `switch.def` needs to be read only once, we check whether it was read before. If it was, the command `\iflanguage` is already defined, so we can stop processing.

```

12.31 \<*kernel>
12.32 \<!*patterns>
12.33 \expandafter\ifx\csname iflanguage\endcsname\relax \else
12.34 \expandafter\endinput

```

---

<sup>4</sup>This is because different operating systems sometimes use *very* different file-naming conventions.

```

12.35 \fi
12.36 \!/patterns>

```

**\language** Plain T<sub>E</sub>X version 3.0 provides the primitive **\language** that is used to store the current language. When used with a pre-3.0 version this function has to be implemented by allocating a counter.

```

12.37 \ifx\language\@undefined
12.38   \csname newcount\endcsname\language
12.39 \fi

```

**\last@language** Another counter is used to store the last language defined. For pre-3.0 formats an extra counter has to be allocated,

```

12.40 \ifx\newlanguage\@undefined
12.41   \csname newcount\endcsname\last@language
      plain TEX version 3.0 uses \count 19 for this purpose.
12.42 \else
12.43   \countdef\last@language=19
12.44 \fi

```

**\addlanguage** To add languages to T<sub>E</sub>X's memory plain T<sub>E</sub>X version 3.0 supplies **\newlanguage**, in a pre-3.0 environment a similar macro has to be provided. For both cases a new macro is defined here, because the original **\newlanguage** was defined to be **\outer**.

For a format based on plain version 2.x, the definition of **\newlanguage** can not be copied because **\count 19** is used for other purposes in these formats. Therefor **\addlanguage** is defined using a definition based on the macros used to define **\newlanguage** in plain T<sub>E</sub>X version 3.0.

```

12.45 \ifx\newlanguage\@undefined
12.46   \def\addlanguage#1{%
12.47     \global\advance\last@language \@ne
12.48     \ifnum\last@language<\@ccclvi
12.49       \else
12.50         \errmessage{No room for a new \string\language!}%
12.51       \fi
12.52     \global\chardef#1\last@language
12.53     \wlog{\string#1 = \string\language\the\last@language}}

```

For formats based on plain version 3.0 the definition of **\newlanguage** can be simply copied, removing **\outer**.

```

12.54 \else
12.55   \def\addlanguage{\alloc@9\language\chardef\@ccclvi}
12.56 \fi

```

**\adddialect** The macro **\adddialect** can be used to add the name of a dialect or variant language, for which an already defined hyphenation table can be used.

```

12.57 \def\adddialect#1#2{%
12.58   \global\chardef#1#2\relax
12.59   \wlog{\string#1 = a dialect from \string\language#2}}

```

**\iflanguage** Users might want to test (in a private package for instance) which language is currently active. For this we provide a test macro, **\iflanguage**, that has three arguments. It checks whether the first argument is a known language. If so, it

compares the first argument with the value of `\language`. Then, depending on the result of the comparison, it executes either the second or the third argument.

```

12.60 \def\iflanguage#1{%
12.61   \expandafter\ifx\csname l@#1\endcsname\relax
12.62     \nolanner{#1}%
12.63   \else
12.64     \bbl@afterfi{\ifnum\csname l@#1\endcsname=\language
12.65       \expandafter\@firstoftwo
12.66     \else
12.67       \expandafter\@secondoftwo
12.68     \fi}%
12.69   \fi}

```

`\selectlanguage` The macro `\selectlanguage` checks whether the language is already defined before it performs its actual task, which is to update `\language` and activate language-specific definitions.

To allow the call of `\selectlanguage` either with a control sequence name or with a simple string as argument, we have to use a trick to delete the optional escape character.

To convert a control sequence to a string, we use the `\string` primitive. Next we have to look at the first character of this string and compare it with the escape character. Because this escape character can be changed by setting the internal integer `\escapechar` to a character number, we have to compare this number with the character of the string. To do this we have to use  $\text{\TeX}$ 's backquote notation to specify the character as a number.

If the first character of the `\string`'ed argument is the current escape character, the comparison has stripped this character and the rest in the 'then' part consists of the rest of the control sequence name. Otherwise we know that either the argument is not a control sequence or `\escapechar` is set to a value outside of the character range 0–255.

If the user gives an empty argument, we provide a default argument for `\string`. This argument should expand to nothing.

```

12.70 \edef\selectlanguage{%
12.71   \noexpand\protect
12.72   \expandafter\noexpand\csname selectlanguage \endcsname
12.73 }

```

Because the command `\selectlanguage` could be used in a moving argument it expands to `\protect\selectlanguage␣`. Therefore, we have to make sure that a macro `\protect` exists. If it doesn't it is `\let` to `\relax`.

```

12.74 \ifx\@undefined\protect\let\protect\relax\fi

```

As  $\text{\LaTeX}$  2.09 writes to files *expanded* whereas  $\text{\LaTeX}$  2<sub>ε</sub> takes care *not* to expand the arguments of `\write` statements we need to be a bit clever about the way we add information to `.aux` files. Therefore we introduce the macro `\xstring` which should expand to the right amount of `\string`'s.

```

12.75 \ifx\documentclass\@undefined
12.76   \def\xstring{\string\string\string}
12.77 \else
12.78   \let\xstring\string
12.79 \fi

```

Since version 3.5 `babel` writes entries to the auxiliary files in order to typeset table of contents etc. in the correct language environment.

`\bbl@pop@language` *But* when the language change happens *inside* a group the end of the group doesn't write anything to the auxiliary files. Therefor we need TeX's `aftergroup` mechanism to help us. The command `\aftergroup` stores the token immediately following it to be executed when the current group is closed. So we define a temporary control sequence `\bbl@pop@language` to be executed at the end of the group. It calls `\bbl@set@language` with the name of the current language as its argument.

`\bbl@language@stack` The previous solution works for one level of nesting groups, but as soon as more levels are used it is no longer adequate. For that case we need to keep track of the nested languages using a stack mechanism. This stack is called `\bbl@language@stack` and initially empty.

```
12.80 \xdef\bbl@language@stack{}
```

When using a stack we need a mechanism to push an element on the stack and to retrieve the information afterwards.

`\bbl@push@language` The stack is simply a list of languagenames, separated with a '+' sign; the push  
`\bbl@pop@language` function can be simple:

```
12.81 \def\bbl@push@language{%
```

```
12.82   \xdef\bbl@language@stack{\language+\bbl@language@stack}%
```

```
12.83 }
```

Retrieving information from the stack is a little bit less simple, as we need to remove the element from the stack while storing it in the macro `\language`. For this we first define a helper function.

`\bbl@pop@lang` This macro stores its first element (which is delimited by the '+'-sign) in `\language` and stores the rest of the string (delimited by '-') in its third argument.

```
12.84 \def\bbl@pop@lang#1+#2-#3{%
```

```
12.85   \def\language{#1}\xdef#3{#2}%
```

```
12.86 }
```

The reason for the somewhat weird arrangement of arguments to the helper function is the fact it is called in the following way:

```
12.87 \def\bbl@pop@language{%
```

```
12.88   \expandafter\bbl@pop@lang\bbl@language@stack-\bbl@language@stack
```

This means that before `\bbl@pop@lang` is executed TeX first *expands* the stack, stored in `\bbl@language@stack`. The result of that is that the argument string of `\bbl@pop@lang` contains one or more language names, each followed by a '+'-sign (zero language names won't occur as this macro will only be called after something has been pushed on the stack) followed by the '-'-sign and finally the reference to the stack.

```
12.89 $$
```

```
12.90   \expandafter\bbl@set@language\expandafter{\language}%
```

```
12.91 }
```

Once the name of the previous language is retrieved from the stack, it is fed to `\bbl@set@language` to do the actual work of switching everything that needs switching.



```

12.92 \expandafter\def\csname selectlanguage \endcsname#1{%
12.93   \bbl@push@language
12.94   \aftergroup\bbl@pop@language
12.95   \bbl@set@language{#1}}

```

`\bbl@set@language` The macro `\bbl@set@language` takes care of switching the language environment *and* of writing entries on the auxiliary files.

```

12.96 \def\bbl@set@language#1{%
12.97   \edef\language#1{%
12.98     \ifnum\escapechar=\expandafter'\string#1\@empty
12.99     \else \string#1\@empty\fi}%
12.100   \select@language{\language}%

```

We also write a command to change the current language in the auxiliary files.

```

12.101   \if@files
12.102     \protected@write\@auxout{}\string\select@language{\language}%
12.103     \addtocontents{toc}{\xstring\select@language{\language}}%
12.104     \addtocontents{lof}{\xstring\select@language{\language}}%
12.105     \addtocontents{lot}{\xstring\select@language{\language}}%
12.106   \fi}

```

First, check if the user asks for a known language. If so, update the value of `\language` and call `\originalTeX` to bring  $\TeX$  in a certain pre-defined state.

```

12.107 \def\select@language#1{%
12.108   \expandafter\ifx\csname l@#1\endcsname\relax
12.109     \@nolanerr{#1}%
12.110   \else
12.111     \expandafter\ifx\csname date#1\endcsname\relax
12.112       \@noopterr{#1}%
12.113     \else
12.114       \language=\csname l@#1\endcsname\relax
12.115       \originalTeX

```

The name of the language is stored in the control sequence `\language`. The contents of this control sequence could be tested in the following way:

```

\edef\tmp{\string english}
\ifx\language\tmp
...
\else
...
\fi

```

The construction with `\string` is necessary because `\language` returns the name with characters of category code 12 (other). Then we have to *redefine* `\originalTeX` to compensate for the things that have been activated. To save memory space for the macro definition of `\originalTeX`, we construct the control sequence name for the `\noextras`*(lang)* command at definition time by expanding the `\csname` primitive.

```

12.116   \expandafter\def\expandafter\originalTeX
12.117     \expandafter{\csname noextras#1\endcsname
12.118     \let\originalTeX\@empty}%

```

```

12.119      \languageshorthands{none}%
12.120      \babel@beginsave

```

Now activate the language-specific definitions. This is done by constructing the names of three macros by concatenating three words with the argument of `\selectlanguage`, and calling these macros.

```

12.121      \csname captions#1\endcsname
12.122      \csname date#1\endcsname
12.123      \csname extras#1\endcsname\relax

```

The switching of the values of `\lefthyphenmin` and `\righthyphenmin` is somewhat different. First we save their current values, then we check if `\langle lang \rangle hyphenmins` is defined. If it is not, we set default values (2 and 3), otherwise the values in `\langle lang \rangle hyphenmins` will be used.

```

12.124      \babel@savevariable\lefthyphenmin
12.125      \babel@savevariable\righthyphenmin
12.126      \expandafter\ifx\csname #1hyphenmins\endcsname\relax
12.127        \set@hyphenmins\tw@\thr@@\relax
12.128      \else
12.129        \expandafter\expandafter\expandafter\set@hyphenmins
12.130        \csname #1hyphenmins\endcsname\relax
12.131      \fi
12.132    \fi
12.133  \fi}

```

**otherlanguage** The `otherlanguage` environment can be used as an alternative to using the `\selectlanguage` declarative command. When you are typesetting a document which mixes left-to-right and right-to-left typesetting you have to use this environment in order to let things work as you expect them to.

The first thing this environment does is store the name of the language in `\language`; it then calls `\selectlanguage_` to switch on everything that is needed for this language. The `\ignorespaces` command is necessary to hide the environment when it is entered in horizontal mode.

```

12.134 \long\def\otherlanguage#1{%
12.135   \csname selectlanguage \endcsname{#1}%
12.136   \ignorespaces
12.137 }

```

The `\endotherlanguage` part of the environment calls `\originalTeX` to restore (most of) the settings and tries to hide itself when it is called in horizontal mode.

```

12.138 \long\def\endotherlanguage{%
12.139   \originalTeX
12.140   \global\@ignoretrue\ignorespaces
12.141 }

```

**otherlanguage\*** The `otherlanguage` environment is meant to be used when a large part of text from a different language needs to be typeset, but without changing the translation of words such as ‘figure’.

This environment makes use of `\foreign@language`.

```

12.142 \expandafter\def\csname otherlanguage*\endcsname#1{%
12.143   \foreign@language{#1}%
12.144 }

```

At the end of the environment we need to switch off the extra definitions. The grouping mechanism of the environment will take care of resetting the correct hyphenation rules.

```
12.145 \expandafter\def\csname endotherlanguage*\endcsname{%
12.146   \csname noextras\language\endcsname
12.147 }
```

**\foreignlanguage** The `\foreignlanguage` command is another substitute for the `\selectlanguage` command. This command takes two arguments, the first argument is the name of the language to use for typesetting the text specified in the second argument.

Unlike `\selectlanguage` this command doesn't switch *everything*, it only switches the hyphenation rules and the extra definitions for the language specified. It does this within a group and assumes the `\extras⟨lang⟩` command doesn't make any `\global` changes. The coding is very similar to part of `\selectlanguage`.

```
12.148 \def\foreignlanguage{\protect\csname foreignlanguage \endcsname}
12.149 \expandafter\def\csname foreignlanguage \endcsname#1#2{%
12.150   \begingroup
12.151     \originalTeX
12.152     \foreign@language{#1}%
12.153     #2%
12.154     \csname noextras#1\endcsname
12.155   \endgroup
12.156 }
```

**\foreign@language** This macro does the work for `\foreignlanguage` and the `otherlanguage*` environment.

```
12.157 \def\foreign@language#1{%
```

First we need to store the name of the language and check that it is a known language.

```
12.158   \def\language#1{%
12.159   \expandafter\ifx\csname l@#1\endcsname\relax
12.160     \@nolanerr{#1}%
12.161   \else
```

If it is we can select the proper hyphenation table and switch on the extra definitions for this language.

```
12.162     \language=\csname l@#1\endcsname\relax
12.163     \languageshorthands{none}%
```

Then we set the left- and right hyphenmin variables.

```
12.164     \csname extras#1\endcsname
12.165     \expandafter\ifx\csname #1hyphenmins\endcsname\relax
12.166       \set@hyphenmins\tw@\thr@@\relax
12.167     \else
12.168       \expandafter\expandafter\expandafter\set@hyphenmins
12.169       \csname #1hyphenmins\endcsname\relax
12.170     \fi
12.171   \fi
12.172 }
```

**hyphenrules** The environment `hyphenrules` can be used to select *just* the hyphenation rules. This environment does *not* change `\language` and when the hyphenation rules specified were not loaded it has no effect.

```

12.173 \def\hyphenrules#1{%
12.174   \expandafter\ifx\csname l@#1\endcsname\@undefined
12.175     \@nolanerr{#1}%
12.176   \else
12.177     \language=\csname l@#1\endcsname\relax
12.178     \languageshorthands{none}%
12.179   \fi
12.180 }
12.181 \def\endhyphenrules{}

```

`\providehyphenmins` The macro `\providehyphenmins` should be used in the language definition files to provide a *default* setting for the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`. If the macro `\langhyphenmins` is already defined this command has no effect.

```

12.182 \def\providehyphenmins#1#2{%
12.183   \expandafter\ifx\csname #1hyphenmins\endcsname\relax
12.184     \@namedef{#1hyphenmins}{#2}%
12.185   \fi}

```

`\set@hyphenmins` This macro sets the values of `\lefthyphenmin` and `\righthyphenmin`. It expects two values as its argument.

```

12.186 \def\set@hyphenmins#1#2{\lefthyphenmin#1\righthyphenmin#2}

```

`\LdfInit` This macro is defined in two versions. The first version is to be part of the ‘kernel’ of `babel`, ie. the part that is loaded in the format; the second version is defined in `babel.def`. The version in the format just checks the category code of the ampersand and then loads `babel.def`.

```

12.187 \def\LdfInit{%
12.188   \chardef\atcatcode=\catcode'\@
12.189   \catcode'\@=11\relax
12.190   \input babel.def\relax

```

The category code of the ampersand is restored and the macro calls itself again with the new definition from `babel.def`

```

12.191   \catcode'\@=\atcatcode \let\atcatcode\relax
12.192   \LdfInit}
12.193 \</kernel>

```

The second version of this macro takes two arguments. The first argument is the name of the language that will be defined in the language definition file; the second argument is either a control sequence or a string from which a control sequence should be constructed. The existence of the control sequence indicates that the file has been processed before.

At the start of processing a language definition file we always check the category code of the ampersand. We make sure that it is a ‘letter’ during the processing of the file.

```

12.194 \<core>
12.195 \def\LdfInit#1#2{%
12.196   \chardef\atcatcode=\catcode'\@
12.197   \catcode'\@=11\relax

```

Another character that needs to have the correct category code during processing of language definition files is the equals sign, ‘=’, because it is sometimes used in

constructions with the `\let` primitive. Therefor we store its current catcode and restore it later on.

```
12.198 \chardef\eqcatcode=\catcode'\=
12.199 \catcode'\==12\relax
```

Now we check whether we should perhaps stop the processing of this file. To do this we first need to check whether the second argument that is passed to `\LdfInit` is a control sequence. We do that by looking at the first token after passing `#2` through `string`. When it is equal to `\@backslashchar` we are dealing with a control sequence which we can compare with `\@undefined`.

```
12.200 \let\bbl@tempa\relax
12.201 \expandafter\if\expandafter\@backslashchar
12.202         \expandafter\@car\string#2\@nil
12.203     \ifx#2\@undefined
12.204     \else
```

If so, we call `\ldf@quit` (but after the end of this `\if` construction) to set the main language, restore the category code of the `@`-sign and call `\endinput`.

```
12.205     \def\bbl@tempa{\ldf@quit{#1}}
12.206     \fi
12.207 \else
```

When `#2` was *not* a control sequence we construct one and compare it with `\relax`.

```
12.208     \expandafter\ifx\csname#2\endcsname\relax
12.209     \else
12.210         \def\bbl@tempa{\ldf@quit{#1}}
12.211     \fi
12.212 \fi
12.213 \bbl@tempa
```

Finally we check `\originalTeX`.

```
12.214 \ifx\originalTeX\@undefined
12.215     \let\originalTeX\@empty
12.216 \else
12.217     \originalTeX
12.218 \fi}
```

`\ldf@quit` This macro interrupts the processing of a language definition file.

```
12.219 \def\ldf@quit#1{%
12.220     \expandafter\main@language\expandafter{#1}%
12.221     \catcode'\@=\atcatcode \let\atcatcode\relax
12.222     \catcode'\==\eqcatcode \let\eqcatcode\relax
12.223     \endinput
12.224 }
```

`\ldf@finish` This macro takes one argument. It is the name of the language that was defined in the language definition file.

We load the local configuration file if one is present, we set the main language (taking into account that the argument might be a control sequence that needs to be expanded) and reset the category code of the `@`-sign.

```
12.225 \def\ldf@finish#1{%
12.226     \loadlocalcfg{#1}%
12.227     \expandafter\main@language\expandafter{#1}%
12.228     \catcode'\@=\atcatcode \let\atcatcode\relax
```

```

12.229 \catcode'\==\eqcatcode \let\eqcatcode\relax
12.230 }

```

After the preamble of the document the commands `\LdfInit`, `\ldf@quit` and `\ldf@finish` are no longer needed. Therefor they are turned into warning messages in L<sup>A</sup>T<sub>E</sub>X.

```

12.231 \@onlypreamble\LdfInit
12.232 \@onlypreamble\ldf@quit
12.233 \@onlypreamble\ldf@finish

```

`\main@language` This command should be used in the various language definition files. It stores its argument in `\bbl@main@language`; to be used to switch to the correct language at the beginning of the document.

```

12.234 \def\main@language#1{%
12.235   \def\bbl@main@language{#1}%
12.236   \let\language\bbl@main@language
12.237   \language=\csname l@\language\endcsname\relax
12.238 }

```

The default is to use English as the main language.

```

12.239 \ifx\l@english\@undefined
12.240   \let\l@english\z@
12.241 \fi
12.242 \main@language{english}

```

We also have to make sure that some code gets executed at the beginning of the document.

```

12.243 \AtBeginDocument{%
12.244   \expandafter\selectlanguage\expandafter{\bbl@main@language}}
12.245 \</core>

```

`\originalTeX` The macro `\originalTeX` should be known to T<sub>E</sub>X at this moment. As it has to be expandable we `\let` it to `\@empty` instead of `\relax`.

```

12.246 \<kernel>
12.247 \ifx\originalTeX\@undefined\let\originalTeX\@empty\fi

```

Because this part of the code can be included in a format, we make sure that the macro which initialises the save mechanism, `\babel@beginsave`, is not considered to be undefined.

```

12.248 \ifx\babel@beginsave\@undefined\let\babel@beginsave\relax\fi

```

`\@nolanerr` The babel package will signal an error when a documents tries to select a language that hasn't been defined earlier. When a user selects a language for which no hyphenation patterns were loaded into the format he will be given a warning about that fact. We revert to the patterns for `\language=0` in that case. In most formats that will be (US)english, but it might also be empty.

`\@noopterr` When the package was loaded without options not everything will work as expected. An error message is issued in that case.

When the format knows about `\PackageError` it must be L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, so we can safely use its error handling interface. Otherwise we'll have to 'keep it simple'.

```

12.249 \ifx\PackageError\@undefined
12.250   \def\@nolanerr#1{%
12.251     \errhelp{Your command will be ignored, type <return> to proceed}%

```

```

12.252 \errmessage{You haven't defined the language #1\space yet}}
12.253 \def\@nopatterns#1{%
12.254 \message{No hyphenation patterns were loaded for}%
12.255 \message{the language '#1'}%
12.256 \message{I will use the patterns loaded for \string\language=0
12.257 instead}}
12.258 \def\@noopterr#1{%
12.259 \errmessage{The option #1 was not specified in \string\usepackage}
12.260 \errhelp{You may continue, but expect unexpected results}}
12.261 \def\@activated#1{%
12.262 \wlog{Package babel Info: Making #1 an active character}}
12.263 \else
12.264 \newcommand*\@nolanerr}[1]{%
12.265 \PackageError{babel}%
12.266 {You haven't defined the language #1\space yet}%
12.267 {Your command will be ignored, type <return> to proceed}}
12.268 \newcommand*\@nopatterns}[1]{%
12.269 \PackageWarningNoLine{babel}%
12.270 {No hyphenation patterns were loaded for\MessageBreak
12.271 the language '#1'\MessageBreak
12.272 I will use the patterns loaded for \string\language=0
12.273 instead}}
12.274 \newcommand*\@noopterr}[1]{%
12.275 \PackageError{babel}%
12.276 {You haven't loaded the option #1\space yet}%
12.277 {You may proceed, but expect unexpected results}}
12.278 \newcommand*\@activated}[1]{%
12.279 \PackageInfo{babel}%
12.280 Making #1 an active character}}
12.281 \fi

```

The following code is meant to be read by `iniTeX` because it should instruct `TeX` to read hyphenation patterns. To this end the `docstrip` option `patterns` can be used to include this code in the file `hyphen.cfg`.

```

12.282 < *patterns >

```

`\process@line` Each line in the file `language.dat` is processed by `\process@line` after it is read. The first thing this macro does is to check whether the line starts with `=`. When the first token of a line is an `=`, the macro `\process@synonym` is called; otherwise the macro `\process@language` will continue.

```

12.283 \def\process@line#1#2 #3/{%
12.284 \ifx=#1
12.285 \process@synonym#2 /
12.286 \else
12.287 \process@language#1#2 #3/%
12.288 \fi
12.289 }

```

`\process@synonym` This macro takes care of the lines which start with an `=`. It needs an empty token register to begin with.

```

12.290 \toks@{}
12.291 \def\process@synonym#1 /{%
12.292 \ifnum\last@language=\m@ne

```

When no languages have been loaded yet, the name following the = will be a synonym for hyphenation register 0.

```
12.293 \expandafter\chardef\csname l@#1\endcsname\relax
12.294 \wlog{\string\l@#1=\string\language0}
```

As no hyphenation patterns are read in yet, we can not yet set the hyphenmin parameters. Therefor a commands to do so is stored in a token register and executed when the first pattern file has been processed.

```
12.295 \toks@\expandafter{\the\toks@
12.296 \expandafter\let\csname #1hyphenmins\expandafter\endcsname
12.297 \csname\language\hyphenmins\endcsname}%
12.298 \else
```

Otherwise the name will be a synonym for the language loaded last.

```
12.299 \expandafter\chardef\csname l@#1\endcsname\last@language
12.300 \wlog{\string\l@#1=\string\language\the\last@language}
```

We also need to copy the hyphenmin parameters for the synonym.

```
12.301 \expandafter\let\csname #1hyphenmins\expandafter\endcsname
12.302 \csname\language\hyphenmins\endcsname
12.303 \fi
12.304 }
```

**\process@language** The macro `\process@language` is used to process a non-empty line from the ‘configuration file’. It has three arguments, each delimited by white space. The third argument is optional, so a / character is expected to delimit the last argument. The first argument is the ‘name’ of a language; the second is the name of the file that contains the patterns. The optional third argument is the name of a file containing hyphenation exceptions.

The first thing to do is call `\addlanguage` to allocate a pattern register and to make that register ‘active’.

```
12.305 \def\process@language#1 #2 #3/{%
12.306 \expandafter\addlanguage\csname l@#1\endcsname
12.307 \expandafter\language\csname l@#1\endcsname
12.308 \def\language{#1}%
```

Then the ‘name’ of the language that will be loaded now is added to the token register `\toks8`. and finally the pattern file is read.

```
12.309 \global\toks8\expandafter{\the\toks8#1, }%
```

For some hyphenation patterns it is needed to load them with a specific font encoding selected. This can be specified in the file `language.dat` by adding for instance ‘:T1’ to the name of the language. The macro `\bbl@get@enc` extracts the font encoding from the language name and stores it in `\bbl@hyph@enc`.

```
12.310 \begingroup
12.311 \bbl@get@enc#1: \@@@
12.312 \ifx\bbl@hyph@enc\empty
12.313 \else
12.314 \fontencoding{\bbl@hyph@enc}\selectfont
12.315 \fi
```

Some pattern files contain assignments to `\lefthyphenmin` and `\righthyphenmin`.  $\TeX$  does not keep track of these assignments. Therefor we try to detect such assignments and store them in the `\(lang)hyphenmins` macro. When no assignments were made we provide a default setting.



12.316     `\lefthyphenmin\m@ne`

Some pattern files contain changes to the `\lccode` en `\uccode` arrays. Such changes should remain local to the language; therefor we process the pattern file in a group; the `\patterns` command acts globally so its effect will be remembered.

12.317     `\input #2\relax`

Now we globally store the settings of `\lefthyphenmin` and `\righthyphenmin` and close the group.

```
12.318     \ifnum\lefthyphenmin=\m@ne
12.319     \else
12.320         \expandafter\xdef\csname #1hyphenmins\endcsname{%
12.321             \the\lefthyphenmin\the\righthyphenmin}%
12.322     \fi
12.323     \endgroup
```

If the counter `\language` is still equal to zero we set the hyphenmin parameters to the values for the language loaded on pattern register 0.

```
12.324     \ifnum\the\language=\z@
12.325         \expandafter\ifx\csname #1hyphenmins\endcsname\relax
12.326             \set@hyphenmins\tw@\thr@@\relax
12.327     \else
12.328         \expandafter\expandafter\expandafter\set@hyphenmins
12.329             \csname #1hyphenmins\endcsname
12.330     \fi
```

Now execute the contents of token register zero as it may contain commands which set the hyphenmin parameters for synonyms that were defined before the first pattern file is read in.

```
12.331     \the\toks@
12.332     \fi
```

Empty the token register after use.

12.333     `\toks@{}%`

When the hyphenation patterns have been processed we need to see if a file with hyphenation exceptions needs to be read. This is the case when the third argument is not empty and when it does not contain a space token.

```
12.334     \def\bbl@tempa{#3}%
12.335     \ifx\bbl@tempa\@empty
12.336     \else
12.337         \ifx\bbl@tempa\space
12.338     \else
12.339         \input #3\relax
12.340     \fi
12.341     \fi
12.342     }
```

`\bbl@get@enc` The macro `\bbl@get@enc` extracts the font encoding from the language name and `\bbl@hyph@enc` stores it in `\bbl@hyph@enc`. It uses delimited arguments to achieve this.

12.343     `\def\bbl@get@enc#1:#2\@@@{%`

First store both arguments in temporary macros,

```
12.344     \def\bbl@tempa{#1}%
12.345     \def\bbl@tempb{#2}%
```

then, if the second argument was empty, no font encoding was specified and we're done.

```
12.346 \ifx\bbl@tempb\@empty
12.347 \let\bbl@hyph@enc\@empty
12.348 \else
```

But if the second argument was *not* empty it will now have a superfluous colon attached to it which we need to remove. This done by feeding it to `\bbl@get@enc`. The string that we are after will then be in the first argument and be stored in `\bbl@tempa`.

```
12.349 \bbl@get@enc#2\@@@
12.350 \edef\bbl@hyph@enc{\bbl@tempa}%
12.351 \fi}
```

`\readconfigfile` The configuration file can now be opened for reading.

```
12.352 \openin1 = language.dat
```

See if the file exists, if not, use the default hyphenation file `hyphen.tex`. The user will be informed about this.

```
12.353 \ifeof1
12.354 \message{I couldn't find the file language.dat,\space
12.355 I will try the file hyphen.tex}
12.356 \input hyphen.tex\relax
12.357 \else
```

Pattern registers are allocated using count register `\last@language`. Its initial value is 0. The definition of the macro `\newlanguage` is such that it first increments the count register and then defines the language. In order to have the first patterns loaded in pattern register number 0 we initialize `\last@language` with the value `-1`.

```
12.358 \last@language@m@ne
```

We now read lines from the file until the end is found

```
12.359 \loop
```

While reading from the input, it is useful to switch off recognition of the end-of-line character. This saves us stripping off spaces from the contents of the control sequence.

```
12.360 \endlinechar@m@ne
12.361 \read1 to \bbl@line
12.362 \endlinechar'\^M
```

Empty lines are skipped.

```
12.363 \ifx\bbl@line\@empty
12.364 \else
```

Now we add a space and a `/` character to the end of `\bbl@line`. This is needed to be able to recognize the third, optional, argument of `\process@language` later on.

```
12.365 \edef\bbl@line{\bbl@line\space/}%
12.366 \expandafter\process@line\bbl@line
12.367 \fi
```

Check for the end of the file. To avoid a new `if` control sequence we create the necessary `\iftrue` or `\iffalse` with the help of `\csname`. But there is one complication with this approach: when skipping the loop...repeat  $\TeX$  has to read `\if/\fi` pairs. So we have to insert a ‘dummy’ `\iftrue`.

```
12.368 \iftrue \csname fi\endcsname
12.369 \csname if\ifeof1 false\else true\fi\endcsname
12.370 \repeat
```

Reactivate the default patterns,

```
12.371 \language=0
12.372 \fi
```

and close the configuration file.

```
12.373 \closein1
```

Also remove some macros from memory

```
12.374 \let\process@language\@undefined
12.375 \let\process@synonym\@undefined
12.376 \let\process@line\@undefined
12.377 \let\bbl@tempa\@undefined
12.378 \let\bbl@tempb\@undefined
12.379 \let\bbl@eq\@undefined
12.380 \let\bbl@line\@undefined
12.381 \let\bbl@get@enc\@undefined
```

We add a message about the fact that `babel` is loaded in the format and with which language patterns to the `\everyjob` register.

```
12.382 \ifx\addto@hook\@undefined
12.383 \else
12.384 \expandafter\addto@hook\expandafter\everyjob\expandafter{%
12.385 \expandafter\typeout\expandafter{\the\toks8 loaded.}}
12.386 \fi
```

Here the code for `ini $\TeX$`  ends.

```
12.387 \</patterns>
12.388 \</kernel>
```

## 12.3 Support for active characters

`\bbl@add@special` The macro `\bbl@add@special` is used to add a new character (or single character control sequence) to the macro `\dospecials` (and `\@sanitize` if  $\LaTeX$  is used).

To keep all changes local, we begin a new group. Then we redefine the macros `\do` and `\@makeother` to add themselves and the given character without expansion.

```
12.389 \<core | shorthands>
12.390 \def\bbl@add@special#1{\begingroup
12.391 \def\do{\noexpand\do\noexpand}%
12.392 \def\@makeother{\noexpand\@makeother\noexpand}%
```

To add the character to the macros, we expand the original macros with the additional character inside the redefinition of the macros. Because `\@sanitize` can be undefined, we put the definition inside a conditional.

```
12.393 \edef\x{\endgroup
12.394 \def\noexpand\dospecials{\dospecials\do#1}%
12.395 \expandafter\ifx\csname @sanitize\endcsname\relax \else
```

```

12.396      \def\noexpand\@sanitize{\@sanitize\@makeother#1}%
12.397      \fi}%

```

The macro `\x` contains at this moment the following:

```
\endgroup\def\dospecials{old contents \do⟨char⟩}.
```

If `\@sanitize` is defined, it contains an additional definition of this macro.

The last thing we have to do, is the expansion of `\x`. Then `\endgroup` is executed, which restores the old meaning of `\x`, `\do` and `\@makeother`. After the group is closed, the new definition of `\dospecials` (and `\@sanitize`) is assigned.

```
12.398  \x}
```

`\bbl@remove@special` The companion of the former macro is `\bbl@remove@special`. It is used to remove a character from the set macros `\dospecials` and `\@sanitize`.

To keep all changes local, we begin a new group. Then we define a help macro `\x`, which expands to empty if the characters match, otherwise it expands to its nonexpandable input. Because  $\TeX$  inserts a `\relax`, if the corresponding `\else` or `\fi` is scanned before the comparison is evaluated, we provide a ‘stop sign’ which should expand to nothing.

```

12.399 \def\bbl@remove@special#1{\begingroup
12.400     \def\x##1##2{\ifnum‘#1=‘##2\noexpand\@empty
12.401         \else\noexpand##1\noexpand##2\fi}%

```

With the help of this macro we define `\do` and `\make@other`.

```

12.402     \def\do{\x\do}%
12.403     \def\@makeother{\x\@makeother}%

```

The rest of the work is similar to `\bbl@add@special`.

```

12.404     \edef\x{\endgroup
12.405         \def\noexpand\dospecials{\dospecials}%
12.406         \expandafter\ifx\csname @sanitize\endcsname\relax \else
12.407             \def\noexpand\@sanitize{\@sanitize}%
12.408         \fi}%
12.409     \x}

```

## 12.4 Shorthands

`\initiate@active@char` A language definition file can call this macro to make a character active. This macro takes one argument, the character that is to be made active. When the character was already active this macro does nothing. Otherwise, this macro defines the control sequence `\normal@char⟨char⟩` to expand to the character in its ‘normal state’ and it defines the active character to expand to `\normal@char⟨char⟩` by default (`⟨char⟩` being the character to be made active). Later its definition can be changed to expand to `\active@char⟨char⟩` by calling `\bbl@activate{⟨char⟩}`.

For example, to make the double quote character active one could have the following line in a language definition file:

```
\initiate@active@char{"}
```

`\bbl@afterelse` Because the code that is used in the handling of active characters may need to  
`\bbl@afterfi` look ahead, we take extra care to ‘throw’ it over the `\else` and `\fi` parts of an

\if-statement<sup>5</sup>. These macros will break if another \if... \fi statement appears in one of the arguments.

```
12.410 \long\def\bbl@afterelse#1\else#2\fi{\fi#1}
12.411 \long\def\bbl@afterfi#1\fi{\fi#1}
```

**\peek@token** To prevent error messages when a shorthand, which normally takes an argument, sees a \par, or }, or similar tokens, we need to be able to ‘peek’ at what is coming up next in the input stream. Depending on the category code of the token that is seen, we need to either continue the code for the active character, or insert the non-active version of that character in the output. The macro \peek@token therefore takes two arguments, with which it constructs the control sequence to expand next. It \let’s \bbl@nexta and \bbl@nextb to the two possible macros. This is necessary for \bbl@test@token to take the right decision.

```
12.412 %\def\peek@token#1#2{%
12.413 % \expandafter\let\expandafter\bbl@nexta\csname #1\string#2\endcsname
12.414 % \expandafter\let\expandafter\bbl@nextb
12.415 % \csname system@active\string#2\endcsname
12.416 % \futurelet\bbl@token\bbl@test@token}
```

**\bbl@test@token** When the result of peeking at the next token has yielded a token with category ‘letter’, ‘other’ or ‘active’ it is safe to proceed with evaluating the code for the shorthand. When a token is found with any other category code proceeding is unsafe and therefor the original shorthand character is inserted in the output. The macro that calls \bbl@test@token needs to setup \bbl@nexta and \bbl@nextb in order to achieve this.

```
12.417 %\def\bbl@test@token{%
12.418 % \let\bbl@next\bbl@nexta
12.419 % \ifcat\noexpand\bbl@token a%
12.420 % \else
12.421 % \ifcat\noexpand\bbl@token=%
12.422 % \else
12.423 % \ifcat\noexpand\bbl@token\noexpand\bbl@next
12.424 % \else
12.425 % \let\bbl@next\bbl@nextb
12.426 % \fi
12.427 % \fi
12.428 % \fi
12.429 % \bbl@next}
```

The macro \initiate@active@char takes all the necessary actions to make its argument a shorthand character. The real work is performed once for each character.

```
12.430 \def\initiate@active@char#1{%
12.431 \expandafter\ifx\csname active@char\string##1\endcsname\relax
12.432 \bbl@afterfi{\@initiate@active@char{#1}}%
12.433 \fi}
```

Note that the definition of \@initiate@active@char needs an active character, for this the ~ is used. Some of the changes we need, do not have to become available later on, so we do it inside a group.

---

<sup>5</sup>This code is based on code presented in TUGboat vol. 12, no2, June 1991 in “An expansion Power Lemma” by Sonja Maus.

```

12.434 \begingroup
12.435 \catcode'\~\active
12.436 \def\x{\endgroup
12.437 \def\@initiate@active@char##1{%

```

If the character is already active we provide the default expansion under this shorthand mechanism.

```

12.438 \ifcat\noexpand##1\noexpand~\relax
12.439 \ifundefined{normal@char\string##1}{%
12.440 \expandafter\let\csname normal@char\string##1\endcsname##1%
12.441 \expandafter\gdef
12.442 \expandafter##1%
12.443 \expandafter{%
12.444 \expandafter\active@prefix\expandafter##1%
12.445 \csname normal@char\string##1\endcsname}}{%
12.446 \else

```

Otherwise we write a message in the transcript file,

```

12.447 \@activated{##1}%

```

and define `\normal@char⟨char⟩` to expand to the character in its default state.

```

12.448 \@namedef{normal@char\string##1}{##1}%

```

If we are making the right quote active we need to change `\pr@m@s` as well.

```

12.449 \ifx##1'%
12.450 \let\prim@s\bbl@prim@s

```

Also, make sure that a single ' in math mode 'does the right thing'.

```

12.451 \@namedef{normal@char\string##1}{%
12.452 \textormath{##1}{~\bgroup\prim@s}}%
12.453 \fi

```

If we are using the caret as a shorthand character special care should be taken to make sure math still works. Therefor an extra level of expansion is introduced with a check for math mode on the upper level.

```

12.454 \ifx##1~%
12.455 \gdef\bbl@act@caret{%
12.456 \ifmmode
12.457 \csname normal@char\string~\endcsname
12.458 \else
12.459 \bbl@afterfi
12.460 {\if@safe@actives
12.461 \bbl@afterelse\csname normal@char\string##1\endcsname
12.462 \else
12.463 \bbl@afterfi\csname user@active\string##1\endcsname
12.464 \fi}%
12.465 \fi}
12.466 \fi

```

To prevent problems with the loading of other packages after `babel` we reset the catcode of the character at the end of the package.

```

12.467 \ifpackagewith{babel}{KeepShorthandsActive}{%
12.468 \edef\bbl@tempa{\catcode'\noexpand##1\the\catcode'##1}%
12.469 \expandafter\AtEndOfPackage\expandafter{\bbl@tempa}}%

```

Now we set the lowercase code of the `~` equal to that of the character to be made active and execute the rest of the code inside a `\lowercase` 'environment'.

```

12.470      \@tempcnta=\lccode'\~
12.471      \lccode'\~='##1%
12.472      \lowercase{%

```

Make the character active and add it to `\dospecials` and `\@sanitize`.

```

12.473      \catcode'\~\active
12.474      \expandafter\bb1@add@special
12.475      \csname \string##1\endcsname

```

Also re-activate it again at `\begin{document}`.

```

12.476      \AtBeginDocument{%
12.477      \catcode'\~##1\active

```

We also need to make sure that the shorthands are active during the processing of the `.aux` file. Otherwise some citations may give unexpected results in the printout when a shorthand was used in the optional argument of `\bibitem` for example.

```

12.478      \if@filesw
12.479      \immediate\write\@mainaux{%
12.480      \string\catcode'\~##1\string\active}%
12.481      \fi}%

```

Define the character to expand to

```

\active@prefix <char> \normal@char<char>

```

(where `\active@char<char>` is *one* control sequence!).

```

12.482      \expandafter\gdef
12.483      \expandafter~%
12.484      \expandafter{%
12.485      \expandafter\active@prefix\expandafter##1%
12.486      \csname normal@char\string##1\endcsname}}%
12.487      \lccode'\~\@tempcnta
12.488      \fi

```

For the active caret we first expand to `\bb1@act@caret` in order to be able to handle math mode correctly.

```

12.489      \ifx##1~%
12.490      \@namedef{active@char\string##1}{\bb1@act@caret}%
12.491      \else

```

We define the first level expansion of `\active@char<char>` to check the status of the `@safe@actives` flag. If it is set to true we expand to the ‘normal’ version of this character, otherwise we call `\@active@char<char>`.

```

12.492      \@namedef{active@char\string##1}{%
12.493      \if@safe@actives
12.494      \bb1@afterelse\csname normal@char\string##1\endcsname
12.495      \else
12.496      \bb1@afterfi\csname user@active\string##1\endcsname
12.497      \fi}%
12.498      \fi

```

The next level of the code checks whether a user has defined a shorthand for himself with this character. First we check for a single character shorthand. If that doesn’t exist we check for a shorthand with an argument.

```

12.499      \@namedef{user@active\string##1}{%
12.500      \expandafter\ifx

```

```

12.501      \csname \user@group @sh@\string##1@\endcsname
12.502      \relax
12.503      \bbl@afterelse\bbl@sh@select\user@group##1%
12.504      {user@active@arg\string##1}{language@active\string##1}%
12.505      \else
12.506      \bbl@afterfi\csname \user@group @sh@\string##1@\endcsname
12.507      \fi}%

```

When there is also no user-level shorthand with an argument we will check whether there is a language defined shorthand for this active character. Before the next token is absorbed as argument we need to make sure that this is safe. Therefore `\peek@token` is called to decide that.

```

12.508      \long\@namedef{user@active@arg\string##1}####1{%
12.509      \expandafter\ifx
12.510      \csname \user@group @sh@\string##1@\string####1@\endcsname
12.511      \relax
12.512      \bbl@afterelse
12.513      \csname language@active\string##1\endcsname####1%
12.514      \else
12.515      \bbl@afterfi
12.516      \csname \user@group @sh@\string##1@\string####1@%
12.517      \endcsname
12.518      \fi}%

```

In order to do the right thing when a shorthand with an argument is used by itself at the end of the line we provide a definition for the case of an empty argument. For that case we let the shorthand character expand to its non-active self.

```

12.519      \@namedef{\user@group @sh@\string##1@}{%
12.520      \csname normal@char\string##1\endcsname}

```

Like the shorthands that can be defined by the user, a language definition file can also define shorthands with and without an argument, so we need two more macros to check if they exist.

```

12.521      \@namedef{language@active\string##1}{%
12.522      \expandafter\ifx
12.523      \csname \language@group @sh@\string##1@\endcsname
12.524      \relax
12.525      \bbl@afterelse\bbl@sh@select\language@group##1%
12.526      {language@active@arg\string##1}{system@active\string##1}%
12.527      \else
12.528      \bbl@afterfi
12.529      \csname \language@group @sh@\string##1@\endcsname
12.530      \fi}%

12.531      \long\@namedef{language@active@arg\string##1}####1{%
12.532      \expandafter\ifx
12.533      \csname \language@group @sh@\string##1@\string####1@\endcsname
12.534      \relax
12.535      \bbl@afterelse
12.536      \csname system@active\string##1\endcsname####1%
12.537      \else
12.538      \bbl@afterfi
12.539      \csname \language@group @sh@\string##1@\string####1@%
12.540      \endcsname
12.541      \fi}%

```



And the same goes for the system level.

```

12.542 \namedef{system@active\string##1}{%
12.543 \expandafter\ifx
12.544 \csname \system@group @sh@\string##1\endcsname
12.545 \relax
12.546 \bbl@afterelse\bbl@sh@select\system@group##1%
12.547 {system@active@arg\string##1}{normal@char\string##1}%
12.548 \else
12.549 \bbl@afterfi\csname \system@group @sh@\string##1\endcsname
12.550 \fi}%

```

When no shorthands were found the ‘normal’ version of the active character is inserted.

```

12.551 \long\namedef{system@active@arg\string##1}####1{%
12.552 \expandafter\ifx
12.553 \csname \system@group @sh@\string##1\string####1\endcsname
12.554 \relax
12.555 \bbl@afterelse\csname normal@char\string##1\endcsname####1%
12.556 \else
12.557 \bbl@afterfi
12.558 \csname \system@group @sh@\string##1\string####1\endcsname
12.559 \fi}%

```

When a shorthand combination such as ‘’ ends up in a heading T<sub>E</sub>X would see `\protect\protect`. To prevent this from happening a shorthand needs to be defined at user level.

```

12.560 \namedef{user@sh@\string##1\string\protect@}{%
12.561 \csname user@active\string##1\endcsname}%
12.562 }%
12.563 }\x

```

`\bbl@sh@select` This command helps the shorthand supporting macros to select how to proceed. Note that this macro needs to be expandable as do all the shorthand macros in order for them to work in expansion-only environments such as the argument of `\hyphenation`.

This macro expects the name of a group of shorthands in its first argument and a shorthand character in its second argument. It will expand to either `\bbl@firstcs` or `\bbl@scndcs`. Hence two more arguments need to follow it.

```

12.564 \def\bbl@sh@select#1#2{%
12.565 \expandafter\ifx\csname#1@sh@\string#2@sel\endcsname\relax
12.566 \bbl@afterelse\bbl@scndcs
12.567 \else
12.568 \bbl@afterfi\csname#1@sh@\string#2@sel\endcsname
12.569 \fi
12.570 }

```

`\active@prefix` The command `\active@prefix` which is used in the expansion of active characters has a function similar to `\OT1-cmd` in that it `\protects` the active character whenever `\protect` is *not* `\@typeset@protect`.

```

12.571 \def\active@prefix#1{%
12.572 \ifx\protect\@typeset@protect
12.573 \else

```

When `\protect` is set to `\@unexpandable@protect` we make sure that the active character is also *not* expanded by inserting `\noexpand` in front of it. The `\@gobble` is needed to remove a token such as `\activechar:` (when the double colon was the active character to be dealt with).

```
12.574 \ifx\protect\@unexpandable@protect
12.575 \bbl@afterelse\bbl@afterfi\noexpand#1\@gobble
12.576 \else
12.577 \bbl@afterfi\bbl@afterfi\protect#1\@gobble
12.578 \fi
12.579 \fi}
```

`\if@safe@actives` In some circumstances it is necessary to be able to change the expansion of an active character on the fly. For this purpose the switch `@safe@actives` is available. The setting of this switch should be checked in the first level expansion of `\active@char⟨char⟩`.

```
12.580 \newif\if@safe@actives
12.581 \@safe@activesfalse
```

`\bbl@restore@actives` When the output routine kicks in while the active characters were made “safe” this must be undone in the headers to prevent unexpected typeset results. For this situation we define a command to make them “unsafe” again.

```
12.582 \def\bbl@restore@actives{\if@safe@actives\@safe@activesfalse\fi}
```

`\bbl@activate` This macro takes one argument, like `\initiate@active@char`. The macro is used to change the definition of an active character to expand to `\active@char⟨char⟩` instead of `\normal@char⟨char⟩`.

```
12.583 \def\bbl@activate#1{%
12.584 \expandafter\def
12.585 \expandafter#1\expandafter{%
12.586 \expandafter\active@prefix
12.587 \expandafter#1\csname active@char\string#1\endcsname}%
12.588 }
```

`\bbl@deactivate` This macro takes one argument, like `\bbl@activate`. The macro doesn’t really make a character non-active; it changes its definition to expand to `\normal@char⟨char⟩`.

```
12.589 \def\bbl@deactivate#1{%
12.590 \expandafter\def
12.591 \expandafter#1\expandafter{%
12.592 \expandafter\active@prefix
12.593 \expandafter#1\csname normal@char\string#1\endcsname}%
12.594 }
```

`\bbl@firstcs` These macros have two arguments. They use one of their arguments to build a `\bbl@scndcs` control sequence from.

```
12.595 \def\bbl@firstcs#1#2{\csname#1\endcsname}
12.596 \def\bbl@scndcs#1#2{\csname#2\endcsname}
```

`\declare@shorthand` The command `\declare@shorthand` is used to declare a shorthand on a certain level. It takes three arguments:

1. a name for the collection of shorthands, i.e. ‘system’, or ‘dutch’;

2. the character (sequence) that makes up the shorthand, i.e. `~` or `"a`;
3. the code to be executed when the shorthand is encountered.

```

12.597 \def\declare@shorthand#1#2{\@decl@short{#1}#2\@nil}
12.598 \def\@decl@short#1#2#3\@nil#4{%
12.599   \def\bbl@tempa{#3}%
12.600   \ifx\bbl@tempa\@empty
12.601     \expandafter\let\csname #1@sh@\string#2@sel\endcsname\bbl@scndcs
12.602     \@namedef{#1@sh@\string#2@}\{#4}%
12.603   \else
12.604     \expandafter\let\csname #1@sh@\string#2@sel\endcsname\bbl@firstcs
12.605     \@namedef{#1@sh@\string#2@\string#3@}\{#4}%
12.606   \fi}

```

`\textormath` Some of the shorthands that will be declared by the language definition files have to be usable in both text and mathmode. To achieve this the helper macro `\textormath` is provided.

```

12.607 \def\textormath#1#2{%
12.608   \ifmmode
12.609     \bbl@afterelse#2%
12.610   \else
12.611     \bbl@afterfi#1%
12.612   \fi}

```

`\user@group` The current concept of ‘shorthands’ supports three levels or groups of shorthands.  
`\language@group` For each level the name of the level or group is stored in a macro. The default is  
`\system@group` to have a user group; use language group ‘english’ and have a system group called ‘system’.

```

12.613 \def\user@group{user}
12.614 \def\language@group{english}
12.615 \def\system@group{system}

```

`\useshorthands` This is the user level command to tell L<sup>A</sup>T<sub>E</sub>X that user level shorthands will be used in the document. It takes one argument, the character that starts a shorthand.

```

12.616 \def\useshorthands#1{%

```

First note that this is user level.

```

12.617   \def\user@group{user}%

```

Then initialize the character for use as a shorthand character.

```

12.618   \initiate@active@char{#1}%

```

Now that T<sub>E</sub>X has seen the character its category code is fixed, but for the actions of `\bbl@activate` to succeed we need it to be active. Hence the trick with the `\lccode` to circumvent this.

```

12.619   \@tempcnta\lccode'\~
12.620   \lccode'\~='#1%
12.621   \lowercase{\catcode'\~\active\bbl@activate{~}}%
12.622   \lccode'\~\@tempcnta}

```

`\defineshorthand` Currently we only support one group of user level shorthands, called ‘user’.

```

12.623 \def\defineshorthand{\declare@shorthand{user}}

```

`\languageshorthands` A user level command to change the language from which shorthands are used.

```
12.624 \def\languageshorthands#1{\def\language@group{#1}}
```

`\aliasshorthand`

```
12.625 \def\aliasshorthand#1#2{%
```

First the new shorthand needs to be initialized,

```
12.626 \expandafter\ifx\csname active@char\string#2\endcsname\relax
```

```
12.627 \ifx\document\@notprerr
```

```
12.628 \@notshorthand{#2}
```

```
12.629 \else
```

```
12.630 \initiate@active@char{#2}%
```

Then we need to use the `\lccode` trick to make the new shorthand behave like the old one. Therefore we save the current `\lccode` of the `~`-character and restore it later. Then we `\let` the new shorthand character be equal to the original.

```
12.631 \tempcnta\lccode`~
```

```
12.632 \lccode`~=`#2%
```

```
12.633 \lowercase{\let~#1}%
```

```
12.634 \lccode`~\tempcnta
```

```
12.635 \fi
```

```
12.636 \fi
```

```
12.637 }
```

`\@notshorthand`

```
12.638 \def\@notshorthand#1{%
```

```
12.639 \PackageError{babel}{%
```

```
12.640 The character '\string #1' should be made
```

```
12.641 a shorthand character;\MessageBreak
```

```
12.642 add the command \string\usesshorthands\string{#1\string} to
```

```
12.643 the preamble.\MessageBreak
```

```
12.644 I will ignore your instruction}{}%
```

```
12.645 }
```

`\shorthandon` The first level definition of these macros just passes the argument on to

`\shorthandoff` `\bbl@switch@sh`, adding `\@nil` at the end to denote the end of the list of characters.

```
12.646 \newcommand*\shorthandon[1]{\bbl@switch@sh{on}#1\@nil}
```

```
12.647 \newcommand*\shorthandoff[1]{\bbl@switch@sh{off}#1\@nil}
```

`\bbl@switch@sh` The macro `\bbl@switch@sh` takes the list of characters apart one by one and subsequently switches the category code of the shorthand character according to the first argument of `\bbl@switch@sh`.

```
12.648 \def\bbl@switch@sh#1#2#3\@nil{%
```

But before any of this switching takes place we make sure that the character we are dealing with is known as a shorthand character. If it is, a macro such as `\active@char` should exist.

```
12.649 \@ifundefined{active@char\string#2}{%
```

```
12.650 \PackageError{babel}{%
```

```
12.651 The character '\string #2' is not a shorthand character
```

```
12.652 in \language\string{#2}}{%
```

```
12.653 Maybe you made a typing mistake?\MessageBreak
```

```
12.654 I will ignore your instruction}{}%
```

```
12.655 \csname bbl@switch@sh@#1\endcsname#2}%
```

Now that, as the first character in the list has been taken care of, we pass the rest of the list back to `\bbl@switch@sh`.

```
12.656 \ifx#3\@empty\else
12.657 \bbl@afterfi\bbl@switch@sh{#1}#3\@nil
12.658 \fi}
```

`\bbl@switch@sh@off` All that is left to do is define the actual switching macros. Switching off is easy, we just set the category code to ‘other’ (12).

```
12.659 \def\bbl@switch@sh@off#1{\catcode'#112\relax}
```

`\bbl@switch@sh@on` But switching the shorthand character back on is a bit more tricky. It involves making sure that we have an active character to begin with when the macro is being defined. It also needs the use of `\lowercase` and `\lccode` trickery to get everything to work out as expected. And to keep things local that need to remain local a group is opened, which is closed as soon as `\x` gets executed.

```
12.660 \begingroup
12.661 \catcode'\~\active
12.662 \def\x{\endgroup
12.663 \def\bbl@switch@sh@on##1{%
12.664 \lccode'\~='##1%
12.665 \lowercase{%
12.666 \catcode'\~\active
12.667 }%
12.668 }%
12.669 }
```

The next operation makes the above definition effective.

```
12.670 \x
12.671 %
```

To prevent problems with constructs such as `\char"01A` when the double quote is made active, we define a shorthand on system level.

```
12.672 \declare@shorthand{system}{"}{\csname normal@char\string\endcsname}
```

When the right quote is made active we need to take care of handling it correctly in mathmode. Therefore we define a shorthand at system level to make it expand to a non-active right quote in textmode, but expand to its original definition in mathmode. (Note that the right quote is ‘active’ in mathmode because of its mathcode.)

```
12.673 \declare@shorthand{system}{'}{\%
12.674 \textormath{\csname normal@char\string'\endcsname}%
12.675 {\sp\bgroup\prim@s}}
```

When the left quote is made active we need to take care of handling it correctly when it is followed by for instance an open brace token. Therefore we define a shorthand at system level to make it expand to a non-active left quote.

```
12.676 \declare@shorthand{system}{'}{\csname normal@char\string'\endcsname}
```

`\bbl@prim@s` One of the internal macros that are involved in substituting `\prime` for each right quote in mathmode is `\prim@s`. This checks if the next character is a right quote. When the right quote is active, the definition of this macro needs to be adapted to look for an active right quote.

```

12.677 \def\bbl@prim@s{%
12.678   \prime\futurelet\@let@token\bbl@pr@m@s}
12.679 \begingroup
12.680   \catcode'\'\active\let'\relax
12.681   \def\x{\endgroup
12.682     \def\bbl@pr@m@s{%
12.683       \ifx'\@let@token
12.684         \expandafter\pr@@@s
12.685       \else
12.686         \ifx~\@let@token
12.687           \expandafter\expandafter\expandafter\pr@@@t
12.688         \else
12.689           \egroup
12.690         \fi
12.691       \fi}%
12.692   }
12.693 \x

```

```

12.694 </core | shorthands>

```

Normally the `~` is active and expands to `\penalty\@M\_\_`. When it is written to the `.aux` file it is written expanded. To prevent that and to be able to use the character `~` as a start character for a shorthand, it is redefined here as a one character shorthand on system level.

```

12.695 <*core>
12.696 \initiate@active@char{~}
12.697 \declare@shorthand{system}{~}{\leavevmode\nobreak\ }
12.698 \bbl@activate{~}

```

`\OT1dqpos` The position of the double quote character is different for the OT1 and T1 encodings. It will later be selected using the `\f@encoding` macro. Therefore we define two macros here to store the position of the character in these encodings.

```

12.699 \expandafter\def\csname OT1dqpos\endcsname{127}
12.700 \expandafter\def\csname T1dqpos\endcsname{4}

```

When the macro `\f@encoding` is undefined (as it is in plain `TEX`) we define it here to expand to OT1

```

12.701 \ifx\f@encoding\@undefined
12.702   \def\f@encoding{OT1}
12.703 \fi

```

## 12.5 Language attributes

Language attributes provide a means to give the user control over which features of the language definition files he wants to enable.

`\languageattribute` The macro `\languageattribute` checks whether its arguments are valid and then activates the selected language attribute.

```

12.704 \newcommand\languageattribute[2]{%

```

First check whether the language is known.

```

12.705   \expandafter\ifx\csname l@#1\endcsname\relax
12.706     \@nolanerr{#1}%
12.707   \else

```

Then process each attribute in the list.

```
12.708 \for\bbl@attr:=#2\do{%
```

We want to make sure that each attribute is selected only once; therefor we store the already selected attributes in `\bbl@known@attrs`. When that control sequence is not yet defined this attribute is certainly not selected before.

```
12.709 \ifx\bbl@known@attrs\undefined
12.710 \in@false
12.711 \else
```

Now we need to see if the attribute occurs in the list of already selected attributes.

```
12.712 \edef\bbl@tempa{\noexpand\in@{,#1-\bbl@attr,}}%
12.713 {,\bbl@known@attrs,}}%
12.714 \bbl@tempa
12.715 \fi
```

When the attribute was in the list we issue a warning; this might not be the users intention.

```
12.716 \ifin@
12.717 \PackageWarning{Babel}{%
12.718 You have more than once selected the attribute
12.719 '\bbl@attr'\MessageBreak for language #1}%
12.720 \else
```

When we end up here the attribute is not selected before. So, we add it to the list of selected attributes and execute the associated `TeX`-code.

```
12.721 \edef\bbl@tempa{%
12.722 \noexpand\bbl@add@list\noexpand\bbl@known@attrs{#1-\bbl@attr}}%
12.723 \bbl@tempa
12.724 \edef\bbl@tempa{#1-\bbl@attr}%
12.725 \expandafter\bbl@ifknown@ttrib\expandafter{\bbl@tempa}\bbl@attributes%
12.726 {\csname#1@attr@\bbl@attr@endcsname}%
12.727 {\@attrerr{#1}{\bbl@attr}}%
12.728 \fi
12.729 }
12.730 \fi}
```

This command should only be used in the preamble of a document.

```
12.731 \@onlypreamble\languageattribute
```

The error text to be issued when an unknown attribute is selected.

```
12.732 \newcommand*{\@attrerr}[2]{%
12.733 \PackageError{babel}%
12.734 {The attribute #2 is unknown for language #1.}%
12.735 {Your command will be ignored, type <return> to proceed}}
```

`\bbl@declare@ttribute` This command adds the new language/attribute combination to the list of known attributes.

```
12.736 \def\bbl@declare@ttribute#1#2#3{%
12.737 \bbl@add@list\bbl@attributes{#1-#2}%
```

Then it defines a control sequence to be executed when the attribute is used in a document. The result of this should be that the macro `\extras...` for the current language is extended, otherwise the attribute will not work as its code is removed from memory at `\begin{document}`.

```
12.738 \expandafter\def\csname#1@attr@#2\endcsname{#3}%
12.739 }
```

`\bbl@ifattributeset` This internal macro has 4 arguments. It can be used to interpret T<sub>E</sub>X code based on whether a certain attribute was set. This command should appear inside the argument to `\AtBeginDocument` because the attributes are set in the document preamble, *after* `babel` is loaded.

The first argument is the language, the second argument the attribute being checked, and the third and fourth arguments are the true and false clauses.

```
12.740 \def\bbl@ifattributeset#1#2#3#4{%
```

First we need to find out if any attributes were set; if not we're done.

```
12.741 \ifx\bbl@known@attribs\@undefined
```

```
12.742 \in@false
```

```
12.743 \else
```

The we need to check the list of known attributes.

```
12.744 \edef\bbl@tempa{\noexpand\in@{,#1-#2,}%
```

```
12.745 {,\bbl@known@attribs,}}%
```

```
12.746 \bbl@tempa
```

```
12.747 \fi
```

When we're this far `\ifin@` has a value indicating if the attribute in question was set or not. Just to be safe the code to be executed is 'thrown over the `\fi`'.

```
12.748 \ifin@
```

```
12.749 \bbl@afterelse#3%
```

```
12.750 \else
```

```
12.751 \bbl@afterfi#4%
```

```
12.752 \fi
```

```
12.753 }
```

`\bbl@add@list` This internal macro adds its second argument to a comma separated list in its first argument. When the list is not defined yet (or empty), it will be initiated

```
12.754 \def\bbl@add@list#1#2{%
```

```
12.755 \ifx#1\@undefined
```

```
12.756 \def#1{#2}%
```

```
12.757 \else
```

```
12.758 \ifx#1\@empty
```

```
12.759 \def#1{#2}%
```

```
12.760 \else
```

```
12.761 \edef#1{#1,#2}%
```

```
12.762 \fi
```

```
12.763 \fi
```

```
12.764 }
```

`\bbl@ifknown@ttrib` An internal macro to check whether a given language/attribute is known. The macro takes 4 arguments, the language/attribute, the attribute list, the T<sub>E</sub>X-code to be executed when the attribute is known and the T<sub>E</sub>X-code to be executed otherwise.

```
12.765 \def\bbl@ifknown@ttrib#1#2{%
```

We first assume the attribute is unknown.

```
12.766 \let\bbl@tempa\@secondoftwo
```

Then we loop over the list of known attributes, trying to find a match.

```
12.767 \@for\bbl@tempb:=#2\do{%
```

```
12.768 \expandafter\in@\expandafter{\expandafter,\bbl@tempb,}{,#1,}%
```

```
12.769 \ifin@
```



When a match is found the definition of `\bbl@tempa` is changed.

```
12.770 \let\bbl@tempa\@firstoftwo
12.771 \else
12.772 \fi}%
```

Finally we execute `\bbl@tempa`.

```
12.773 \bbl@tempa
12.774 }
```

`\bbl@clear@ttribs` This macro removes all the attribute code from L<sup>A</sup>T<sub>E</sub>X's memory at `\begin{document}` time (if any is present).

```
12.775 \def\bbl@clear@ttribs{%
12.776 \ifx\bbl@attributes\@undefined\else
12.777 \@for\bbl@tempa:=\bbl@attributes\do{%
12.778 \expandafter\bbl@clear@ttrib\bbl@tempa.
12.779 }%
12.780 \let\bbl@attributes\@undefined
12.781 \fi
12.782 }
12.783 \def\bbl@clear@ttrib#1-#2.{%
12.784 \expandafter\let\csname#1@attr@#2\endcsname\@undefined}
12.785 \AtBeginDocument{\bbl@clear@ttribs}
```

## 12.6 Support for saving macro definitions

To save the meaning of control sequences using `\babel@save`, we use temporary control sequences. To save hash table entries for these control sequences, we don't use the name of the control sequence to be saved to construct the temporary name. Instead we simply use the value of a counter, which is reset to zero each time we begin to save new values. This works well because we release the saved meanings before we begin to save a new set of control sequence meanings (see `\selectlanguage` and `\originalTeX`).

`\babel@savecnt` The initialization of a new save cycle: reset the counter to zero.

```
\babel@beginsave 12.786 \def\babel@beginsave{\babel@savecnt\z@}
```

Before it's forgotten, allocate the counter and initialize all.

```
12.787 \newcount\babel@savecnt
12.788 \babel@beginsave
```

`\babel@save` The macro `\babel@save⟨csname⟩` saves the current meaning of the control sequence `⟨csname⟩` to `\originalTeX`<sup>6</sup>. To do this, we let the current meaning to a temporary control sequence, the restore commands are appended to `\originalTeX` and the counter is incremented.

```
12.789 \def\babel@save#1{%
12.790 \expandafter\let\csname babel@\number\babel@savecnt\endcsname #1\relax
12.791 \begingroup
12.792 \toks@\expandafter{\originalTeX \let#1=}%
12.793 \edef\x{\endgroup
12.794 \def\noexpand\originalTeX{\the\toks@ \expandafter\noexpand
12.795 \csname babel@\number\babel@savecnt\endcsname\relax}}%
12.796 \x
12.797 \advance\babel@savecnt\@ne}
```

<sup>6</sup>`\originalTeX` has to be expandable, i. e. you shouldn't let it to `\relax`.

`\babel@savevariable` The macro `\babel@savevariable⟨variable⟩` saves the value of the variable. `⟨variable⟩` can be anything allowed after the `\the` primitive.

```

12.798 \def\babel@savevariable#1{\begingroup
12.799   \toks@\expandafter{\originalTeX #1}%
12.800   \edef\x{\endgroup
12.801     \def\noexpand\originalTeX{\the\toks@ \the#1\relax}}%
12.802   \x}

```

`\bbl@frenchspacing` Some languages need to have `\frenchspacing` in effect. Others don't want that.

`\bbl@nonfrenchspacing` The command `\bbl@frenchspacing` switches it on when it isn't already in effect and `\bbl@nonfrenchspacing` switches it off if necessary.

```

12.803 \def\bbl@frenchspacing{%
12.804   \ifnum\the\sfcodes'\.=\@m
12.805     \let\bbl@nonfrenchspacing\relax
12.806   \else
12.807     \frenchspacing
12.808     \let\bbl@nonfrenchspacing\nonfrenchspacing
12.809   \fi}
12.810 \let\bbl@nonfrenchspacing\nonfrenchspacing

```

## 12.7 Support for extending macros

`\addto` For each language four control sequences have to be defined that control the language-specific definitions. To be able to add something to these macro once they have been defined the macro `\addto` is introduced. It takes two arguments, a `⟨control sequence⟩` and T<sub>E</sub>X-code to be added to the `⟨control sequence⟩`.

If the `⟨control sequence⟩` has not been defined before it is defined now.

```

12.811 \def\addto#1#2{%
12.812   \ifx#1\@undefined
12.813     \def#1{#2}%
12.814   \else

```

The control sequence could also expand to `\relax`, in which case a circular definition results. The net result is a stack overflow.

```

12.815   \ifx#1\relax
12.816     \def#1{#2}%
12.817   \else

```

Otherwise the replacement text for the `⟨control sequence⟩` is expanded and stored in a token register, together with the T<sub>E</sub>X-code to be added. Finally the `⟨control sequence⟩` is redefined, using the contents of the token register.

```

12.818     {\toks@\expandafter{#1#2}%
12.819     \xdef#1{\the\toks@}}%
12.820   \fi
12.821 \fi
12.822 }

```

## 12.8 Macros common to a number of languages

`\allowhyphens` This macro makes hyphenation possible. Basically its definition is nothing more than `\nobreak \hskip 0pt plus 0pt`<sup>7</sup>.

<sup>7</sup>T<sub>E</sub>X begins and ends a word for hyphenation at a glue node. The penalty prevents a linebreak at this glue node.

```

12.823 \def\bbl@t@one{T1}
12.824 \def\allowhyphens{%
12.825   \ifx\cf@encoding\bbl@t@one\else\bbl@allowhyphens\fi}
12.826 \def\bbl@allowhyphens{\nobreak\hskip\z@skip}

```

**\set@low@box** The following macro is used to lower quotes to the same level as the comma. It prepares its argument in box register 0.

```

12.827 \def\set@low@box#1{\setbox\tw@hbox{,}\setbox\z@hbox{#1}%
12.828   \dimen\z@ht\z@ \advance\dimen\z@ -\ht\tw@%
12.829   \setbox\z@hbox{\lower\dimen\z@ \box\z@}\ht\z@\ht\tw@ \dp\z@\dp\tw@}

```

**\save@sf@q** The macro `\save@sf@q` is used to save and reset the current space factor.

```

12.830 \def\save@sf@q #1{\leavevmode
12.831   \begingroup
12.832   \edef\@SF{\spacefactor \the\spacefactor}#1\@SF
12.833   \endgroup
12.834 }

```

**\bbl@disc** For some languages the macro `\bbl@disc` is used to ease the insertion of discretionary for letters that behave ‘abnormally’ at a breakpoint.

```

12.835 \def\bbl@disc#1#2{%
12.836   \nobreak\discretionary{#2-}{-}{#1}\allowhyphens}

```

## 12.9 Making glyphs available

The file `babel.dtx`<sup>8</sup> makes a number of glyphs available that either do not exist in the OT1 encoding and have to be ‘faked’, or that are not accessible through `T1enc.def`.

### 12.10 Quotation marks

**\quotedblbase** In the T1 encoding the opening double quote at the baseline is available as a separate character, accessible via `\quotedblbase`. In the OT1 encoding it is not available, therefore we make it available by lowering the normal open quote character to the baseline.

```

12.837 \ProvideTextCommand{\quotedblbase}{OT1}{%
12.838   \save@sf@q{\set@low@box{\textquotedblright\}%
12.839     \box\z@\kern-.04em\allowhyphens}}

```

Make sure that when an encoding other than OT1 or T1 is used this glyph can still be typeset.

```

12.840 \ProvideTextCommandDefault{\quotedblbase}{%
12.841   \UseTextSymbol{OT1}{\quotedblbase}}

```

**\quotesinglbase** We also need the single quote character at the baseline.

```

12.842 \ProvideTextCommand{\quotesinglbase}{OT1}{%
12.843   \save@sf@q{\set@low@box{\textquoteright\}%
12.844     \box\z@\kern-.04em\allowhyphens}}

```

<sup>8</sup>The file described in this section has version number v3.8e, and was last revised on 2005/03/24.

Make sure that when an encoding other than OT1 or T1 is used this glyph can still be typeset.

```
12.845 \ProvideTextCommandDefault{\quotesinglbase}{%
12.846   \UseTextSymbol{OT1}{\quotesinglbase}}
```

`\guillemotleft` The guillemet characters are not available in OT1 encoding. They are faked.

```
\guillemotright 12.847 \ProvideTextCommand{\guillemotleft}{OT1}{%
12.848   \ifmmode
12.849     \ll
12.850   \else
12.851     \save@sf@q{\nobreak
12.852       \raise.2ex\hbox{$\scriptscriptstyle\ll$}\allowhyphens}%
12.853   \fi}
12.854 \ProvideTextCommand{\guillemotright}{OT1}{%
12.855   \ifmmode
12.856     \gg
12.857   \else
12.858     \save@sf@q{\nobreak
12.859       \raise.2ex\hbox{$\scriptscriptstyle\gg$}\allowhyphens}%
12.860   \fi}
```

Make sure that when an encoding other than OT1 or T1 is used these glyphs can still be typeset.

```
12.861 \ProvideTextCommandDefault{\guillemotleft}{%
12.862   \UseTextSymbol{OT1}{\guillemotleft}}
12.863 \ProvideTextCommandDefault{\guillemotright}{%
12.864   \UseTextSymbol{OT1}{\guillemotright}}
```

`\guilsinglleft` The single guillemets are not available in OT1 encoding. They are faked.

```
\guilsinglright 12.865 \ProvideTextCommand{\guilsinglleft}{OT1}{%
12.866   \ifmmode
12.867     <%
12.868   \else
12.869     \save@sf@q{\nobreak
12.870       \raise.2ex\hbox{$\scriptscriptstyle<$}\allowhyphens}%
12.871   \fi}
12.872 \ProvideTextCommand{\guilsinglright}{OT1}{%
12.873   \ifmmode
12.874     >%
12.875   \else
12.876     \save@sf@q{\nobreak
12.877       \raise.2ex\hbox{$\scriptscriptstyle>$}\allowhyphens}%
12.878   \fi}
```

Make sure that when an encoding other than OT1 or T1 is used these glyphs can still be typeset.

```
12.879 \ProvideTextCommandDefault{\guilsinglleft}{%
12.880   \UseTextSymbol{OT1}{\guilsinglleft}}
12.881 \ProvideTextCommandDefault{\guilsinglright}{%
12.882   \UseTextSymbol{OT1}{\guilsinglright}}
```

## 12.11 Letters

`\ij` The dutch language uses the letter ‘ij’. It is available in T1 encoded fonts, but not `\IJ` in the OT1 encoded fonts. Therefor we fake it for the OT1 encoding.

```
12.883 \DeclareTextCommand{\ij}{OT1}{%
12.884   \allowhyphens i\kern-0.02em j\allowhyphens}
12.885 \DeclareTextCommand{\IJ}{OT1}{%
12.886   \allowhyphens I\kern-0.02em J\allowhyphens}
12.887 \DeclareTextCommand{\ij}{T1}{\char188}
12.888 \DeclareTextCommand{\IJ}{T1}{\char156}
```

Make sure that when an encoding other than OT1 or T1 is used these glyphs can still be typeset.

```
12.889 \ProvideTextCommandDefault{\ij}{%
12.890   \UseTextSymbol{OT1}{\ij}}
12.891 \ProvideTextCommandDefault{\IJ}{%
12.892   \UseTextSymbol{OT1}{\IJ}}
```

`\dj` The croatian language needs the letters `\dj` and `\DJ`; they are available in the T1 `\DJ` encoding, but not in the OT1 encoding by default.

Some code to construct these glyphs for the OT1 encoding was made available to me by Stipcevic Mario, (stipcevic@olimp.irb.hr).

```
12.893 \def\crrtic@{\hrule height0.1ex width0.3em}
12.894 \def\crttic@{\hrule height0.1ex width0.33em}
12.895 %
12.896 \def\ddj@{%
12.897   \setbox0\hbox{d}\dimen@=\ht0
12.898   \advance\dimen@1ex
12.899   \dimen@.45\dimen@
12.900   \dimen@ii\expandafter\rem@pt\the\fontdimen\@ne\font\dimen@
12.901   \advance\dimen@ii.5ex
12.902   \leavevmode\rlap{\raise\dimen@\hbox{\kern\dimen@ii\vbox{\crrtic@}}}}
12.903 \def\DDJ@{%
12.904   \setbox0\hbox{D}\dimen@=.55\ht0
12.905   \dimen@ii\expandafter\rem@pt\the\fontdimen\@ne\font\dimen@
12.906   \advance\dimen@ii.15ex % correction for the dash position
12.907   \advance\dimen@ii-.15\fontdimen7\font % correction for cmtt font
12.908   \dimen\thr@@\expandafter\rem@pt\the\fontdimen7\font\dimen@
12.909   \leavevmode\rlap{\raise\dimen@\hbox{\kern\dimen@ii\vbox{\crttic@}}}}
12.910 %
12.911 \DeclareTextCommand{\dj}{OT1}{\ddj@ d}
12.912 \DeclareTextCommand{\DJ}{OT1}{\DDJ@ D}
```

Make sure that when an encoding other than OT1 or T1 is used these glyphs can still be typeset.

```
12.913 \ProvideTextCommandDefault{\dj}{%
12.914   \UseTextSymbol{OT1}{\dj}}
12.915 \ProvideTextCommandDefault{\DJ}{%
12.916   \UseTextSymbol{OT1}{\DJ}}
```

`\SS` For the T1 encoding `\SS` is defined and selects a specific glyph from the font, but for other encodings it is not available. Therefor we make it available here.

```
12.917 \DeclareTextCommand{\SS}{OT1}{SS}
12.918 \ProvideTextCommandDefault{\SS}{\UseTextSymbol{OT1}{\SS}}
```

## 12.12 Shorthands for quotation marks

Shorthands are provided for a number of different quotation marks, which make them usable both outside and inside mathmode.

`\glq` The ‘german’ single quotes.

```
\grq12.919 \ProvideTextCommand{\glq}{OT1}{%
12.920   \textormath{\quotesinglbase}{\mbox{\quotesinglbase}}}
12.921 \ProvideTextCommand{\glq}{T1}{%
12.922   \textormath{\quotesinglbase}{\mbox{\quotesinglbase}}}
12.923 \ProvideTextCommandDefault{\glq}{\UseTextSymbol{OT1}\glq}
```

The definition of `\grq` depends on the fontencoding. With T1 encoding no extra kerning is needed.

```
12.924 \ProvideTextCommand{\grq}{T1}{%
12.925   \textormath{\textquoteleft}{\mbox{\textquoteleft}}}
12.926 \ProvideTextCommand{\grq}{OT1}{%
12.927   \save@sf@q{\kern-.0125em%
12.928   \textormath{\textquoteleft}{\mbox{\textquoteleft}}}%
12.929   \kern.07em\relax}}
12.930 \ProvideTextCommandDefault{\grq}{\UseTextSymbol{OT1}\grq}
```

`\glqq` The ‘german’ double quotes.

```
\grqq12.931 \ProvideTextCommand{\glqq}{OT1}{%
12.932   \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
12.933 \ProvideTextCommand{\glqq}{T1}{%
12.934   \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
12.935 \ProvideTextCommandDefault{\glqq}{\UseTextSymbol{OT1}\glqq}
```

The definition of `\grqq` depends on the fontencoding. With T1 encoding no extra kerning is needed.

```
12.936 \ProvideTextCommand{\grqq}{T1}{%
12.937   \textormath{\textquotedblleft}{\mbox{\textquotedblleft}}}
12.938 \ProvideTextCommand{\grqq}{OT1}{%
12.939   \save@sf@q{\kern-.07em%
12.940   \textormath{\textquotedblleft}{\mbox{\textquotedblleft}}}%
12.941   \kern.07em\relax}}
12.942 \ProvideTextCommandDefault{\grqq}{\UseTextSymbol{OT1}\grqq}
```

`\flq` The ‘french’ single guillemets.

```
\frq12.943 \ProvideTextCommand{\flq}{OT1}{%
12.944   \textormath{\guilsinglleft}{\mbox{\guilsinglleft}}}
12.945 \ProvideTextCommand{\flq}{T1}{%
12.946   \textormath{\guilsinglleft}{\mbox{\guilsinglleft}}}
12.947 \ProvideTextCommandDefault{\flq}{\UseTextSymbol{OT1}\flq}

12.948 \ProvideTextCommand{\frq}{OT1}{%
12.949   \textormath{\guilsinglright}{\mbox{\guilsinglright}}}
12.950 \ProvideTextCommand{\frq}{T1}{%
12.951   \textormath{\guilsinglright}{\mbox{\guilsinglright}}}
12.952 \ProvideTextCommandDefault{\frq}{\UseTextSymbol{OT1}\frq}
```

`\flqq` The ‘french’ double guillemets.

```
\frqq12.953 \ProvideTextCommand{\flqq}{OT1}{%
12.954   \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
```

```

12.955 \ProvideTextCommand{\flqq}{T1}{%
12.956   \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
12.957 \ProvideTextCommandDefault{\flqq}{\UseTextSymbol{OT1}\flqq}

12.958 \ProvideTextCommand{\frqq}{OT1}{%
12.959   \textormath{\guillemotright}{\mbox{\guillemotright}}}
12.960 \ProvideTextCommand{\frqq}{T1}{%
12.961   \textormath{\guillemotright}{\mbox{\guillemotright}}}
12.962 \ProvideTextCommandDefault{\frqq}{\UseTextSymbol{OT1}\frqq}

```

### 12.13 Umlauts and trema's

The command `\` needs to have a different effect for different languages. For German for instance, the ‘umlaut’ should be positioned lower than the default position for placing it over the letters a, o, u, A, O and U. When placed over an e, i, E or I it can retain its normal position. For Dutch the same glyph is always placed in the lower position.

`\umlauthigh` To be able to provide both positions of `\` we provide two commands to switch the positioning, the default will be `\umlauthigh` (the normal positioning).

```

12.963 \def\umlauthigh{%
12.964   \def\bbl@umlauta##1{\leavevmode\bgroup%
12.965     \expandafter\accent\csname\f@encoding dqpos\endcsname
12.966     ##1\allowhyphens\egroup}%
12.967   \let\bbl@umlaute\bbl@umlauta}
12.968 \def\umlautlow{%
12.969   \def\bbl@umlauta{\protect\lower@umlaut}}
12.970 \def\umlautelow{%
12.971   \def\bbl@umlaute{\protect\lower@umlaut}}
12.972 \umlauthigh

```

`\lower@umlaut` The command `\lower@umlaut` is used to position the `\` closer to the letter.

We want the umlaut character lowered, nearer to the letter. To do this we need an extra *dimen* register.

```

12.973 \expandafter\ifx\csname U@D\endcsname\relax
12.974   \csname newdimen\endcsname\U@D
12.975 \fi

```

The following code fools T<sub>E</sub>X's `make_accent` procedure about the current x-height of the font to force another placement of the umlaut character.

```

12.976 \def\lower@umlaut#1{%

```

First we have to save the current x-height of the font, because we'll change this font dimension and this is always done globally.

```

12.977   \leavevmode\bgroup
12.978     \U@D 1ex%

```

Then we compute the new x-height in such a way that the umlaut character is lowered to the base character. The value of `.45ex` depends on the METAFONT parameters with which the fonts were built. (Just try out, which value will look best.)

```

12.979   {\setbox\z@ \hbox{%
12.980     \expandafter\char\csname\f@encoding dqpos\endcsname}%
12.981     \dimen@ -.45ex\advance\dimen@\ht\z@

```

If the new x-height is too low, it is not changed.

```
12.982      \ifdim 1ex<\dimen@ \fontdimen5\font\dimen@ \fi%
```

Finally we call the `\accent` primitive, reset the old x-height and insert the base character in the argument.

```
12.983      \expandafter\accent\csname\fontencoding dqpos\endcsname
12.984      \fontdimen5\font\U@D #1%
12.985      \egroup}
```

For all vowels we declare `\` to be a composite command which uses `\bbl@umlauta` or `\bbl@umlaute` to position the umlaut character. We need to be sure that these definitions override the ones that are provided when the package `fontenc` with option `OT1` is used. Therefor these declarations are postponed until the beginning of the document.

```
12.986 \AtBeginDocument{%
12.987   \DeclareTextCompositeCommand{"}{OT1}{a}{\bbl@umlauta{a}}%
12.988   \DeclareTextCompositeCommand{"}{OT1}{e}{\bbl@umlaute{e}}%
12.989   \DeclareTextCompositeCommand{"}{OT1}{i}{\bbl@umlaute{i}}%
12.990   \DeclareTextCompositeCommand{"}{OT1}{\i}{\bbl@umlaute{i}}%
12.991   \DeclareTextCompositeCommand{"}{OT1}{o}{\bbl@umlauta{o}}%
12.992   \DeclareTextCompositeCommand{"}{OT1}{u}{\bbl@umlauta{u}}%
12.993   \DeclareTextCompositeCommand{"}{OT1}{A}{\bbl@umlauta{A}}%
12.994   \DeclareTextCompositeCommand{"}{OT1}{E}{\bbl@umlaute{E}}%
12.995   \DeclareTextCompositeCommand{"}{OT1}{I}{\bbl@umlaute{I}}%
12.996   \DeclareTextCompositeCommand{"}{OT1}{O}{\bbl@umlauta{O}}%
12.997   \DeclareTextCompositeCommand{"}{OT1}{U}{\bbl@umlauta{U}}%
12.998 }
```

## 12.14 The redefinition of the style commands

The rest of the code in this file can only be processed by  $\text{\LaTeX}$ , so we check the current format. If it is plain  $\text{\TeX}$ , processing should stop here. But, because of the need to limit the scope of the definition of `\format`, a macro that is used locally in the following `\if` statement, this comparison is done inside a group. To prevent  $\text{\TeX}$  from complaining about an unclosed group, the processing of the command `\endinput` is deferred until after the group is closed. This is accomplished by the command `\aftergroup`.

```
12.999 {\def\format{plain}
12.1000 \ifx\fmtname\format
12.1001 \else
12.1002   \def\format{LaTeX2e}
12.1003   \ifx\fmtname\format
12.1004   \else
12.1005     \aftergroup\endinput
12.1006   \fi
12.1007 \fi}
```

Now that we're sure that the code is seen by  $\text{\LaTeX}$  only, we have to find out what the main (primary) document style is because we want to redefine some macros. This is only necessary for releases of  $\text{\LaTeX}$  dated before December 1991. Therefor this part of the code can optionally be included in `babel.def` by specifying the `docstrip` option `names`.

```
12.1008 (*names)
```



The standard styles can be distinguished by checking whether some macros are defined. In table 1 an overview is given of the macros that can be used for this purpose.

article	:	both the <code>\chapter</code> and <code>\opening</code> macros are undefined
report and book	:	the <code>\chapter</code> macro is defined and the <code>\opening</code> is undefined
letter	:	the <code>\chapter</code> macro is undefined and the <code>\opening</code> is defined

Table 1: How to determine the main document style

The macros that have to be redefined for the `report` and `book` document styles happen to be the same, so there is no need to distinguish between those two styles.

`\doc@style` First a parameter `\doc@style` is defined to identify the current document style. This parameter might have been defined by a document style that already uses macros instead of hard-wired texts, such as `artikel1.sty` [6], so the existence of `\doc@style` is checked. If this macro is undefined, i.e., if the document style is unknown and could therefore contain hard-wired texts, `\doc@style` is defined to the default value ‘0’.

```
12.1009 \ifx\@undefined\doc@style
12.1010   \def\doc@style{0}%
```

This parameter is defined in the following `if` construction (see table 1):

```
12.1011   \ifx\@undefined\opening
12.1012     \ifx\@undefined\chapter
12.1013       \def\doc@style{1}%
12.1014     \else
12.1015       \def\doc@style{2}%
12.1016     \fi
12.1017   \else
12.1018     \def\doc@style{3}%
12.1019   \fi%
12.1020 \fi%
```

### 12.14.1 Redefinition of macros

Now here comes the real work: we start to redefine things and replace hard-wired texts by macros. These redefinitions should be carried out conditionally, in case it has already been done.

For the `figure` and `table` environments we have in all styles:

```
12.1021 \@ifundefined{figurename}{\def\fnun@figure{\figurename} \thefigure}}{}
12.1022 \@ifundefined{tablename}{\def\fnun@table{tablename} \thetable}}{}%
```

The rest of the macros have to be treated differently for each style. When `\doc@style` still has its default value nothing needs to be done.

```
12.1023 \ifcase \doc@style\relax
12.1024 \or
```

This means that `babel.def` is read after the `article` style, where no `\chapter` and `\opening` commands are defined<sup>9</sup>.

First we have the `\tableofcontents`, `\listoffigures` and `\listoftables`:

```
12.1025 \@ifundefined{contentsname}%
12.1026     {\def\tableofcontents{\section*{\contentsname\@mkboth
12.1027         {\uppercase{\contentsname}}{\uppercase{\contentsname}}}%
12.1028         \@starttoc{toc}}}{%
12.1029
12.1030 \@ifundefined{listfigurename}%
12.1031     {\def\listoffigures{\section*{\listfigurename\@mkboth
12.1032         {\uppercase{\listfigurename}}{\uppercase{\listfigurename}}}%
12.1033         \@starttoc{lof}}}{%
12.1034
12.1035 \@ifundefined{listtablename}%
12.1036     {\def\listoftables{\section*{\listtablename\@mkboth
12.1037         {\uppercase{\listtablename}}{\uppercase{\listtablename}}}%
12.1038         \@starttoc{lot}}}{%
12.1039
```

Then the `\thebibliography` and `\theindex` environments.

```
12.1039 \@ifundefined{refname}%
12.1040     {\def\thebibliography#1{\section*{\refname
12.1041         \@mkboth{\uppercase{\refname}}{\uppercase{\refname}}}%
12.1042         \list{\arabic{enumi}}{\settowidth\labelwidth{[#1]}%
12.1043             \leftmargin\labelwidth
12.1044             \advance\leftmargin\labelsep
12.1045             \usecounter{enumi}}%
12.1046         \def\newblock{\hskip.11em plus.33em minus.07em}%
12.1047         \sloppy\clubpenalty4000\widowpenalty\clubpenalty
12.1048         \sfcode'\.=1000\relax}}{%
12.1049
12.1050 \@ifundefined{indexname}%
12.1051     {\def\theindex{\@restonecoltrue\if@twocolumn\@restonecolfalse\fi
12.1052         \columnseprule \z@
12.1053         \columnsep 35pt\twocolumn[{\section*{\indexname}}%
12.1054             \@mkboth{\uppercase{\indexname}}{\uppercase{\indexname}}}%
12.1055         \thispagestyle{plain}%
12.1056         \parskip\z@ plus.3pt\parindent\z@\let\item\@idxitem}}{%
12.1057
```

The abstract environment:

```
12.1057 \@ifundefined{abstractname}%
12.1058     {\def\abstract{\if@twocolumn
12.1059         \section*{\abstractname}%
12.1060         \else \small
12.1061         \begin{center}%
12.1062             {\bf \abstractname\vspace{-.5em}\vspace{\z@}}%
12.1063             \end{center}%
12.1064             \quotation
12.1065             \fi}}{%
12.1066
```

And last but not least, the macro `\part`:

```
12.1066 \@ifundefined{partname}%
12.1067 {\def\@part[#1]#2{\ifnum \c@secnumdepth >\m@ne
```

---

<sup>9</sup>A fact that was pointed out to me by Nico Poppelier and was already used in Piet van Oostrum's document style option `nl`.

```

12.1068      \refstepcounter{part}%
12.1069      \addcontentsline{toc}{part}{\thepart
12.1070      \hspace{1em}#1}\else
12.1071      \addcontentsline{toc}{part}{#1}\fi
12.1072      {\parindent\z@ \raggedright
12.1073      \ifnum \c@secnumdepth >\m@ne
12.1074      \Large \bf \partname{} \thepart
12.1075      \par \nobreak
12.1076      \fi
12.1077      \huge \bf
12.1078      #2\markboth{}{}\par}%
12.1079      \nobreak
12.1080      \vskip 3ex\@afterheading}%
12.1081 }{}

```

This is all that needs to be done for the `article` style.

12.1082 \or

The next case is formed by the two styles `book` and `report`. Basically we have to do the same as for the `article` style, except now we must also change the `\chapter` command.

The tables of contents, figures and tables:

```

12.1083 \@ifundefined{contentsname}%
12.1084 {\def\tableofcontents{\@restonecolfalse
12.1085 \if@twocolumn\@restonecoltrue\onecolumn
12.1086 \fi\chapter*{\contentsname\@mkboth
12.1087 {\uppercase{\contentsname}}{\uppercase{\contentsname}}}%
12.1088 \@starttoc{toc}%
12.1089 \csname if@restonecol\endcsname\twocolumn
12.1090 \csname fi\endcsname}{}}
12.1091
12.1092 \@ifundefined{listfigurename}%
12.1093 {\def\listoffigures{\@restonecolfalse
12.1094 \if@twocolumn\@restonecoltrue\onecolumn
12.1095 \fi\chapter*{\listfigurename\@mkboth
12.1096 {\uppercase{\listfigurename}}{\uppercase{\listfigurename}}}%
12.1097 \@starttoc{lof}%
12.1098 \csname if@restonecol\endcsname\twocolumn
12.1099 \csname fi\endcsname}{}}
12.1100
12.1101 \@ifundefined{listtablename}%
12.1102 {\def\listoftables{\@restonecolfalse
12.1103 \if@twocolumn\@restonecoltrue\onecolumn
12.1104 \fi\chapter*{\listtablename\@mkboth
12.1105 {\uppercase{\listtablename}}{\uppercase{\listtablename}}}%
12.1106 \@starttoc{lot}%
12.1107 \csname if@restonecol\endcsname\twocolumn
12.1108 \csname fi\endcsname}{}}

```

Again, the bibliography and index environments; notice that in this case we use `\bibname` instead of `\refname` as in the definitions for the `article` style. The reason for this is that in the `article` document style the term ‘References’ is used in the definition of `\thebibliography`. In the `report` and `book` document styles the term ‘Bibliography’ is used.

```

12.1109 \@ifundefined{bibname}%
12.1110     {\def\thebibliography#1{\chapter*{\bibname
12.1111         \@mkboth{\uppercase{\bibname}}{\uppercase{\bibname}}}%
12.1112         \list{[\arabic{enumi}]}{\settowidth\labelwidth{[#1]}%
12.1113         \leftmargin\labelwidth \advance\leftmargin\labelsep
12.1114         \usecounter{enumi}}}%
12.1115         \def\newblock{\hspace{.11em plus.33em minus.07em}%
12.1116         \sloppy\clubpenalty4000\widowpenalty\clubpenalty
12.1117         \sfcode'\.=1000\relax}}{}
12.1118
12.1119 \@ifundefined{indexname}%
12.1120     {\def\theindex{\@restonecoltrue\if@twocolumn\@restonecolfalse\fi
12.1121         \columnseprule \z@
12.1122         \columnsep 35pt\twocolumn[\@makeschapterhead{\indexname}]%
12.1123         \@mkboth{\uppercase{\indexname}}{\uppercase{\indexname}}%
12.1124         \thispagestyle{plain}%
12.1125         \parskip\z@ plus.3pt\parindent\z@ \let\item\@idxitem}}{}

```

Here is the abstract environment:

```

12.1126 \@ifundefined{abstractname}%
12.1127     {\def\abstract{\titlepage
12.1128         \null\vfil
12.1129         \begin{center}%
12.1130         {\bf \abstractname}%
12.1131         \end{center}}}{}}

```

And last but not least the \chapter, \appendix and \part macros.

```

12.1132 \@ifundefined{chaptername}{\def\@chapapp{\chaptername}}{}
12.1133 %
12.1134 \@ifundefined{appendixname}%
12.1135     {\def\appendix{\par
12.1136         \setcounter{chapter}{0}%
12.1137         \setcounter{section}{0}%
12.1138         \def\@chapapp{\appendixname}%
12.1139         \def\thechapter{\Alph{chapter}}}}{}
12.1140 %
12.1141 \@ifundefined{partname}%
12.1142     {\def\@part[#1]#2{\ifnum \c@secnumdepth >-2\relax
12.1143         \refstepcounter{part}%
12.1144         \addcontentsline{toc}{part}{\thepart
12.1145         \hspace{1em}#1}\else
12.1146         \addcontentsline{toc}{part}{#1}\fi
12.1147         \markboth{}{}%
12.1148         {\centering
12.1149         \ifnum \c@secnumdepth >-2\relax
12.1150         \huge\bf \partname{} \thepart
12.1151         \par
12.1152         \vskip 20pt \fi
12.1153         \Huge \bf
12.1154         #1\par}\@endpart}}}{}}
12.1155 \or

```

Now we address the case where babel.def is read after the letter style. The letter document style defines the macro \opening and some other macros

that are specific to `letter`. This means that we have to redefine other macros, compared to the previous two cases.

First two macros for the material at the end of a letter, the `\cc` and `\encl` macros.

```

12.1156 \@ifundefined{ccname}%
12.1157     {\def\cc#1{\par\noindent
12.1158         \parbox[t]{\textwidth}%
12.1159         {\@hangfrom{\rm \ccname : }\ignorespaces #1\strut}\par}}{}
12.1160
12.1161 \@ifundefined{enclname}%
12.1162     {\def\encl#1{\par\noindent
12.1163         \parbox[t]{\textwidth}%
12.1164         {\@hangfrom{\rm \enclname : }\ignorespaces #1\strut}\par}}{}

```

The last thing we have to do here is to redefine the `headings` pagestyle:

```

12.1165 \@ifundefined{headtoname}%
12.1166     {\def\ps@headings{%
12.1167         \def\@oddhead{\sl \headtoname} \ignorespaces\toname \hfil
12.1168         \@date \hfil \pagename{} \thepage}%
12.1169     \def\@oddfoot{}}{}

```

This was the last of the four standard document styles, so if `\doc@style` has another value we do nothing and just close the `if` construction.

```

12.1170 \fi

```

Here ends the code that can be optionally included when a version of  $\text{\LaTeX}$  is in use that is dated *before* December 1991.

```

12.1171 </names>
12.1172 </core>

```

## 12.15 Cross referencing macros

The  $\text{\LaTeX}$  book states:

The *key* argument is any sequence of letters, digits, and punctuation symbols; upper- and lowercase letters are regarded as different.

When the above quote should still be true when a document is typeset in a language that has active characters, special care has to be taken of the category codes of these characters when they appear in an argument of the cross referencing macros.

When a cross referencing command processes its argument, all tokens in this argument should be character tokens with category ‘letter’ or ‘other’.

The only way to accomplish this in most cases is to use the trick described in the  $\text{\TeX}$ book [1] (Appendix D, page 382). The primitive `\meaning` applied to a token expands to the current meaning of this token. For example, ‘`\meaning\A`’ with `\A` defined as ‘`\def\A#1{\B}`’ expands to the characters ‘`macro:#1->\B`’ with all category codes set to ‘other’ or ‘space’.

**`\bbl@redefine`** To redefine a command, we save the old meaning of the macro. Then we redefine it to call the original macro with the ‘sanitized’ argument. The reason why we do it this way is that we don’t want to redefine the  $\text{\LaTeX}$  macros completely in case their definitions change (they have changed in the past).

Because we need to redefine a number of commands we define the command `\bbl@redefine` which takes care of this. It creates a new control sequence, `\org@...`

```
12.1173 (*core | shorthands)
12.1174 \def\bbl@redefine#1{%
12.1175   \edef\bbl@tempa{\expandafter\@gobble\string#1}%
12.1176   \expandafter\let\csname org@\bbl@tempa\endcsname#1
12.1177   \expandafter\def\csname\bbl@tempa\endcsname}
```

This command should only be used in the preamble of the document.

```
12.1178 \@onlypreamble\bbl@redefine
```

`\bbl@redefine@long` This version of `\babel@redefine` can be used to redefine `\long` commands such as `\ifthenelse`.

```
12.1179 \def\bbl@redefine@long#1{%
12.1180   \edef\bbl@tempa{\expandafter\@gobble\string#1}%
12.1181   \expandafter\let\csname org@\bbl@tempa\endcsname#1
12.1182   \expandafter\long\expandafter\def\csname\bbl@tempa\endcsname}
12.1183 \@onlypreamble\bbl@redefine@long
```

`\bbl@redefineroobust` For commands that are redefined, but which *might* be robust we need a slightly more intelligent macro. A robust command `foo` is defined to expand to `\protect\foo_`. So it is necessary to check whether `\foo_` exists.

```
12.1184 \def\bbl@redefineroobust#1{%
12.1185   \edef\bbl@tempa{\expandafter\@gobble\string#1}%
12.1186   \expandafter\ifx\csname\bbl@tempa\space\endcsname\relax
12.1187     \expandafter\let\csname org@\bbl@tempa\endcsname#1
12.1188     \expandafter\edef\csname\bbl@tempa\endcsname{\noexpand\protect
12.1189       \expandafter\noexpand\csname\bbl@tempa\space\endcsname}%
12.1190   \else
12.1191     \expandafter\let\csname org@\bbl@tempa\expandafter\endcsname
12.1192       \csname\bbl@tempa\space\endcsname
12.1193   \fi
```

The result of the code above is that the command that is being redefined is always robust afterwards. Therefore all we need to do now is define `\foo_`.

```
12.1194   \expandafter\def\csname\bbl@tempa\space\endcsname}
```

This command should only be used in the preamble of the document.

```
12.1195 \@onlypreamble\bbl@redefineroobust
```

`\newlabel` The macro `\label` writes a line with a `\newlabel` command into the `.aux` file to define labels.

```
12.1196 %\bbl@redefine\newlabel#1#2{%
12.1197 %   \@safe@activestrue\org@newlabel{#1}{#2}\@safe@activesfalse}
```

`\@newl@bel` We need to change the definition of the L<sup>A</sup>T<sub>E</sub>X-internal macro `\@newl@bel`. This is needed because we need to make sure that shorthand characters expand to their non-active version.

```
12.1198 \def\@newl@bel#1#2#3{%
```

First we open a new group to keep the changed setting of `\protect` local and then we set the `@safe@actives` switch to true to make sure that any shorthand that appears in any of the arguments immediately expands to its non-active self.

```

12.1199  {%
12.1200    \@safe@activetrue
12.1201    \@ifundefined{#1@#2}%
12.1202      \relax
12.1203    {%
12.1204      \gdef \@multiplelabels {%
12.1205        \@latex@warning@no@line{There were multiply-defined labels}}%
12.1206        \@latex@warning@no@line{Label ‘#2’ multiply defined}%
12.1207      }%
12.1208      \global\@namedef{#1@#2}{#3}%
12.1209    }%
12.1210  }

```

`\@testdef` An internal L<sup>A</sup>T<sub>E</sub>X macro used to test if the labels that have been written on the .aux file have changed. It is called by the `\enddocument` macro. This macro needs to be completely rewritten, using `\meaning`. The reason for this is that in some cases the expansion of `\#1@#2` contains the same characters as the `#3`; but the character codes differ. Therefor L<sup>A</sup>T<sub>E</sub>X keeps reporting that the labels may have changed.

```

12.1211 \CheckCommand*\@testdef[3]{%
12.1212   \def\reserved@a{#3}%
12.1213   \expandafter \ifx \csname #1@#2\endcsname \reserved@a
12.1214   \else
12.1215     \@tempswatrue
12.1216   \fi}

```

Now that we made sure that `\@testdef` still has the same definition we can rewrite it. First we make the shorthands ‘safe’.

```

12.1217 \def\@testdef #1#2#3{%
12.1218   \@safe@activetrue

```

Then we use `\bbl@tempa` as an ‘alias’ for the macro that contains the label which is being checked.

```

12.1219   \expandafter\let\expandafter\bbl@tempa\csname #1@#2\endcsname

```

Then we define `\bbl@tempb` just as `\@newl@bel` does it.

```

12.1220   \def\bbl@tempb{#3}%
12.1221   \@safe@activesfalse

```

When the label is defined we replace the definition of `\bbl@tempa` by its meaning.

```

12.1222   \ifx\bbl@tempa\relax
12.1223   \else
12.1224     \edef\bbl@tempa{\expandafter\strip@prefix\meaning\bbl@tempa}%
12.1225   \fi

```

We do the same for `\bbl@tempb`.

```

12.1226   \edef\bbl@tempb{\expandafter\strip@prefix\meaning\bbl@tempb}%

```

If the label didn’t change, `\bbl@tempa` and `\bbl@tempb` should be identical macros.

```

12.1227   \ifx \bbl@tempa \bbl@tempb
12.1228   \else
12.1229     \@tempswatrue
12.1230   \fi}

```

`\ref` The same holds for the macro `\ref` that references a label and `\pageref` to reference a page. So we redefine `\ref` and `\pageref`. While we change these macros,

we make them robust as well (if they weren't already) to prevent problems if they should become expanded at the wrong moment.

```
12.1231 \bbl@redefineroast\ref#1{%
12.1232   \@safe@activetrue\org@ref{#1}\@safe@activesfalse}
12.1233 \bbl@redefineroast\pageref#1{%
12.1234   \@safe@activetrue\org@pageref{#1}\@safe@activesfalse}
```

**\@citex** The macro used to cite from a bibliography, `\cite`, uses an internal macro, `\@citex`. It is this internal macro that picks up the argument(s), so we redefine this internal macro and leave `\cite` alone. The first argument is used for typesetting, so the shorthands need only be deactivated in the second argument.

```
12.1235 \bbl@redefine\@citex[#1]#2{%
12.1236   \@safe@activetrue\edef\@tempa{#2}\@safe@activesfalse
12.1237   \org@@citex[#1]{\@tempa}}
```

Unfortunately, the packages `natbib` and `cite` need a different definition of `\@citex`... To begin with, `natbib` has a definition for `\@citex` with *three* arguments... We only know that a package is loaded when `\begin{document}` is executed, so we need to postpone the different redefinition.

```
12.1238 \AtBeginDocument{%
12.1239   \@ifpackageloaded{natbib}{%
```

Notice that we use `\def` here instead of `\bbl@redefine` because `\org@@citex` is already defined and we don't want to overwrite that definition (it would result in parameter stack overflow because of a circular definition).

```
12.1240     \def\@citex[#1][#2]#3{%
12.1241       \@safe@activetrue\edef\@tempa{#3}\@safe@activesfalse
12.1242       \org@@citex[#1][#2]{\@tempa}}%
12.1243   }{}}
```

The package `cite` has a definition of `\@citex` where the shorthands need to be turned off in both arguments.

```
12.1244 \AtBeginDocument{%
12.1245   \@ifpackageloaded{cite}{%
12.1246     \def\@citex[#1]#2{%
12.1247       \@safe@activetrue\org@@citex[#1]{#2}\@safe@activesfalse}%
12.1248     }{}}
```

**\nocite** The macro `\nocite` which is used to instruct BiBTeX to extract uncited references from the database.

```
12.1249 \bbl@redefine\nocite#1{%
12.1250   \@safe@activetrue\org@nocite{#1}\@safe@activesfalse}
```

**\babcite** The macro that is used in the `.aux` file to define citation labels. When packages such as `natbib` or `cite` are not loaded its second argument is used to typeset the citation label. In that case, this second argument can contain active characters but is used in an environment where `\@safe@activetrue` is in effect. This switch needs to be reset inside the `\hbox` which contains the citation label. In order to determine during `.aux` file processing which definition of `\babcite` is needed we define `\babcite` in such a way that it redefines itself with the proper definition.

```
12.1251 \bbl@redefine\babcite{%
```



We call `\bbl@cite@choice` to select the proper definition for `\bibcite`. This new definition is then activated.

```
12.1252 \bbl@cite@choice
12.1253 \bibcite}
```

`\bbl@bibcite` The macro `\bbl@bibcite` holds the definition of `\bibcite` needed when neither `natbib` nor `cite` is loaded.

```
12.1254 \def\bbl@bibcite#1#2{%
12.1255 \org@bibcite{#1}{\@safe@activesfalse#2}}
```

`\bbl@cite@choice` The macro `\bbl@cite@choice` determines which definition of `\bibcite` is needed.

```
12.1256 \def\bbl@cite@choice{%
    First we give \bibcite its default definition.
```

```
12.1257 \global\let\bibcite\bbl@bibcite
```

Then, when `natbib` is loaded we restore the original definition of `\bibcite`.

```
12.1258 \@ifpackageloaded{natbib}{\global\let\bibcite\org@bibcite}{}%
```

For `cite` we do the same.

```
12.1259 \@ifpackageloaded{cite}{\global\let\bibcite\org@bibcite}{}%
```

Make sure this only happens once.

```
12.1260 \global\let\bbl@cite@choice\relax
12.1261 }
```

When a document is run for the first time, no `.aux` file is available, and `\bibcite` will not yet be properly defined. In this case, this has to happen before the document starts.

```
12.1262 \AtBeginDocument{\bbl@cite@choice}
```

`\@bibitem` One of the two internal L<sup>A</sup>T<sub>E</sub>X macros called by `\bibitem` that write the citation label on the `.aux` file.

```
12.1263 \bbl@redefine\@bibitem#1{%
12.1264 \@safe@activetrue\org@@bibitem{#1}\@safe@activesfalse}
```

## 12.16 marks

`\markright` Because the output routine is asynchronous, we must pass the current language attribute to the head lines, together with the text that is put into them. To achieve this we need to adapt the definition of `\markright` and `\markboth` somewhat.

```
12.1265 \bbl@redefine\markright#1{%
```

First, we check whether the argument is empty; if it is, we just make sure the scratch token register is empty.

```
12.1266 \def\bbl@arg{#1}%
12.1267 \ifx\bbl@arg\@empty
12.1268 \toks@{}%
12.1269 \else
```

Then, we store the argument to `\markright` in the scratch token register, together with a language switching command. This way these commands will not be expanded by using `\edef` later on, and we make sure that the text is typeset using the correct language settings. While doing so, we make sure that active characters

that may end up in the mark are not disabled by the output routine kicking in while `\@safe@activestrue` is in effect.

```
12.1270 \toks@{\noexpand\foreignlanguage{%
12.1271 \language}%
12.1272 \noexpand\bb1@restore@actives#1}}%
12.1273 \fi
```

Then we define a temporary control sequence using `\edef`.

```
12.1274 \edef\bb1@tempa{%
```

When `\bb1@tempa` is executed, only `\language` will be expanded, because of the way the token register was filled.

```
12.1275 \noexpand\org@markright{\the\toks@}%
12.1276 \bb1@tempa
12.1277 }
```

The definition of `\markboth` is equivalent to that of `\markright`, except that we need two token registers.

```
12.1278 \bb1@redefine\markboth#1#2{%
12.1279 \def\bb1@arg{#1}%
12.1280 \ifx\bb1@arg@empty
12.1281 \toks@{}%
12.1282 \else
12.1283 \toks@{\noexpand\foreignlanguage{%
12.1284 \language}%
12.1285 \noexpand\bb1@restore@actives#1}}%
12.1286 \fi
12.1287 \def\bb1@arg{#2}%
12.1288 \ifx\bb1@arg@empty
12.1289 \toks8{}%
12.1290 \else
12.1291 \toks8{\noexpand\foreignlanguage{%
12.1292 \language}%
12.1293 \noexpand\bb1@restore@actives#2}}%
12.1294 \fi
12.1295 \edef\bb1@tempa{%
12.1296 \noexpand\org@markboth{\the\toks@}{\the\toks8}}%
12.1297 \bb1@tempa
12.1298 }
12.1299 </core | shorthands>
```

## 12.17 Encoding issues (part 2)

**\TeX** Because documents may use font encodings other than one of the latin encodings,  
**\LaTeX** we make sure that the logos of  $\mathrm{T}_{\mathrm{E}}\mathrm{X}$  and  $\mathrm{L}^{\mathrm{A}}\mathrm{T}_{\mathrm{E}}\mathrm{X}$  always come out in the right encoding.

```
12.1300 <*core>
12.1301 \bb1@redefine\TeX{\textlatin{\org@TeX}}
12.1302 \bb1@redefine\LaTeX{\textlatin{\org@LaTeX}}
12.1303 </core>
```

## 12.18 Preventing clashes with other packages

### 12.18.1 ifthen

`\ifthenelse` Sometimes a document writer wants to create a special effect depending on the page a certain fragment of text appears on. This can be achieved by the following piece of code:

```
\ifthenelse{\isodd{\pageref{some:label}}}{%
    {code for odd pages}%
    {code for even pages}%
}
```

In order for this to work the argument of `\isodd` needs to be fully expandable. With the above redefinition of `\pageref` it is not in the case of this example. To overcome that, we add some code to the definition of `\ifthenelse` to make things work.

The first thing we need to do is check if the package `ifthen` is loaded. This should be done at `\begin{document}` time.

```
12.1304 \*package%
12.1305 \AtBeginDocument{%
12.1306   \ifpackageloaded{ifthen}{%
    Then we can redefine \ifthenelse:
12.1307   \bbl@redefine@long\ifthenelse#1#2#3{%
```

We want to revert the definition of `\pageref` to its original definition for the duration of `\ifthenelse`, so we first need to store its current meaning.

```
12.1308     \let\bbl@tempa\pageref
12.1309     \let\pageref\org@pageref
```

Then we can set the `\@safe@actives` switch and call the original `\ifthenelse`. In order to be able to use shorthands in the second and third arguments of `\ifthenelse` the resetting of the switch *and* the definition of `\pageref` happens inside those arguments.

```
12.1310     \@safe@activetrue
12.1311     \org@ifthenelse{#1}{%
12.1312       \let\pageref\bbl@tempa
12.1313       \@safe@activesfalse
12.1314       #2}{%
12.1315       \let\pageref\bbl@tempa
12.1316       \@safe@activesfalse
12.1317       #3}%
12.1318   }%
```

When the package wasn't loaded we do nothing.

```
12.1319   }{}%
12.1320 }
```

### 12.18.2 varioref

`\@vppageref` When the package `varioref` is in use we need to modify its internal command `\vrefpagemum` `\@vppageref` in order to prevent problems when an active character ends up in the argument of `\vref`.

```
12.1321 \AtBeginDocument{%
```

```

12.1322 \@ifpackageloaded{varioref}{%
12.1323   \bbl@redefine\@vpageref#1[#2]#3{%
12.1324     \@safe@activetrue
12.1325     \org@@vpageref{#1}[#2]{#3}%
12.1326     \@safe@activesfalse}%
12.1327   \bbl@redefine\refpagem#1#2{%
12.1328     \@safe@activetrue
12.1329     \org@vrefpagem{#1}#2}%
12.1330     \@safe@activesfalse}%
12.1331   }{}%
12.1332 }

```

### 12.18.3 hhline

`\hhline` Delaying the activation of the shorthand characters has introduced a problem with the `hhline` package. The reason is that it uses the ‘:’ character which is made active by the french support in `babel`. Therefor we need to *reload* the package when the ‘:’ is an active character.

So at `\begin{document}` we check whether `hhline` is loaded.

```

12.1333 \AtBeginDocument{%
12.1334   \@ifpackageloaded{hhline}%

```

Then we check whether the expansion of `\normal@char:` is not equal to `\relax`.

```

12.1335   {\expandafter\ifx\csname normal@char:string:\endcsname\relax
12.1336     \else

```

In that case we simply reload the package. Note that this happens *after* the category code of the @-sign has been changed to other, so we need to temporarily change it to letter again.

```

12.1337     \makeatletter
12.1338     \def\@currname{hhline}\input{hhline.sty}\makeatother
12.1339     \fi}%
12.1340   {}

```

### 12.18.4 General

`\FOREIGNLANGUAGE` The package `fancyhdr` treats the running head and foot lines somewhat differently as the standard classes. A symptom of this is that the command `\foreignlanguage` which `babel` adds to the marks can end up inside the argument of `\MakeUppercase`. To prevent unexpected results we need to define `\FOREIGNLANGUAGE` here.

```

12.1341 \DeclareRobustCommand{\FOREIGNLANGUAGE}[1]{%
12.1342   \lowercase{\foreignlanguage{#1}}}
12.1343 \end{package}

```

`\nfss@catcodes`  $\text{\LaTeX}$ ’s font selection scheme sometimes wants to read font definition files in the middle of processing the document. In order to guard against any characters having the wrong `\catcodes` it always calls `\nfss@catcodes` before loading a file. Unfortunately, the characters “ and ’ are not dealt with. Therefor we have to add them until  $\text{\LaTeX}$  does that herself.

```

12.1344 \core | shorthands
12.1345 \ifx\nfss@catcodes\undefined
12.1346 \else

```

```

12.1347 \addto\nfss@catcodes{%
12.1348 \@makeother\'%
12.1349 \@makeother\"%
12.1350 }
12.1351 \fi

12.1352 </core | shorthands>

```

## 13 Local Language Configuration

`\loadlocalcfg` At some sites it may be necessary to add site-specific actions to a language definition file. This can be done by creating a file with the same name as the language definition file, but with the extension `.cfg`. For instance the file `norsk.cfg` will be loaded when the language definition file `norsk.ldf` is loaded.

13.1 <core>

For plain-based formats we don't want to override the definition of `\loadlocalcfg` from `plain.def`.

```

13.2 \ifx\loadlocalcfg\@undefined
13.3 \def\loadlocalcfg#1{%
13.4 \InputIfFileExists{#1.cfg}
13.5 {\typeout{*****~J%
13.6 * Local config file #1.cfg used~J%
13.7 *}%
13.8 }
13.9 {}}
13.10 \fi

```

Just to be compatible with L<sup>A</sup>T<sub>E</sub>X 2.09 we add a few more lines of code:

```

13.11 \ifx\@unexpandable@protect\@undefined
13.12 \def\@unexpandable@protect{\noexpand\protect\noexpand}
13.13 \long\def \protected@write#1#2#3{%
13.14 \begingroup
13.15 \let\thepage\relax
13.16 #2%
13.17 \let\protect\@unexpandable@protect
13.18 \edef\reserved@a{\write#1{#3}}%
13.19 \reserved@a
13.20 \endgroup
13.21 \if@nobreak\ifvmode\nobreak\fi\fi
13.22 }
13.23 \fi
13.24 </core>

```

## 14 Driver files for the documented source code

Since `babel` version 3.4 all source files that are part of the `babel` system can be typeset separately. But to typeset them all in one document, the file `babel.drv` can be used. If you only want the information on how to use the `babel` system and what goodies are provided by the language-specific files, you can run the file `user.drv` through  $\text{\LaTeX}$  to get a user guide.

```

14.1 \driver}
14.2 \documentclass{ltxdoc}
14.3 \usepackage{url,tlenc,supertabular}
14.4 \usepackage[icelandic,english]{babel}
14.5 \DoNotIndex{!,\',\,,\.,\-,\\:,\\;,\\?,\\/,\\~,\\',\\@M}
14.6 \DoNotIndex{@,\\One,\\@m,\\@afterheading,\\@date,\\@endpart}
14.7 \DoNotIndex{@hangfrom,\\@idxitem,\\@makeschapterhead,\\@mkboth}
14.8 \DoNotIndex{@oddfoot,\\@oddhead,\\@restonecolfalse,\\@restonecoltrue}
14.9 \DoNotIndex{@starttoc,\\@unused}
14.10 \DoNotIndex{\\accent,\\active}
14.11 \DoNotIndex{\\addcontentsline,\\advance,\\Alph,\\arabic}
14.12 \DoNotIndex{\\baselineskip,\\begin,\\begingroup,\\bf,\\box,\\c@secnumdepth}
14.13 \DoNotIndex{\\catcode,\\centering,\\char,\\chardef,\\clubpenalty}
14.14 \DoNotIndex{\\columnsep,\\columnseprule,\\crcr,\\csname}
14.15 \DoNotIndex{\\day,\\def,\\dimen,\\discretionary,\\divide,\\dp,\\do}
14.16 \DoNotIndex{\\edef,\\else,\\@empty,\\end,\\endgroup,\\endcsname,\\endinput}
14.17 \DoNotIndex{\\errhelp,\\errmessage,\\expandafter,\\fi,\\filedate}
14.18 \DoNotIndex{\\fileversion,\\fmtname,\\fnum@figure,\\fnum@table,\\fontdimen}
14.19 \DoNotIndex{\\gdef,\\global}
14.20 \DoNotIndex{\\hbox,\\hidewidth,\\hfil,\\hskip,\\hspace,\\ht,\\Huge,\\huge}
14.21 \DoNotIndex{\\ialign,\\if@twocolumn,\\ifcase,\\ifcat,\\ifhmode,\\ifmmode}
14.22 \DoNotIndex{\\ifnum,\\ifx,\\immediate,\\ignorespaces,\\input,\\item}
14.23 \DoNotIndex{\\kern}
14.24 \DoNotIndex{\\labelsep,\\Large,\\large,\\labelwidth,\\lccode,\\leftmargin}
14.25 \DoNotIndex{\\lineskip,\\leavevmode,\\let,\\list,\\ll,\\long,\\lower}
14.26 \DoNotIndex{\\m@ne,\\mathchar,\\mathaccent,\\markboth,\\month,\\multiply}
14.27 \DoNotIndex{\\newblock,\\newbox,\\newcount,\\newdimen,\\newif,\\newwrite}
14.28 \DoNotIndex{\\nobreak,\\noexpand,\\noindent,\\null,\\number}
14.29 \DoNotIndex{\\onecolumn,\\or}
14.30 \DoNotIndex{\\p@,\\par,\\parbox,\\parindent,\\parskip,\\penalty}
14.31 \DoNotIndex{\\protect,\\ps@headings}
14.32 \DoNotIndex{\\quotation}
14.33 \DoNotIndex{\\raggedright,\\raise,\\refstepcounter,\\relax,\\rm,\\setbox}
14.34 \DoNotIndex{\\section,\\setcounter,\\settowidth,\\scriptscriptstyle}
14.35 \DoNotIndex{\\sfcode,\\sl,\\sloppy,\\small,\\space,\\spacefactor,\\strut}
14.36 \DoNotIndex{\\string}
14.37 \DoNotIndex{\\textwidth,\\the,\\thechapter,\\thefigure,\\thepage,\\thepart}
14.38 \DoNotIndex{\\thetable,\\thispagestyle,\\titlepage,\\tracingmacros}
14.39 \DoNotIndex{\\tw@,\\twocolumn,\\typeout,\\uppercase,\\usecounter}
14.40 \DoNotIndex{\\vbox,\\vfil,\\vskip,\\vspace,\\vss}
14.41 \DoNotIndex{\\widowpenalty,\\write,\\xdef,\\year,\\z@,\\z@skip}

```

Here \dlqq is defined so that an example of " can be given.

```

14.42 \makeatletter
14.43 \gdef\dlqq{{\setbox\tw@=\hbox{,}\setbox\z@=\hbox{'}}%
14.44 \dimen\z@=\ht\z@ \advance\dimen\z@-\ht\tw@
14.45 \setbox\z@=\hbox{\lower\dimen\z@box\z@}\ht\z@=\ht\tw@

```

```
14.46 \dp\z@=\dp\tw@ \box\z@\kern-.04em}}
```

The code lines are numbered within sections,

```
14.47 <!*user)
14.48 \@addtoreset{CodelineNo}{section}
14.49 \renewcommand\theCodelineNo{%
14.50 \reset@font\scriptsize\thesection.\arabic{CodelineNo}}
```

which should also be visible in the index; hence this redefinition of a macro from `doc.sty`.

```
14.51 \renewcommand\codeline@wrindex[1]{\if@filesw
14.52 \immediate\write\@indexfile
14.53 {\string\indexentry{#1}%
14.54 {\number\c@section.\number\c@CodelineNo}}\fi}
```

The glossary environment is used or the change log, but its definition needs changing for this document.

```
14.55 \renewenvironment{theglossary}{%
14.56 \glossary@prologue%
14.57 \GlossaryParms \let\item\@idxitem \ignorespaces}%
14.58 {}
14.59 <!/user)
14.60 \makeatother
```

A few shorthands used in the documentation

```
14.61 \font\manual=logo10 % font used for the METAFONT logo, etc.
14.62 \newcommand*{\MF}{\manual META}\-{\manual FONT}}
14.63 \newcommand*{\TeXhax}{\TeX hax}
14.64 \newcommand*{\babel}{\textsf{babel}}
14.65 \newcommand*{\Babel}{\textsf{Babel}}
14.66 \newcommand*{\m[1]{\mbox{$\langle\it#1\rangle$}}
14.67 \newcommand*{\langvar}{\m{lang}}
```

Some more definitions needed in the documentation.

```
14.68 %\newcommand*\note[1]{\textbf{#1}}
14.69 \newcommand*\note[1]{}
14.70 \newcommand*\bsl{\protect\bslash}
14.71 \newcommand*\Lopt[1]{\textsf{#1}}
14.72 \newcommand*\Lenv[1]{\textsf{#1}}
14.73 \newcommand*\file[1]{\texttt{#1}}
14.74 \newcommand*\cls[1]{\texttt{#1}}
14.75 \newcommand*\pkg[1]{\texttt{#1}}
14.76 \newcommand*\langdeffile[1]{%
14.77 <-user) \clearpage
14.78 \DocInput{#1}}
```

When a full index should be generated uncomment the line with `\EnableCrossrefs`. Beware, processing may take some time. Use `\DisableCrossrefs` when the index is ready.

```
14.79 % \EnableCrossrefs
14.80 \DisableCrossrefs
```

Include the change log.

```
14.81 <-user)\RecordChanges
```

The index should use the linenumbers of the code.

```
14.82 <-user)\CodelineIndex
```

Set everything in `\MacroFont` instead of `\AltMacroFont`

14.83 `\setcounter{StandardModuleDepth}{1}`

For the user guide we only want the description parts of all the files.

14.84 `<+user>\OnlyDescription`

Here starts the document

14.85 `\begin{document}`

14.86 `\DocInput{babel.dtx}`

All the language definition files.

14.87 `<+user>\clearpage`

14.88 `\langdeffile{esperanto.dtx}`

14.89 `\langdeffile{interlingua.dtx}`

14.90 `%`

14.91 `\langdeffile{dutch.dtx}`

14.92 `\langdeffile{english.dtx}`

14.93 `\langdeffile{germanb.dtx}`

14.94 `\langdeffile{ngermanb.dtx}`

14.95 `%`

14.96 `\langdeffile{breton.dtx}`

14.97 `\langdeffile{welsh.dtx}`

14.98 `\langdeffile{irish.dtx}`

14.99 `\langdeffile{scottish.dtx}`

14.100 `%`

14.101 `\langdeffile{greek.dtx}`

14.102 `%`

14.103 `\langdeffile{frenchb.dtx}`

14.104 `\langdeffile{italian.dtx}`

14.105 `\langdeffile{latin.dtx}`

14.106 `\langdeffile{portuges.dtx}`

14.107 `\langdeffile{spanish.dtx}`

14.108 `\langdeffile{catalan.dtx}`

14.109 `\langdeffile{galician.dtx}`

14.110 `\langdeffile{basque.dtx}`

14.111 `\langdeffile{romanian.dtx}`

14.112 `%`

14.113 `\langdeffile{danish.dtx}`

14.114 `\langdeffile{icelandic.dtx}`

14.115 `\langdeffile{norsk.dtx}`

14.116 `\langdeffile{swedish.dtx}`

14.117 `\langdeffile{samin.dtx}`

14.118 `%`

14.119 `\langdeffile{finnish.dtx}`

14.120 `\langdeffile{magyar.dtx}`

14.121 `\langdeffile{estonian.dtx}`

14.122 `%`

14.123 `\langdeffile{croatian.dtx}`

14.124 `\langdeffile{czech.dtx}`

14.125 `\langdeffile{polish.dtx}`

14.126 `\langdeffile{serbian.dtx}`

14.127 `\langdeffile{slovak.dtx}`

14.128 `\langdeffile{slovene.dtx}`

14.129 `\langdeffile{russianb.dtx}`

14.130 `\langdeffile{bulgarian.dtx}`



```

14.131 \langdeffile{ukraineb.dtx}
14.132 %
14.133 \langdeffile{lsorbian.dtx}
14.134 \langdeffile{usorbian.dtx}
14.135 \langdeffile{turkish.dtx}
14.136 %
14.137 \langdeffile{hebrew.dtx}
14.138 \DocInput{hebinp.dtx}
14.139 \DocInput{hebrew.fdd}
14.140 \DocInput{heb209.dtx}
14.141 \langdeffile{bahasa.dtx}
14.142 %\langdeffile{sanskrit.dtx}
14.143 %\langdeffile{kannada.dtx}
14.144 %\langdeffile{nagari.dtx}
14.145 %\langdeffile{tamil.dtx}
14.146 \clearpage
14.147 \DocInput{bbplain.dtx}

```

Finally print the index and change log (not for the user guide).

```

14.148 <!*user>
14.149 \clearpage
14.150 \def\filename{index}
14.151 \PrintIndex
14.152 \clearpage
14.153 \def\filename{changes}
14.154 \PrintChanges
14.155 </!user>
14.156 \end{document}
14.157 </driver>

```

## 15 Conclusion

A system of document options has been presented that enable the user of  $\text{\LaTeX}$  to adapt the standard document classes of  $\text{\LaTeX}$  to the language he or she prefers to use. These options offer the possibility of switching between languages in one document. The basic interface consists of using one option, which is the same for *all* standard document classes.

In some cases the language definition files provide macros that can be useful to plain  $\text{\TeX}$  users as well as to  $\text{\LaTeX}$  users. The `babel` system has been implemented so that it can be used by both groups of users.

## 16 Acknowledgements

I would like to thank all who volunteered as  $\beta$ -testers for their time. I would like to mention Julio Sanchez who supplied the option file for the Spanish language and Maurizio Codogno who supplied the option file for the Italian language. Michel Goossens supplied contributions for most of the other languages. Nico Poppelier helped polish the text of the documentation and supplied parts of the macros for the Dutch language. Paul Wackers and Werenfried Spit helped find and repair bugs.

During the further development of the `babel` system I received much help from Bernd Raichle, for which I am grateful.

## References

- [1] Donald E. Knuth, *The  $\text{\TeX}$ book*, Addison-Wesley, 1986.
- [2] Leslie Lamport,  *$\text{\LaTeX}$ , A document preparation System*, Addison-Wesley, 1986.
- [3] K.F. Treebus. *Tekstwijzer, een gids voor het grafisch verwerken van tekst*. SDU Uitgeverij ('s-Gravenhage, 1988). A Dutch book on layout design and typography.
- [4] Hubert Partl, *German  $\text{\TeX}$* , *TUGboat* 9 (1988) #1, p. 70–72.
- [5] Leslie Lamport, in:  $\text{\TeX}$ hax Digest, Volume 89, #13, 17 February 1989.
- [6] Johannes Braams, Victor Eijkhout and Nico Poppelier, *The development of national  $\text{\LaTeX}$  styles*, *TUGboat* 10 (1989) #3, p. 401–406.
- [7] Joachim Schrod, *International  $\text{\LaTeX}$  is ready to use*, *TUGboat* 11 (1990) #1, p. 87–90.

## 17 The Esperanto language

The file `esperanto.dtx`<sup>10</sup> defines all the language-specific macros for the Esperanto language.

For this language the character `^` is made active. In table 2 an overview is given of its purpose.

<code>^c</code>	gives <code>ĉ</code> with hyphenation in the rest of the word allowed, this works for <code>c, C, g, G, H, J, s, S, z, Z</code>
<code>^h</code>	prevents <code>ĥ</code> from becoming too tall
<code>^j</code>	gives <code>ĵ</code>
<code>^u</code>	gives <code>ŭ</code> , with hyphenation in the rest of the word allowed
<code>^U</code>	gives <code>Ŭ</code> , with hyphenation in the rest of the word allowed
<code>^ </code>	inserts a <code>\discretionary{-}{-}{-}</code>

Table 2: The functions of the active character for Esperanto.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
17.1 (*code)
17.2 \LdfInit{esperanto}\captionesperanto
```

When this file is read as an option, i.e. by the `\usepackage` command, `esperanto` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@esperanto` to see whether we have to do something here.

```
17.3 \ifx\l@esperanto\@undefined
17.4   \@nopatterns{Esperanto}
17.5   \adddialect\l@esperanto0\fi
```

The next step consists of defining commands to switch to the Esperanto language. The reason for this is that a user might want to switch back and forth between languages.

`\captionesperanto` The macro `\captionesperanto` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
17.6 \addto\captionesperanto{%
17.7   \def\prefacename{Anta\u{u}parolo}%
17.8   \def\refname{Cita\^{}j{oj}}%
17.9   \def\abstractname{Resumo}%
17.10  \def\bibname{Bibliografio}%
17.11  \def\chaptername{{\^{}C}apitro}%
17.12  \def\appendixname{Apendico}%
17.13  \def\contentsname{Enhavo}%
17.14  \def\listfigurename{Listo de figuroj}%
17.15  \def\listtablename{Listo de tabeloj}%
17.16  \def\indexname{Indekso}%
```

<sup>10</sup>The file described in this section has version number ? and was last revised on ?. A contribution was made by Ruiz-Altba Marti ([ruizaltb@cernvm.cern.ch](mailto:ruizaltb@cernvm.cern.ch)). Code from the file `esperant.sty` by Jörg Knappen ([knappen@vkpmzd.kph.uni-mainz.de](mailto:knappen@vkpmzd.kph.uni-mainz.de)) was included.

```

17.17 \def\figurename{Figuro}%
17.18 \def\tablename{Tabelo}%
17.19 \def\partname{Parto}%
17.20 \def\enclname{Aldono(j)}%
17.21 \def\ccname{Kopie al}%
17.22 \def\headtoname{Al}%
17.23 \def\pagename{Pa\^go}%
17.24 \def\subjectname{Temo}%
17.25 \def\seename{vidu}% a~u: vd.
17.26 \def\alsoname{vidu anka\u{u}}% a~u vd. anka\u{u}
17.27 \def\proofname{Pruvo}%
17.28 \def\glossaryname{Glosaro}%
17.29 }

```

`\dateesperanto` The macro `\dateesperanto` redefines the command `\today` to produce Esperanto dates.

```

17.30 \def\dateesperanto{%
17.31 \def\today{\number\day{--a}~de~\ifcase\month\or
17.32 januaro\or februaro\or marto\or aprilo\or majo\or junio\or
17.33 julio\or a\u{u}gusto\or septembro\or oktobro\or novembro\or
17.34 decembro\fi,\space \number\year}}

```

`\extrasesperanto` The macro `\extrasesperanto` performs all the extra definitions needed for the Esperanto language. The macro `\noextrasesperanto` is used to cancel the actions of `\extrasesperanto`.

For Esperanto the `^` character is made active. This is done once, later on its definition may vary.

```

17.35 \initiate@active@char{^}

```

Because the character `^` is used in math mode with quite a different purpose we need to add an extra level of evaluation to the definition of the active `^`. It checks whether math mode is active; if so the shorthand mechanism is bypassed by a direct call of `\normal@char^`.

```

17.36 \addto\extrasesperanto{\languageshorthands{esperanto}}
17.37 \addto\extrasesperanto{\bbl@activate{^}}
17.38 \addto\noextrasesperanto{\bbl@deactivate{^}}

```

In order to prevent problems with the active `^` we add a shorthand on system level which expands to a ‘normal `^`’.

```

17.39 \declare@shorthand{system}{^}{\csname normal@char\string^ \endcsname}

```

And here are the uses of the active `^`:

```

17.40 \declare@shorthand{esperanto}{^c}{\^c}\allowhyphens}
17.41 \declare@shorthand{esperanto}{^C}{\^C}\allowhyphens}
17.42 \declare@shorthand{esperanto}{^g}{\^g}\allowhyphens}
17.43 \declare@shorthand{esperanto}{^G}{\^G}\allowhyphens}
17.44 \declare@shorthand{esperanto}{^h}{h\llap{\^}}\allowhyphens}
17.45 \declare@shorthand{esperanto}{^H}{\^H}\allowhyphens}
17.46 \declare@shorthand{esperanto}{^j}{\^j}\allowhyphens}
17.47 \declare@shorthand{esperanto}{^J}{\^J}\allowhyphens}
17.48 \declare@shorthand{esperanto}{^s}{\^s}\allowhyphens}
17.49 \declare@shorthand{esperanto}{^S}{\^S}\allowhyphens}
17.50 \declare@shorthand{esperanto}{^u}{\u u\allowhyphens}

```

```

17.51 \declare@shorthand{esperanto}{~U}{\u U\allowhyphens}
17.52 \declare@shorthand{esperanto}{~|}{\discretionary{-}{~}{~}\allowhyphens}

```

`\Esper` In `esperant.sty` Jörg Knappen provides the macros `\esper` and `\Esper` that can be used instead of `\alph` and `\Alph`. These macros are available in this file as well.

Their definition takes place in two steps. First the toplevel.

```

17.53 \def\esper#1{\@esper{\@nameuse{c@#1}}}
17.54 \def\Esper#1{\@Esper{\@nameuse{c@#1}}}

```

Then the second level.

```

17.55 \def\@esper#1{%
17.56   \ifcase#1\or a\or b\or c\or \^c\or d\or e\or f\or g\or \^g\or
17.57     h\or h\llap{\^{} }\or i\or j\or \^j\or k\or l\or m\or n\or o\or
17.58     p\or s\or \^s\or t\or u\or \u{u}\or v\or z\else\@ctrerr\fi}
17.59 \def\@Esper#1{%
17.60   \ifcase#1\or A\or B\or C\or \^C\or D\or E\or F\or G\or \^G\or
17.61     H\or \^H\or I\or J\or \^J\or K\or L\or M\or N\or O\or
17.62     P\or S\or \^S\or T\or U\or \u{U}\or V\or Z\else\@ctrerr\fi}

```

`\hodiaun` In `esperant.sty` Jörg Knappen provides two alternative macros for `\today`, `\hodiaun` and `\hodiaun`. The second macro produces an accusative version of the date in Esperanto.

```

17.63 \addto\dateesperanto{\def\hodiaun{la \today}}
17.64 \def\hodiaun{la \number\day --an~de~\ifcase\month\or
17.65   januaro\or februaro\or marto\or aprilo\or majo\or junio\or
17.66   julio\or a\u{u}gusto\or septembro\or oktobro\or novembro\or
17.67   decembro\fi, \space \number\year}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

17.68 \ldf@finish{esperanto}
17.69 \code

```

## 18 The Interlingua language

The file `interlingua.dtx`<sup>11</sup> defines all the language definition macros for the Interlingua language. This file was contributed by Peter Kleiweg, kleiweg at let.rug.nl.

Interlingua is an auxiliary language, built from the common vocabulary of Spanish/Portuguese, English, Italian and French, with some normalisation of spelling. The grammar is very easy, more similar to English's than to neolatin languages. The site <http://www.interlingua.com> is mostly written in interlingua (as is <http://interlingua.altervista.org>), in case you want to read some sample of it.

You can have a look at the grammar at <http://www.geocities.com/linguablau>

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
18.1 (*code)
18.2 \LdfInit{interlingua}{captionsinterlingua}
```

When this file is read as an option, i.e. by the `\usepackage` command, `interlingua` could be an 'unknown' language in which case we have to make it known. So we check for the existence of `\l@interlingua` to see whether we have to do something here.

```
18.3 \ifx\undefined\l@interlingua
18.4 \nopatterns{Interlingua}
18.5 \adddialect\l@interlingua0\fi
```

The next step consists of defining commands to switch to (and from) the Interlingua language.

`\interlinguahyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

```
18.6 \providehyphenmins{interlingua}{\tw@\tw@}
```

`\captionsinterlingua` The macro `\captionsinterlingua` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
18.7 \def\captionsinterlingua{%
18.8 \def\prefacename{Prefacio}%
18.9 \def\refname{Referentias}%
18.10 \def\abstractname{Summario}%
18.11 \def\bibname{Bibliographia}%
18.12 \def\chaptername{Capitulo}%
18.13 \def\appendixname{Appendice}%
18.14 \def\contentsname{Contento}%
18.15 \def\listfigurename{Lista de figuras}%
18.16 \def\listtablename{Lista de tabellas}%
18.17 \def\indexname{Indice}%
18.18 \def\figurename{Figura}%
18.19 \def\tablename{Tabella}%
18.20 \def\partname{Parte}%
18.21 \def\enclname{Incluso}%
18.22 \def\ccname{Copia}%
18.23 \def\headtoname{A}%
```

---

<sup>11</sup>The file described in this section has version number v1.6 and was last revised on 2005/03/30.

```

18.24 \def\pagename{Pagina}%
18.25 \def\seename{vide}%
18.26 \def\alsoname{vide etiam}%
18.27 \def\proofname{Prova}%
18.28 \def\glossaryname{Glossario}%
18.29 }

```

`\dateinterlingua` The macro `\dateinterlingua` redefines the command `\today` to produce Interlingua dates.

```

18.30 \def\dateinterlingua{%
18.31 \def\today{le~\number\day\space de \ifcase\month\or
18.32     janeiro\or february\or martio\or april\or maio\or junio\or
18.33     julio\or agosto\or septembre\or octobre\or novembre\or
18.34     decembre\fi
18.35 \space \number\year}}

```

`\extrasinterlingua` The macro `\extrasinterlingua` will perform all the extra definitions needed for the Interlingua language. The macro `\noextrasinterlingua` is used to cancel the actions of `\extrasinterlingua`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```

18.36 \addto\extrasinterlingua{}
18.37 \addto\noextrasinterlingua{}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

18.38 \ldf@finish{interlingua}
18.39 </code>

```

## 19 The Dutch language

The file `dutch.dtx`<sup>12</sup> defines all the language-specific macros for the Dutch language and the ‘Afrikaans’ version<sup>13</sup> of it.

For this language the character " is made active. In table 3 an overview is given of its purpose. One of the reasons for this is that in the Dutch language a word with a dieresis can be hyphenated just before the letter with the umlaut, but the dieresis has to disappear if the word is broken between the previous letter and the accented letter.

In [3] the quoting conventions for the Dutch language are discussed. The preferred convention is the single-quote Anglo-American convention, i.e. ‘This is a quote’. An alternative is the slightly old-fashioned Dutch method with initial double quotes lowered to the baseline, „This is a quote”, which should be typed as "‘This is a quote’”.

"a	\ "a which hyphenates as -a; also implemented for the other letters.
"y	puts a negative kern between i and j
"Y	puts a negative kern between I and J
"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
"~	to produce a hyphencharacter without the following \discretionary{}{}{}.
" "	to produce an invisible ‘breakpoint’.
"‘	lowered double left quotes (see example below).
"’	normal double right quotes.
\-	like the old \-, but allowing hyphenation in the rest of the word.

Table 3: The extra definitions made by `dutch.ldf`

```

19.1 % \changes{dutch-3.8a}{1996/10/04}{made check dependant on
19.2 %   \cs{CurrentOption}}
19.3 %
19.4 %   The macro |\LdfInit| takes care of preventing that this file is
19.5 %   loaded more than once, checking the category code of the
19.6 %   \texttt{@} sign, etc.
19.7 % \changes{dutch-3.8a}{1996/10/30}{Now use \cs{LdfInit} to perform
19.8 %   initial checks}
19.9 %   \begin{macrocode}
19.10 < *code>
19.11 \LdfInit\CurrentOption{captions\CurrentOption}

```

When this file is read as an option, i.e. by the `\usepackage` command, `dutch` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@dutch` or `\l@afrikaans` to see whether we have to do something here.

<sup>12</sup>The file described in this section has version number v3.8i, and was last revised on 2005/03/30.

<sup>13</sup>contributed by Stoffel Lombard (lombc@b31pc87.up.ac.za)



First we try to establish with which option we are being processed.

```

19.12 \def\bbl@tempa{dutch}
19.13 \ifx\CurrentOption\bbl@tempa

    If it is dutch then we first check if the Dutch hyphenation patterns wer loaded,
19.14 \ifx\l@dutch\undefined
    if no we issue a warning and make dutch a ‘dialect’ of either the hyphenation
    patterns that were loaded in slot 0 or of ‘afrikaans’ when it is available.
19.15 \@nopatterns{Dutch}
19.16 \ifx\l@afrikaans\undefined
19.17 \adddialect\l@dutch0
19.18 \else
19.19 \adddialect\l@dutch\l@afrikaans
19.20 \fi
19.21 \fi

```

The next step consists of defining commands to switch to (and from) the Dutch language.

`\captionsdutch` The macro `\captionsdutch` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```

19.22 \begingroup
19.23 \catcode'\active
19.24 \def\x{\endgroup
19.25 \def\captionsdutch{%
19.26 \def\prefacename{Voorwoord}%
19.27 \def\refname{Referenties}%
19.28 \def\abstractname{Samenvatting}%
19.29 \def\bibname{Bibliografie}%
19.30 \def\chaptername{Hoofdstuk}%
19.31 \def\appendixname{B"ylage}%
19.32 \def\contentsname{Inhoudsopgave}%
19.33 \def\listfigurename{L"yst van figuren}%
19.34 \def\listtablename{L"yst van tabellen}%
19.35 \def\indexname{Index}%
19.36 \def\figurename{Figuur}%
19.37 \def\tablename{Tabel}%
19.38 \def\partname{Deel}%
19.39 \def\enclname{B"ylage(n)}%
19.40 \def\ccname{cc}%
19.41 \def\headtoname{Aan}%
19.42 \def\pagename{Pagina}%
19.43 \def\seename{zie}%
19.44 \def\alsoname{zie ook}%
19.45 \def\proofname{Bew"ys}%
19.46 \def\glossaryname{Verklarende Woordenl"yst}%
19.47 }
19.48 }\x

```

`\datedutch` The macro `\datedutch` redefines the command `\today` to produce Dutch dates.

```

19.49 \def\datedutch{%
19.50 \def\today{\number\day~\ifcase\month\or

```

```

19.51      januari\or februari\or maart\or april\or mei\or juni\or
19.52      juli\or augustus\or september\or oktober\or november\or
19.53      december\fi
19.54      \space \number\year}}

```

When the option with which this file is being process was not `dutch` we assume it was `afrikaans`. We perform a similar check on the availability of the hyphenation patterns.

```

19.55 \else
19.56   \ifx\l@afrikaans\undefined
19.57     \@nopatterns{Afrikaans}
19.58   \ifx\l@dutch\undefined
19.59     \adddialect\l@afrikaans0
19.60   \else
19.61     \adddialect\l@afrikaans\l@dutch
19.62   \fi
19.63 \fi

```

`\caption safrikaans` Now is the time to define the words for ‘Afrikaans’.

```

19.64 \def\caption safrikaans{%
19.65   \def\prefacename{Voorwoord}%
19.66   \def\refname{Verwysings}%
19.67   \def\abstractname{Samevatting}%
19.68   \def\bibname{Bibliografie}%
19.69   \def\chaptername{Hoofstuk}%
19.70   \def\appendixname{Bylae}%
19.71   \def\contentsname{Inhoudsopgawe}%
19.72   \def\listfigurename{Lys van figure}%
19.73   \def\listtablename{Lys van tabelle}%
19.74   \def\indexname{Inhoud}%
19.75   \def\figurename{Figuur}%
19.76   \def\tablename{Tabel}%
19.77   \def\partname{Deel}%
19.78   \def\enclname{Bylae(n)}%
19.79   \def\ccname{a. a.}%
19.80   \def\headtoname{Aan}%
19.81   \def\pagename{Bladsy}%
19.82   \def\seename{sien}%
19.83   \def\alsoname{sien ook}%
19.84   \def\proofname{Bewys}%
19.85 }

```

`\date afrikaans` Here is the ‘Afrikaans’ version of the date macro.

```

19.86 \def\date afrikaans{%
19.87   \def\today{\number\day~\ifcase\month\or
19.88     Januarie\or Februarie\or Maart\or April\or Mei\or Junie\or
19.89     Julie\or Augustus\or September\or Oktober\or November\or
19.90     Desember\fi
19.91     \space \number\year}}
19.92 \fi

```

`\extrasdutch` The macros `\extrasdutch` and `\caption safrikaans` will perform all the extra definitions needed for the Dutch language. The macros `\noextrasdutch`  
`\noextrasdutch`  
`\noextrasdutch`

and `noextrasafrikaans` is used to cancel the actions of `\extrasdutch` and `\captionsafrikaans`.

For Dutch the " character is made active. This is done once, later on its definition may vary. Other languages in the same document may also use the " character for shorthands; we specify that the dutch group of shorthands should be used.

19.93 `\initiate@active@char{"}`

Both version of the language use the same set of shorthand definitions although the 'ij' is not used in Afrikaans.

19.94 `\@namedef{extras\CurrentOption}{\languageshorthands{dutch}}`  
 19.95 `\expandafter\addto\csname extras\CurrentOption\endcsname{%`  
 19.96 `\bbl@activate{"}`

The 'umlaut' character should be positioned lower on *all* vowels in Dutch texts.

19.97 `\expandafter\addto\csname extras\CurrentOption\endcsname{%`  
 19.98 `\umlautlow\umlautelow}`  
 19.99 `\@namedef{noextras\CurrentOption}{%`  
 19.100 `\umlauthigh}`

`\dutchhyphenmins` The dutch hyphenation patterns can be used with `\lefthyphenmin` set to 2 and `\afrikaanshyphenmins` `\righthyphenmin` set to 3.

19.101 `\providehyphenmins{\CurrentOption}{\tw@\thr@@}`

`\@trema` In the Dutch language vowels with a trema are treated specially. If a hyphenation occurs before a vowel-plus-trema, the trema should disappear. To be able to do this we could first define the hyphenation break behaviour for the five vowels, both lowercase and uppercase, in terms of `\discretionary`. But this results in a large `\if-construct` in the definition of the active ". Because we think a user should not use " when he really means something like '' we chose not to distinguish between vowels and consonants. Therefore we have one macro `\@trema` which specifies the hyphenation break behaviour for all letters.

19.102 `\def\@trema#1{\allowhyphens\discretionary{-}{#1}{\{"#1}\allowhyphens}`

Now we can define the doublequote macros: the tremas,

19.103 `\declare@shorthand{dutch}{a}{\textormath{\@trema a}{\ddot a}}`  
 19.104 `\declare@shorthand{dutch}{e}{\textormath{\@trema e}{\ddot e}}`  
 19.105 `\declare@shorthand{dutch}{i}{\textormath`  
 19.106 `{\allowhyphens\discretionary{-}{i}{\{"i}\allowhyphens}%`  
 19.107 `{\ddot \imath}}`  
 19.108 `\declare@shorthand{dutch}{o}{\textormath{\@trema o}{\ddot o}}`  
 19.109 `\declare@shorthand{dutch}{u}{\textormath{\@trema u}{\ddot u}}`

dutch quotes,

19.110 `\declare@shorthand{dutch}{"}{%`  
 19.111 `\textormath{\quotedblbase}{\mbox{\quotedblbase}}}`  
 19.112 `\declare@shorthand{dutch}{"'}{%`  
 19.113 `\textormath{\textquotedblright}{\mbox{\textquotedblright}}}`

and some additional commands:

19.114 `\declare@shorthand{dutch}{"-}{\nobreak-\bbl@allowhyphens}`  
 19.115 `\declare@shorthand{dutch}{"~}{\textormath{\leavevmode\hbox{-}}{-}}`

```

19.116 \declare@shorthand{dutch}{|}{%
19.117   \textormath{\discretionary{-}{\kern.03em}}{}}
19.118 \declare@shorthand{dutch}{"}{\hskip\z@skip}
19.119 \declare@shorthand{dutch}{y}{\textormath{\ij}}{\ddot y}
19.120 \declare@shorthand{dutch}{Y}{\textormath{\IJ}}{\ddot Y}

```

To enable hyphenation in two words, written together but separated by a slash, as in ‘uitdrukking/opmerking’ we define the command “/”.

```

19.121 \declare@shorthand{dutch}{/}{\textormath
19.122   {\bbl@allowhyphens\discretionary{/}{/}{\bbl@allowhyphens}}}

```

- \- All that is left now is the redefinition of \-. The new version of \- should indicate an extra hyphenation position, while allowing other hyphenation positions to be generated automatically. The standard behaviour of T<sub>E</sub>X in this respect is very unfortunate for languages such as Dutch and German, where long compound words are quite normal and all one needs is a means to indicate an extra hyphenation position on top of the ones that T<sub>E</sub>X can generate from the hyphenation patterns.

```

19.123 \expandafter\addto\csname extras\CurrentOption\endcsname{%
19.124   \babel@save\-\}
19.125 \expandafter\addto\csname extras\CurrentOption\endcsname{%
19.126   \def\-\{\bbl@allowhyphens\discretionary{-}{-}{\bbl@allowhyphens}}

```

The macro \ldf@finish takes care of looking for a configuration file, setting the main language to be switched on at \begin{document} and resetting the category code of @ to its original value.

```

19.127 \ldf@finish\CurrentOption
19.128 \code

```

## 20 The English language

The file `english.dtx`<sup>14</sup> defines all the language definition macros for the English language as well as for the American and Australian version of this language. For the Australian version the British hyphenation patterns will be used, if available, for the Canadian variant the American patterns are selected.

For this language currently no special definitions are needed or available.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

20.1 `(*code)`

20.2 `\LdfInit\CurrentOption{date\CurrentOption}`

When this file is read as an option, i.e. by the `\usepackage` command, `english` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@english` to see whether we have to do something here.

We allow for the british english patterns to be loaded as either ‘british’, or ‘UKenglish’. When neither of those is known we try to define `\l@english` as an alias for `\l@american` or `\l@USenglish`.

```
20.3 \ifx\l@english\@undefined
20.4   \ifx\l@UKenglish\@undefined
20.5     \ifx\l@british\@undefined
20.6       \ifx\l@american\@undefined
20.7         \ifx\l@USenglish\@undefined
20.8           \ifx\l@canadian\@undefined
20.9             \ifx\l@australian\@undefined
20.10              \ifx\l@newzealand\@undefined
20.11                \nopatterns{English}
20.12                \adddialect\l@english0
20.13              \else
20.14                \let\l@english\l@newzealand
20.15              \fi
20.16            \else
20.17              \let\l@english\l@australian
20.18            \fi
20.19          \else
20.20            \let\l@english\l@canadian
20.21          \fi
20.22        \else
20.23          \let\l@english\l@USenglish
20.24        \fi
20.25      \else
20.26        \let\l@english\l@american
20.27      \fi
20.28    \else
20.29      \let\l@english\l@british
20.30    \fi
20.31  \else
20.32    \let\l@english\l@UKenglish
20.33  \fi
20.34 \fi
```

---

<sup>14</sup>The file described in this section has version number v3.3o and was last revised on 2005/03/30.

Because we allow ‘british’ to be used as the babel option we need to make sure that it will be recognised by `\selectlanguage`. In the code above we have made sure that `\l@english` was defined. Now we want to make sure that `\l@british` and `\l@UKenglish` are defined as well. When either of them is we make them equal to each other, when neither is we fall back to the default, `\l@english`.

```
20.35 \ifx\l@british\@undefined
20.36   \ifx\l@UKenglish\@undefined
20.37     \addialect\l@british\l@english
20.38     \addialect\l@UKenglish\l@english
20.39   \else
20.40     \let\l@british\l@UKenglish
20.41   \fi
20.42 \else
20.43   \let\l@UKenglish\l@british
20.44 \fi
```

‘American’ is a version of ‘English’ which can have its own hyphenation patterns. The default english patterns are in fact for american english. We allow for the patterns to be loaded as ‘english’ ‘american’ or ‘USenglish’.

```
20.45 \ifx\l@american\@undefined
20.46   \ifx\l@USenglish\@undefined
```

When the patterns are not known as ‘american’ or ‘USenglish’ we add a “dialect”.

```
20.47     \addialect\l@american\l@english
20.48   \else
20.49     \let\l@american\l@USenglish
20.50   \fi
20.51 \else
```

Make sure that USenglish is known, even if the patterns were loaded as ‘american’.

```
20.52   \ifx\l@USenglish\@undefined
20.53     \let\l@USenglish\l@american
20.54   \fi
20.55 \fi
```

‘Canadian’ english spelling is a hybrid of British and American spelling. Although so far no special ‘translations’ have been reported we allow this file to be loaded by the option `candian` as well.

```
20.56 \ifx\l@canadian\@undefined
20.57   \addialect\l@canadian\l@american
20.58 \fi
```

‘Australian’ and ‘New Zealand’ english spelling seem to be the same as British spelling. Although so far no special ‘translations’ have been reported we allow this file to be loaded by the options `australian` and `newzealand` as well.

```
20.59 \ifx\l@australian\@undefined
20.60   \addialect\l@australian\l@british
20.61 \fi
20.62 \ifx\l@newzealand\@undefined
20.63   \addialect\l@newzealand\l@british
20.64 \fi
```

`\englishhyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

20.65 `\providehyphenmins{\CurrentOption}{\tw@\thr@@}`

The next step consists of defining commands to switch to (and from) the English language.

`\captionsenglish` The macro `\captionsenglish` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```
20.66 \@namedef{captions\CurrentOption}{%
20.67   \def\prefacename{Preface}%
20.68   \def\refname{References}%
20.69   \def\abstractname{Abstract}%
20.70   \def\bibName{Bibliography}%
20.71   \def\chaptername{Chapter}%
20.72   \def\appendixname{Appendix}%
20.73   \def\contentsname{Contents}%
20.74   \def\listfigurename{List of Figures}%
20.75   \def\listtablename{List of Tables}%
20.76   \def\indexname{Index}%
20.77   \def\figurename{Figure}%
20.78   \def\tablename{Table}%
20.79   \def\partname{Part}%
20.80   \def\enclname{encl}%
20.81   \def\ccname{cc}%
20.82   \def\headtoname{To}%
20.83   \def\pagename{Page}%
20.84   \def\seename{see}%
20.85   \def\alsoname{see also}%
20.86   \def\proofname{Proof}%
20.87   \def\glossaryname{Glossary}%
20.88 }
```

`\dateenglish` In order to define `\today` correctly we need to know whether it should be ‘english’, ‘australian’, or ‘american’. We can find this out by checking the value of `\CurrentOption`.

```
20.89 \def\bbl@tempa{british}
20.90 \ifx\CurrentOption\bbl@tempa\def\bbl@tempb{UK}\fi
20.91 \def\bbl@tempa{UKenglish}
20.92 \ifx\CurrentOption\bbl@tempa\def\bbl@tempb{UK}\fi
20.93 \def\bbl@tempa{american}
20.94 \ifx\CurrentOption\bbl@tempa\def\bbl@tempb{US}\fi
20.95 \def\bbl@tempa{USenglish}
20.96 \ifx\CurrentOption\bbl@tempa\def\bbl@tempb{US}\fi
20.97 \def\bbl@tempa{canadian}
20.98 \ifx\CurrentOption\bbl@tempa\def\bbl@tempb{US}\fi
20.99 \def\bbl@tempa{australian}
20.100 \ifx\CurrentOption\bbl@tempa\def\bbl@tempb{AU}\fi
20.101 \def\bbl@tempa{newzealand}
20.102 \ifx\CurrentOption\bbl@tempa\def\bbl@tempb{AU}\fi
```

The macro `\dateenglish` redefines the command `\today` to produce English dates.

```
20.103 \def\bbl@tempa{UK}
20.104 \ifx\bbl@tempa\bbl@tempb
20.105   \@namedef{date\CurrentOption}{%
```

```

20.106 \def\today{\ifcase\day\or
20.107 1st\or 2nd\or 3rd\or 4th\or 5th\or
20.108 6th\or 7th\or 8th\or 9th\or 10th\or
20.109 11th\or 12th\or 13th\or 14th\or 15th\or
20.110 16th\or 17th\or 18th\or 19th\or 20th\or
20.111 21st\or 22nd\or 23rd\or 24th\or 25th\or
20.112 26th\or 27th\or 28th\or 29th\or 30th\or
20.113 31st\fi~\ifcase\month\or
20.114 January\or February\or March\or April\or May\or June\or
20.115 July\or August\or September\or October\or November\or
20.116 December\fi\space \number\year}}

```

`\dateaustralian` Now, test for ‘australian’ or ‘american’.

```

20.117 \else
      The macro \dateaustralian redefines the command \today to produce Aus-
      tralian resp. New Zealand dates.
20.118 \def\bbl@tempa{AU}
20.119 \ifx\bbl@tempa\bbl@tempb
20.120 \@namedef{date\CurrentOption}{%
20.121 \def\today{\number\day~\ifcase\month\or
20.122 January\or February\or March\or April\or May\or June\or
20.123 July\or August\or September\or October\or November\or
20.124 December\fi\space \number\year}}

```

`\dateamerican` The macro `\dateamerican` redefines the command `\today` to produce American dates.

```

20.125 \else
20.126 \@namedef{date\CurrentOption}{%
20.127 \def\today{\ifcase\month\or
20.128 January\or February\or March\or April\or May\or June\or
20.129 July\or August\or September\or October\or November\or
20.130 December\fi\space\number\day, \number\year}}
20.131 \fi
20.132 \fi

```

`\extrasenglish` The macro `\extrasenglish` will perform all the extra definitions needed for the English language. The macro `\noextrasenglish` is used to cancel the actions of `\extrasenglish`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```

20.133 \@namedef{extras\CurrentOption}{}
20.134 \@namedef{noextras\CurrentOption}{}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

20.135 \ldf@finish\CurrentOption
20.136 \code

```



## 21 The German language

The file `germanb.dtx`<sup>15</sup> defines all the language definition macros for the German language as well as for the Austrian dialect of this language<sup>16</sup>.

For this language the character " is made active. In table 4 an overview is given of its purpose. One of the reasons for this is that in the German language some character combinations change when a word is broken between the combination. Also the vertical placement of the umlaut can be controlled this way. The quotes

"a	\a, also implemented for the other lowercase and uppercase vowels.
"s	to produce the German ß (like \ss{ }).
"z	to produce the German ß (like \ss{ }).
"ck	for ck to be hyphenated as k-k.
"ff	for ff to be hyphenated as ff-f, this is also implemented for l, m, n, p, r and t
"S	for SS to be \uppercase{"s}.
"Z	for SZ to be \uppercase{"z}.
"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
" "	like "-", but producing no hyphen sign (for compound words with hyphen, e.g. x-"y).
"~	for a compound word mark without a breakpoint.
"=	for a compound word mark with a breakpoint, allowing hyphenation in the composing words.
"‘	for German left double quotes (looks like „).
"’	for German right double quotes.
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).

Table 4: The extra definitions made by `german.ldf`

in table 4 can also be typeset by using the commands in table 5.

When this file was read through the option `germanb` we make it behave as if `german` was specified.

```

21.1 \def\bbl@tempa{germanb}
21.2 \ifx\CurrentOption\bbl@tempa
21.3   \def\CurrentOption{german}
21.4 \fi

```

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```

21.5 (*code)
21.6 \LdfInit\CurrentOption{captions\CurrentOption}

```

When this file is read as an option, i.e., by the `\usepackage` command, `german` will be an ‘unknown’ language, so we have to make it known. So we check for the

<sup>15</sup>The file described in this section has version number v2.6k and was last revised on 2004/02/19.

<sup>16</sup>This file is a re-implementation of Hubert Partl’s `german.sty` version 2.5b, see [4].

<code>\glqq</code>	for German left double quotes (looks like „).
<code>\grqq</code>	for German right double quotes (looks like “).
<code>\glq</code>	for German left single quotes (looks like ,).
<code>\grq</code>	for German right single quotes (looks like ‘).
<code>\flqq</code>	for French left double quotes (similar to <<).
<code>\frqq</code>	for French right double quotes (similar to >>).
<code>\flq</code>	for (French) left single quotes (similar to <).
<code>\frq</code>	for (French) right single quotes (similar to >).
<code>\dq</code>	the original quotes character (").

Table 5: More commands which produce quotes, defined by `german.ldf`

existence of `\l@german` to see whether we have to do something here.

```

21.7 \ifx\l@german\@undefined
21.8   \@nopatterns{German}
21.9   \adddialect\l@german0
21.10 \fi

```

For the Austrian version of these definitions we just add another language.

```

21.11 \adddialect\l@austrian\l@german

```

The next step consists of defining commands to switch to (and from) the German language.

`\captionsgerman` Either the macro `\captionsgerman` or the macro `\captionsaustrian` will define  
`\captionsaustrian` all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```

21.12 \@namedef{captions\CurrentOption}{%
21.13   \def\prefacename{Vorwort}%
21.14   \def\refname{Literatur}%
21.15   \def\abstractname{Zusammenfassung}%
21.16   \def\bibname{Literaturverzeichnis}%
21.17   \def\chaptername{Kapitel}%
21.18   \def\appendixname{Anhang}%
21.19   \def\contentsname{Inhaltsverzeichnis}%      % oder nur: Inhalt
21.20   \def\listfigurename{Abbildungsverzeichnis}%
21.21   \def\listtablename{Tabellenverzeichnis}%
21.22   \def\indexname{Index}%
21.23   \def\figurename{Abbildung}%
21.24   \def\tablename{Tabelle}%                  % oder: Tafel
21.25   \def\partname{Teil}%
21.26   \def\enclname{Anlage(n)}%                 % oder: Beilage(n)
21.27   \def\ccname{Verteiler}%                   % oder: Kopien an
21.28   \def\headtoname{An}%
21.29   \def\pagename{Seite}%
21.30   \def\seename{siehe}%
21.31   \def\alsoname{siehe auch}%
21.32   \def\proofname{Beweis}%
21.33   \def\glossaryname{Glossar}%
21.34 }

```

`\dategerman` The macro `\dategerman` redefines the command `\today` to produce German dates.

```

21.35 \def\month@german{\ifcase\month\or
21.36   Januar\or Februar\or M"arz\or April\or Mai\or Juni\or
21.37   Juli\or August\or September\or Oktober\or November\or Dezember\fi}
21.38 \def\dategerman{\def\today{\number\day.\~\month@german
21.39   \space\number\year}}

```

`\dateaustrian` The macro `\dateaustrian` redefines the command `\today` to produce Austrian version of the German dates.

```

21.40 \def\dateaustrian{\def\today{\number\day.\~\ifnum1=\month
21.41   J"anner\else \month@german\fi \space\number\year}}

```

`\extrasgerman` Either the macro `\extrasgerman` or the macros `\extrasaustrian` will perform all the extra definitions needed for the German language. The macro `\noextrasgerman` `\noextrasaustrian` is used to cancel the actions of `\extrasgerman`. For German (as well as for Dutch) the " character is made active. This is done once, later on its definition may vary.

```

21.42 \initiate@active@char{"}
21.43 \@namedef{extras\CurrentOption}{%
21.44   \languageshortands{german}}
21.45 \expandafter\addto\csname extras\CurrentOption\endcsname{%
21.46   \bbl@activate{}}

```

Don't forget to turn the shortands off again.

```

21.47 \addto\noextrasgerman{\bbl@deactivate{}}

```

In order for T<sub>E</sub>X to be able to hyphenate German words which contain ‘ß’ (in the OT1 position  $\sim$ Y) we have to give the character a nonzero `\lccode` (see Appendix H, the T<sub>E</sub>Xbook).

```

21.48 \expandafter\addto\csname extras\CurrentOption\endcsname{%
21.49   \babel@savevariable{\lccode25}%
21.50   \lccode25=25}

```

The umlaut accent macro `\` is changed to lower the umlaut dots. The redefinition is done with the help of `\umlautlow`.

```

21.51 \expandafter\addto\csname extras\CurrentOption\endcsname{%
21.52   \babel@save"\umlautlow}
21.53 \@namedef{noextras\CurrentOption}{\umlauthigh}

```

The german hyphenation patterns can be used with `\lefthyphenmin` and `\righthyphenmin` set to 2.

```

21.54 \providehyphenmins{\CurrentOption}{\tw@\tw@}

```

For German texts we need to make sure that `\frenchspacing` is turned on.

```

21.55 \expandafter\addto\csname extras\CurrentOption\endcsname{%
21.56   \bbl@frenchspacing}
21.57 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
21.58   \bbl@nonfrenchspacing}

```

The code above is necessary because we need an extra active character. This character is then used as indicated in table 4.

To be able to define the function of " , we first define a couple of ‘support’ macros.

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\"` can now be typed as `"`.

```
21.59 \begingroup \catcode'\ "12
21.60 \def\x{\endgroup
21.61 \def\@SS{\mathchar"7019 }
21.62 \def\dq{"}}
21.63 \x
```

Now we can define the doublequote macros: the umlauts,

```
21.64 \declare@shorthand{german}{a}{\textormath{\{a\}\allowhyphens}{\ddot a}}
21.65 \declare@shorthand{german}{o}{\textormath{\{o\}\allowhyphens}{\ddot o}}
21.66 \declare@shorthand{german}{u}{\textormath{\{u\}\allowhyphens}{\ddot u}}
21.67 \declare@shorthand{german}{A}{\textormath{\{A\}\allowhyphens}{\ddot A}}
21.68 \declare@shorthand{german}{O}{\textormath{\{O\}\allowhyphens}{\ddot O}}
21.69 \declare@shorthand{german}{U}{\textormath{\{U\}\allowhyphens}{\ddot U}}
```

tremas,

```
21.70 \declare@shorthand{german}{e}{\textormath{\{e\}{\ddot e}}
21.71 \declare@shorthand{german}{E}{\textormath{\{E\}{\ddot E}}
21.72 \declare@shorthand{german}{i}{\textormath{\{i\}%
21.73 \ddot\imath}}
21.74 \declare@shorthand{german}{I}{\textormath{\{I\}{\ddot I}}
```

german es-zet (sharp s),

```
21.75 \declare@shorthand{german}{s}{\textormath{\ss}{\@SS{}}}
21.76 \declare@shorthand{german}{S}{\SS}
21.77 \declare@shorthand{german}{z}{\textormath{\ss}{\@SS{}}}
21.78 \declare@shorthand{german}{Z}{\SZ}
```

german and french quotes,

```
21.79 \declare@shorthand{german}{"'}{\glqq}
21.80 \declare@shorthand{german}{"'}{\grqq}
21.81 \declare@shorthand{german}{"<}{\flqq}
21.82 \declare@shorthand{german}{">}{\frqq}
```

discretionary commands

```
21.83 \declare@shorthand{german}{c}{\textormath{\bbl@disc ck}{c}}
21.84 \declare@shorthand{german}{C}{\textormath{\bbl@disc CK}{C}}
21.85 \declare@shorthand{german}{F}{\textormath{\bbl@disc F{FF}}{F}}
21.86 \declare@shorthand{german}{l}{\textormath{\bbl@disc l{ll}}{l}}
21.87 \declare@shorthand{german}{L}{\textormath{\bbl@disc L{LL}}{L}}
21.88 \declare@shorthand{german}{m}{\textormath{\bbl@disc m{mm}}{m}}
21.89 \declare@shorthand{german}{M}{\textormath{\bbl@disc M{MM}}{M}}
21.90 \declare@shorthand{german}{n}{\textormath{\bbl@disc n{nn}}{n}}
21.91 \declare@shorthand{german}{N}{\textormath{\bbl@disc N{NN}}{N}}
21.92 \declare@shorthand{german}{p}{\textormath{\bbl@disc p{pp}}{p}}
21.93 \declare@shorthand{german}{P}{\textormath{\bbl@disc P{PP}}{P}}
21.94 \declare@shorthand{german}{r}{\textormath{\bbl@disc r{rr}}{r}}
21.95 \declare@shorthand{german}{R}{\textormath{\bbl@disc R{RR}}{R}}
21.96 \declare@shorthand{german}{t}{\textormath{\bbl@disc t{tt}}{t}}
21.97 \declare@shorthand{german}{T}{\textormath{\bbl@disc T{TT}}{T}}
```

We need to treat "f a bit differently in order to preserve the ff-ligature.

```
21.98 \declare@shorthand{german}{f}{\textormath{\bbl@discff}{f}}
21.99 \def\bbl@discff{\penalty\@M
21.100 \afterassignment\bbl@insertff \let\bbl@nextff= }
```

```

21.101 \def\bbl@insertff{%
21.102   \if f\bbl@nextff
21.103     \expandafter\@firstoftwo\else\expandafter\@secondoftwo\fi
21.104   {\relax\discretionary{ff-}{f}{ff}\allowhyphens}{f\bbl@nextff}}
21.105 \let\bbl@nextff=f

```

and some additional commands:

```

21.106 \declare@shorthand{german}{"-}{\nobreak\-\bbl@allowhyphens}
21.107 \declare@shorthand{german}{"}{|}{%
21.108   \textormath{\penalty\@M\discretionary{-}{-}{\kern.03em}%
21.109     \allowhyphens}{-}}
21.110 \declare@shorthand{german}{""}{\hskip\z@skip}
21.111 \declare@shorthand{german}{"}{~}{\textormath{\leavevmode\hbox{-}}{-}}
21.112 \declare@shorthand{german}{"}{=}{\penalty\@M-\hskip\z@skip}

```

`\mdqon` All that's left to do now is to define a couple of commands for reasons of compatibility with `german.sty`.

```

\ck
21.113 \def\mdqon{\shorthandon{"}}
21.114 \def\mdqoff{\shorthandoff{"}}
21.115 \def\ck{\allowhyphens\discretionary{k-}{k}{ck}\allowhyphens}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

21.116 \ldf@finish\CurrentOption
21.117 \code

```

## 22 The German language – new orthography

The file `ngermanb.dtx`<sup>17</sup> defines all the language definition macros for the German language with the ‘new orthography’ introduced in August 1998. This includes also the Austrian dialect of this language.

As with the ‘traditional’ German orthography, the character " is made active, and the commands in table 4 can be used, except for "ck and "ff etc., which are no longer required.

The internal language names are `ngerman` and `naustrian`.

When this file was read through the option `ngermanb` we make it behave as if `ngerman` was specified.

```
22.1 \def\bbl@tempa{ngermanb}
22.2 \ifx\CurrentOption\bbl@tempa
22.3   \def\CurrentOption{ngerman}
22.4 \fi
```

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
22.5 (*code)
22.6 \LdfInit\CurrentOption{captions\CurrentOption}
```

When this file is read as an option, i.e., by the `\usepackage` command, `ngerman` will be an ‘unknown’ language, so we have to make it known. So we check for the existence of `\l@ngerman` to see whether we have to do something here.

```
22.7 \ifx\l@ngerman\@undefined
22.8   \@nopatterns{ngerman}
22.9   \adddialect\l@ngerman0
22.10 \fi
```

For the Austrian version of these definitions we just add another language.

```
22.11 \adddialect\l@naustrian\l@ngerman
```

The next step consists of defining commands to switch to (and from) the German language.

`\captionsngerman` Either the macro `\captionssngerman` or the macro `\captionsnaustrian` will define all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```
22.12 \@namedef{captions\CurrentOption}{%
22.13   \def\prefacename{Vorwort}%
22.14   \def\refname{Literatur}%
22.15   \def\abstractname{Zusammenfassung}%
22.16   \def\bibname{Literaturverzeichnis}%
22.17   \def\chaptername{Kapitel}%
22.18   \def\appendixname{Anhang}%
22.19   \def\contentsname{Inhaltsverzeichnis}%    % oder nur: Inhalt
22.20   \def\listfigurename{Abbildungsverzeichnis}%
22.21   \def\listtablename{Tabellenverzeichnis}%
22.22   \def\indexname{Index}%
22.23   \def\figurename{Abbildung}%
22.24   \def\tablename{Tabelle}%                % oder: Tafel
22.25   \def\partname{Teil}%
```

---

<sup>17</sup>The file described in this section has version number v2.6m and was last revised on 2004/02/20.

```

22.26 \def\enclname{Anlage(n)}%           % oder: Beilage(n)
22.27 \def\ccname{Verteiler}%           % oder: Kopien an
22.28 \def\headtoname{An}%
22.29 \def\pagename{Seite}%
22.30 \def\seename{siehe}%
22.31 \def\alsoname{siehe auch}%
22.32 \def\proofname{Beweis}%
22.33 \def\glossaryname{Glossar}%
22.34 }

```

`\datengerman` The macro `\datengerman` redefines the command `\today` to produce German dates.

```

22.35 \def\month@ngerman{\ifcase\month\or
22.36   Januar\or Februar\or M\"arz\or April\or Mai\or Juni\or
22.37   Juli\or August\or September\or Oktober\or November\or Dezember\fi}
22.38 \def\datengerman{\def\today{\number\day.\~\month@ngerman
22.39   \space\number\year}}

```

`\dateaustrian` The macro `\datenaustrian` redefines the command `\today` to produce Austrian version of the German dates.

```

22.40 \def\datenaustrian{\def\today{\number\day.\~\ifnum1=\month
22.41   J\"anner\else \month@ngerman\fi \space\number\year}}

```

`\extrasngerman` Either the macro `\extrasngerman` or the macros `\extrasnaustrian` will perform all the extra definitions needed for the German language. The macro `\noextrasngerman` `\noextrasnaustrian` is used to cancel the actions of `\extrasngerman`. For German (as well as for Dutch) the " character is made active. This is done once, later on its definition may vary.

```

22.42 \initiate@active@char{"}
22.43 \@namedef{extras\CurrentOption}{%
22.44   \languageshortands{ngerman}}
22.45 \expandafter\addto\csname extras\CurrentOption\endcsname{%
22.46   \bbl@activate{"}}

```

Don't forget to turn the shortands off again.

```

22.47 \addto\noextrasngerman{\bbl@deactivate{"}}

```

In order for T<sub>E</sub>X to be able to hyphenate German words which contain 'ß' (in the OT1 position ~Y) we have to give the character a nonzero `\lccode` (see Appendix H, the T<sub>E</sub>Xbook).

```

22.48 \expandafter\addto\csname extras\CurrentOption\endcsname{%
22.49   \babel@savevariable{\lccode25}%
22.50   \lccode25=25}

```

The umlaut accent macro `\` is changed to lower the umlaut dots. The redefinition is done with the help of `\umlautlow`.

```

22.51 \expandafter\addto\csname extras\CurrentOption\endcsname{%
22.52   \babel@save{"\umlautlow}
22.53 \@namedef{noextras\CurrentOption}{\umlauthigh}

```

The current version of the 'new' German hyphenation patterns (`dehyphn.tex` is to be used with `\lefthyphenmin` and `\righthyphenmin` set to 2.

```

22.54 \providehyphenmins{\CurrentOption}{\tw@tw@}

```

For German texts we need to make sure that `\frenchspacing` is turned on.

```
22.55 \expandafter\addto\csname extras\CurrentOption\endcsname{%
22.56   \bbl@frenchspacing}
22.57 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
22.58   \bbl@nonfrenchspacing}
```

The code above is necessary because we need an extra active character. This character is then used as indicated in table 4.

To be able to define the function of `"`, we first define a couple of ‘support’ macros.

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\"` can now be typed as `"`.

```
22.59 \begingroup \catcode'\ "12
22.60 \def\x{\endgroup
22.61   \def\@SS{\mathchar"7019 }
22.62   \def\dq{"}}
22.63 \x
```

Now we can define the doublequote macros: the umlauts,

```
22.64 \declare@shorthand{ngerman}{a}{\textormath{\{a\allowhyphens}{\ddot a}}
22.65 \declare@shorthand{ngerman}{o}{\textormath{\{o\allowhyphens}{\ddot o}}
22.66 \declare@shorthand{ngerman}{u}{\textormath{\{u\allowhyphens}{\ddot u}}
22.67 \declare@shorthand{ngerman}{A}{\textormath{\{A\allowhyphens}{\ddot A}}
22.68 \declare@shorthand{ngerman}{O}{\textormath{\{O\allowhyphens}{\ddot O}}
22.69 \declare@shorthand{ngerman}{U}{\textormath{\{U\allowhyphens}{\ddot U}}
```

tremas,

```
22.70 \declare@shorthand{ngerman}{e}{\textormath{\{e\}{\ddot e}}
22.71 \declare@shorthand{ngerman}{E}{\textormath{\{E\}{\ddot E}}
22.72 \declare@shorthand{ngerman}{i}{\textormath{\{i\}}%
22.73   {\ddot\imath}}
22.74 \declare@shorthand{ngerman}{I}{\textormath{\{I\}{\ddot I}}
```

german es-zet (sharp s),

```
22.75 \declare@shorthand{ngerman}{s}{\textormath{\ss}{\@SS}}
22.76 \declare@shorthand{ngerman}{S}{\SS}
22.77 \declare@shorthand{ngerman}{z}{\textormath{\ss}{\@SS}}
22.78 \declare@shorthand{ngerman}{Z}{SZ}
```

german and french quotes,

```
22.79 \declare@shorthand{ngerman}{'}{\glqq}
22.80 \declare@shorthand{ngerman}{''}{\grqq}
22.81 \declare@shorthand{ngerman}{<}{\flqq}
22.82 \declare@shorthand{ngerman}{>}{\frqq}
```

and some additional commands:

```
22.83 \declare@shorthand{ngerman}{-}{\nobreak\-\bbl@allowhyphens}
22.84 \declare@shorthand{ngerman}{|}{%
22.85   \textormath{\penalty\@M\discretionary{-}{\kern.03em}%
22.86     \allowhyphens}{}}
22.87 \declare@shorthand{ngerman}{"}{\hskip\z@skip}
22.88 \declare@shorthand{ngerman}{""}{\textormath{\leavevmode\hbox{-}{-}}
22.89 \declare@shorthand{ngerman}{=}{\penalty\@M-\hskip\z@skip}
```



`\mdqon` All that's left to do now is to define a couple of commands for reasons of compatibility with `german.sty`.

```
22.90 \def\mdqon{\shorthandon{}}
```

```
22.91 \def\mdqoff{\shorthandoff{}}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
22.92 \ldf@finish\CurrentOption
```

```
22.93 \end{code}
```

## 23 The Breton language

The file `breton.dtx`<sup>18</sup> defines all the language-specific macros for the Breton language.

There are not really typographic rules for the Breton language. It is a local language (it's one of the celtic languages) which is spoken in Brittany (West of France). So we have a synthesis between french typographic rules and english typographic rules. The characters `:`, `;`, `!` and `?` are made active in order to get a whitespace automatically before these characters.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
23.1 (*code)
23.2 \LdfInit{breton}\captionsbreton
```

When this file is read as an option, i.e. by the `\usepackage` command, `breton` will be an 'unknown' language in which case we have to make it known. So we check for the existence of `\l@breton` to see whether we have to do something here.

```
23.3 \ifx\l@breton\@undefined
23.4     \@nopatterns{Breton}
23.5     \adddialect\l@breton0\fi
```

The next step consists of defining commands to switch to the English language. The reason for this is that a user might want to switch back and forth between languages.

`\captionsbreton` The macro `\captionsbreton` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```
23.6 \addto\captionsbreton{%
23.7   \def\prefacename{Rakskrid}%
23.8   \def\refname{Daveenno\'u}%
23.9   \def\abstractname{Dvierra\~n}%
23.10  \def\bibName{Lennadurezh}%
23.11  \def\chaptername{Pennad}%
23.12  \def\appendixname{Stagadenn}%
23.13  \def\contentsname{Taolenn}%
23.14  \def\listfigurename{Listenn ar Figurenno\'u}%
23.15  \def\listtablename{Listenn an taolennno\'u}%
23.16  \def\indexname{Meneger}%
23.17  \def\figurename{Figurenn}%
23.18  \def\tablename{Taolenn}%
23.19  \def\partname{Lodenn}%
23.20  \def\enclname{Diello\'u kevret}%
23.21  \def\ccname{Eilskrid da}%
23.22  \def\headtoname{evit}
23.23  \def\pagename{Pajenn}%
23.24  \def\seename{Gwelout}%
23.25  \def\alsoname{Gwelout ivez}%
23.26  \def\proofname{Proof}% <-- needs translation
23.27  \def\glossaryname{Glossary}% <-- Needs translation
23.28 }
```

---

<sup>18</sup>The file described in this section has version number v1.0h and was last revised on 2005/03/29.

`\datebreton` The macro `\datebreton` redefines the command `\today` to produce Breton dates.

```

23.29 \def\datebreton{%
23.30   \def\today{\ifnum\day=1\relax 1\/$\{\rm a\tilde{n}}$\else
23.31     \number\day\fi \space a\space viz\space\ifcase\month\or
23.32     Genver\or C’hwevrer\or Meurzh\or Ebrel\or Mae\or Mezheven\or
23.33     Gouere\or Eost\or Gwengolo\or Here\or Du\or Kerzu\fi
23.34     \space\number\year}}

```

`\extrasbreton` The macro `\extrasbreton` will perform all the extra definitions needed for the Breton language. The macro `\noextrasbreton` is used to cancel the actions of `\extrasbreton`.

The category code of the characters `:`, `;`, `!` and `?` is made `\active` to insert a little white space.

```

23.35 \initiate@active@char{:}
23.36 \initiate@active@char{:;}
23.37 \initiate@active@char{:!}
23.38 \initiate@active@char{:?}

```

We specify that the breton group of shorthands should be used.

```

23.39 \addto\extrasbreton{\languageshorthands{breton}}

```

These characters are ‘turned on’ once, later their definition may vary.

```

23.40 \addto\extrasbreton{%
23.41   \bbl@activate{:}\bbl@activate{:;}%
23.42   \bbl@activate{:!}\bbl@activate{:?}}

```

Don’t forget to turn the shorthands off again.

```

23.43 \addto\noextrasbreton{%
23.44   \bbl@deactivate{:}\bbl@deactivate{:;}%
23.45   \bbl@deactivate{:!}\bbl@deactivate{:?}}

```

The last thing `\extrasbreton` needs to do is to make sure that `\frenchspacing` is in effect. If this is not the case the execution of `\noextrasbreton` will switch it off again.

```

23.46 \addto\extrasbreton{\bbl@frenchspacing}
23.47 \addto\noextrasbreton{\bbl@nonfrenchspacing}

```

`\breton@sh@;` We have to reduce the amount of white space before `;`, `:` and `!` when the user types a space in front of these characters. This should only happen outside mathmode, hence the test with `\ifmmode`.

```

23.48 \declare@shorthand{breton}{;}{;%
23.49   \ifmmode
23.50     \string;\space
23.51   \else\relax

```

In horizontal mode we check for the presence of a ‘space’ and replace it by a `\thinspace`.

```

23.52   \ifhmode
23.53     \ifdim\lastskip>\z@
23.54       \unskip\penalty\@M\thinspace
23.55     \fi
23.56   \fi
23.57   \string;\space
23.58 \fi}%

```

\breton@sh@:@ Because these definitions are very similar only one is displayed in a way that the  
 \breton@sh@!@ definition can be easily checked.

```

23.59 \declare@shorthand{breton}{:}{}%
23.60 \ifmmode\string:\space
23.61 \else\relax
23.62 \ifhmode
23.63 \ifdim\lastskip>\z@\unskip\penalty\@M\thinspace\fi
23.64 \fi
23.65 \string:\space
23.66 \fi}
23.67 \declare@shorthand{breton}{!}{}%
23.68 \ifmmode\string!\space
23.69 \else\relax
23.70 \ifhmode
23.71 \ifdim\lastskip>\z@\unskip\penalty\@M\thinspace\fi
23.72 \fi
23.73 \string!\space
23.74 \fi}

```

\breton@sh@?@ For the question mark something different has to be done. In this case the amount  
 of white space that replaces the space character depends on the dimensions of the  
 font.

```

23.75 \declare@shorthand{breton}{?}{}%
23.76 \ifmmode
23.77 \string?\space
23.78 \else\relax
23.79 \ifhmode
23.80 \ifdim\lastskip>\z@
23.81 \unskip
23.82 \kern\fontdimen2\font
23.83 \kern-1.4\fontdimen3\font
23.84 \fi
23.85 \fi
23.86 \string?\space
23.87 \fi}

```

All that is left to do now is provide the breton user with some extra utilities.  
 Some definitions for special characters.

```

23.88 \DeclareTextSymbol{\at}{OT1}{64}
23.89 \DeclareTextSymbol{\at}{T1}{64}
23.90 \DeclareTextSymbolDefault{\at}{OT1}
23.91 \DeclareTextSymbol{\boi}{OT1}{92}
23.92 \DeclareTextSymbol{\boi}{T1}{16}
23.93 \DeclareTextSymbolDefault{\boi}{OT1}
23.94 \DeclareTextSymbol{\circonflexe}{OT1}{94}
23.95 \DeclareTextSymbol{\circonflexe}{T1}{2}
23.96 \DeclareTextSymbolDefault{\circonflexe}{OT1}
23.97 \DeclareTextSymbol{\tild}{OT1}{126}
23.98 \DeclareTextSymbol{\tild}{T1}{3}
23.99 \DeclareTextSymbolDefault{\tild}{OT1}
23.100 \DeclareTextSymbol{\degre}{OT1}{23}
23.101 \DeclareTextSymbol{\degre}{T1}{6}
23.102 \DeclareTextSymbolDefault{\degre}{OT1}

```

The following macros are used in the redefinition of `\^` and `\"` to handle the letter i.

```
23.103 \AtBeginDocument{%
23.104   \DeclareTextCompositeCommand{\~}{OT1}{i}{\^i}
23.105   \DeclareTextCompositeCommand{\"}{OT1}{i}{\"i}}
```

And some more macros for numbering.

```
23.106 \def\kentan{1\/$}\rm a\tilde{n}}$}
23.107 \def\eil{2\/$}\rm l}$}
23.108 \def\re{\/$}\rm re}$}
23.109 \def\trede{3\re}
23.110 \def\pevare{4\re}
23.111 \def\vet{\/$}\rm vet}$}
23.112 \def\pempvet{5\vet}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
23.113 \ldf@finish{breton}
23.114 \code}
```

## 24 The Welsh language

The file `welsh.dtx`<sup>19</sup> defines all the language definition macros for the Welsh language.

For this language currently no special definitions are needed or available.

The macro `\ldf@init` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

24.1 `(*code)`

24.2 `\LdfInit{welsh}{captionswelsh}`

When this file is read as an option, i.e. by the `\usepackage` command, `welsh` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@welsh` to see whether we have to do something here.

24.3 `\ifx\undefined\l@welsh`

24.4 `\@nopatterns{welsh}`

24.5 `\adddialect\l@welsh0\fi`

The next step consists of defining commands to switch to (and from) the Welsh language.

`\welshhyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

24.6 `\providehyphenmins{\CurrentOption}{\tw@\thr@@}`

`\captionswelsh` The macro `\captionswelsh` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

24.7 `\def\captionswelsh{%`

24.8 `\def\prefacename{Rhagair}%`

24.9 `\def\refname{Cyfeiriadau}%`

24.10 `\def\abstractname{Crynodeb}%`

24.11 `\def\bibname{Llyfryddiaeth}%`

24.12 `\def\chaptername{Pennod}%`

24.13 `\def\appendixname{Atodiad}%`

24.14 `\def\contentsname{Cynnwys}%`

24.15 `\def\listfigurename{Rhestr Ddarluniau}%`

24.16 `\def\listtablename{Rhestr Dablau}%`

24.17 `\def\indexname{Mynegai}%`

24.18 `\def\figurename{Darlun}%`

24.19 `\def\tablename{Taflen}%`

24.20 `\def\partname{Rhan}%`

24.21 `\def\enclname{amgae"edig}%`

24.22 `\def\ccname{cop"i au}%`

24.23 `\def\headtoname{At}% % ‘at’ on letters meaning ‘to ( a person)’`

24.24 `% ‘to (a place)’ is ‘i’ in Welsh`

24.25 `\def\pagename{tudalen}%`

24.26 `\def\seename{gweler}%`

24.27 `\def\alsoname{gweler hefyd}%`

24.28 `\def\proofname{Prawf}%`

24.29 `\def\glossaryname{Rhestr termau}%`

24.30 `}`

---

<sup>19</sup>The file described in this section has version number v1.0d and was last revised on 2005/03/31.

`\datewelsh` The macro `\datewelsh` redefines the command `\today` to produce welsh dates.

```
24.31 \def\datewelsh{%
24.32   \def\today{\ifnum\day=1\relax 1\/$^{\mathrm{a\tilde{n}}}}$\else
24.33     \number\day\fi\space\ifcase\month\or
24.34     Ionawr\or Chwefror\or Mawrth\or Ebrill\or
24.35     Mai\or Mehefin\or Gorffennaf\or Awst\or
24.36     Medi\or Hydref\or Tachwedd\or Rhagfyr\fi
24.37   \space\number\year}}
```

`\extraswelsh` The macro `\extraswelsh` will perform all the extra definitions needed for the  
`\noextraswelsh` welsh language. The macro `\noextraswelsh` is used to cancel the actions of  
`\extraswelsh`. For the moment these macros are empty but they are defined for  
compatibility with the other language definition files.

```
24.38 \addto\extraswelsh{}
24.39 \addto\noextraswelsh{}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting  
the main language to be switched on at `\begin{document}` and resetting the  
category code of `@` to its original value.

```
24.40 \ldf@finish{welsh}
24.41 \code
```

## 25 The Irish language

The file `irish.dtx`<sup>20</sup> defines all the language definition macros for the Irish language.

For this language currently no special definitions are needed or available.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

25.1 `(*code)`

25.2 `\LdfInit{irish}\captionsirish`

When this file is read as an option, i.e. by the `\usepackage` command, `irish` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@irish` to see whether we have to do something here.

25.3 `\ifx\l@irish\@undefined`

25.4 `\@nopatterns{irish}`

25.5 `\adddialect\l@irish0\fi`

The next step consists of defining commands to switch to (and from) the Irish language.

`\irishhyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

25.6 `\providehyphenmins{\CurrentOption}{\tw@\thr@@}`

`\captionsirish` The macro `\captionsirish` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

25.7 `\addto\captionsirish{%`

25.8 `\def\prefacename{R\’eamhr\’a}%` `<-- also "Brollach"`

25.9 `\def\refname{Tagairt\’\’{i}}%`

25.10 `\def\abstractname{Achoimre}%`

25.11 `\def\bibname{Leabharliosta}%`

25.12 `\def\chaptername{Caibidil}%`

25.13 `\def\appendixname{Aguis\’\’{i}n}%`

25.14 `\def\contentsname{Cl\’ar \’Abhair}%`

25.15 `\def\listfigurename{L\’ear\’aid\’\’{i}}%`

25.16 `\def\listtablename{T\’abla\’\’{i}}%`

25.17 `\def\indexname{Inn\’eacs}%`

25.18 `\def\figurename{L\’ear\’aid}%`

25.19 `\def\tablename{T\’abla}%`

25.20 `\def\partname{Cuid}%`

25.21 `\def\enclname{faoi iamh}%`

25.22 `\def\ccname{cc}%` `abrv. ‘c\’oip chuig’`

25.23 `\def\headtoname{Go}%`

25.24 `\def\pagename{Leathanach}%`

25.25 `\def\seename{f\’each}%`

25.26 `\def\alsoname{f\’each freisin}%`

25.27 `\def\proofname{Cruth\’unas}%`

25.28 `\def\glossaryname{Glossary}% <-- Needs translation`

25.29 `}`

---

<sup>20</sup>The file described in this section has version number v1.0h and was last revised on 2005/03/30. A contribution was made by Marion Gunn.



`\dateirish` The macro `\dateirish` redefines the command `\today` to produce Irish dates.

```
25.30 \def\dateirish{%
25.31   \def\today{%
25.32     \number\day\space \ifcase\month\or
25.33     Ean\'air\or Feabhra\or M\'arta\or Aibre\'an\or
25.34     Bealtaine\or Meitheamh\or I\'uil\or L\'unasa\or
25.35     Me\'an F\'omhair\or Deireadh F\'omhair\or
25.36     M\'{\i} na Samhna\or M\'{\i} na Nollag\fi
25.37     \space \number\year}}
```

`\extrasirish` The macro `\extrasirish` will perform all the extra definitions needed for the  
`\noextrasirish` Irish language. The macro `\noextrasirish` is used to cancel the actions of  
`\extrasirish`. For the moment these macros are empty but they are defined  
for compatibility with the other language definition files.

```
25.38 \addto\extrasirish{}
25.39 \addto\noextrasirish{}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting  
the main language to be switched on at `\begin{document}` and resetting the  
category code of `@` to its original value.

```
25.40 \ldf@finish{irish}
25.41 \code
```

## 26 The Scottish language

The file `scottish.dtx`<sup>21</sup> defines all the language definition macros for the Scottish language.

For this language currently no special definitions are needed or available.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
26.1 (*code)
26.2 \LdfInit{scottish}\captionsscottish
```

When this file is read as an option, i.e. by the `\usepackage` command, `scottish` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@scottish` to see whether we have to do something here.

```
26.3 \ifx\l@scottish\@undefined
26.4   \@nopatterns{scottish}
26.5   \adddialect\l@scottish0\fi
```

The next step consists of defining commands to switch to (and from) the Scottish language.

`\captionsscottish` The macro `\captionsscottish` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
26.6 \addto\captionsscottish{%
26.7   \def\prefacename{Preface}%    <-- needs translation
26.8   \def\refname{Iomraidh}%
26.9   \def\abstractname{Br\‘{i}gh}%
26.10  \def\bibname{Leabhraichean}%
26.11  \def\chaptername{Caibideil}%
26.12  \def\appendixname{Ath-sgr‘{i}obhadh}%
26.13  \def\contentsname{Cl\‘ar-obrach}%
26.14  \def\listfigurename{Liosta Dhealbh }%
26.15  \def\listtablename{Liosta Chl\‘ar}%
26.16  \def\indexname{Cl\‘ar-innse}%
26.17  \def\figurename{Dealbh}%
26.18  \def\tablename{Cl\‘ar}%
26.19  \def\partname{Cuid}%
26.20  \def\enclname{a-staigh}%
26.21  \def\ccname{lethbhreac gu}%
26.22  \def\headtoname{gu}%
26.23  \def\pagename{t.d.}%          abrv. ‘taobh duilleag’
26.24  \def\seename{see}%    <-- needs translation
26.25  \def\alsoname{see also}%    <-- needs translation
26.26  \def\proofname{Proof}%    <-- needs translation
26.27  \def\glossaryname{Glossary}% <-- Needs translation
26.28 }
```

`\datescottish` The macro `\datescottish` redefines the command `\today` to produce Scottish dates.

```
26.29 \def\datescottish{%
26.30   \def\today{%
```

---

<sup>21</sup>The file described in this section has version number v1.0g and was last revised on 2005/03/31. A contribution was made by Fraser Grant (FRASER@CERNVM).

```

26.31 \number\day\space \ifcase\month\or
26.32 am Faoilteach\or an Gearran\or am M\‘art\or an Giblean\or
26.33 an C\‘eitean\or an t-\‘Og mhios\or an t-Iuchar\or
26.34 L\‘unasdal\or an Sultuine\or an D\‘amhar\or
26.35 an t-Samhainn\or an Dubhlachd\fi
26.36 \space \number\year}}

```

`\extrasscottish` The macro `\extrasscottish` will perform all the extra definitions needed for the Scottish language. The macro `\noextrasscottish` is used to cancel the actions of `\extrasscottish`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```

26.37 \addto\extrasscottish{}
26.38 \addto\noextrasscottish{}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

26.39 \ldf@finish{scottish}
26.40 \code

```

## 27 The Greek language

The file `greek.dtx`<sup>22</sup> defines all the language definition macros for the Greek language, i.e., as it used today with only one accent, and the attribute *πολυτονικό* (“Polutoniko”) for typesetting greek text with all accents. This separation arose out of the need to simplify things, for only very few people will be really interested to typeset polytonic Greek text.

`\greektext`      The commands `\greektext` and `\latintext` can be used to switch to greek or latin fonts. These are declarations.  
`\latintext`  
`\textgreek`      The commands `\textgreek` and `\textlatin` both take one argument which is then typeset using the requested font encoding. The command `\greekol` switches to the greek outline font family, while the command `\textol` typesets a short text in outline font. A number of extra greek characters are made available through the added text commands `\stigma`, `\qoppa`, `\sampi`, `\ddigamma`, `\Digamma`, `\euro`, `\permill`, and `\vardigamma`.  
`\textlatin`  
`\textol`

### 27.1 Typing conventions

Entering greek text can be quite difficult because of the many diacritical signs that need to be added for various purposes. The fonts that are used to typeset Greek make this a lot easier by offering a lot of ligatures. But in order for this to work, some characters need to be considered as letters. These characters are `<`, `>`, `~`, `‘`, `’`, `"` and `|`. Therefore their `\lccode` is changed when Greek is in effect. In order to let `\uppercase` give correct results, the `\uccode` of these characters is set to a non-existing character to make them disappear. Of course not all characters are needed when typesetting “modern” *μονοτονικό*. In that case we only need the `’` and `"` symbols which are treated in the proper way.

### 27.2 Greek numbering

The Greek alphabetical numbering system, like the Roman one, is still used in everyday life for short enumerations. Unfortunately most Greeks don’t know how to write Greek numbers bigger than 20 or 30. Nevertheless, in official editions of the last century and beginning of this century this numbering system was also used for dates and numbers in the range of several thousands. Nowadays this numbering system is primary used by the Eastern Orthodox Church and by certain scholars. It is hence necessary to be able to typeset any Greek numeral up to 999 999. Here are the conventions:

- There is no Greek numeral for any number less than or equal to 0.
- Numbers from 1 to 9 are denoted by letters alpha, beta, gamma, delta, epsilon, stigma, zeta, eta, theta, followed by a mark similar to the mathematical symbol “prime”. (Nowadays instead of letter stigma the digraph sigma tau is used for number 6. Mainly because the letter stigma is not always available, so people opt to write down the first two letters of its name

---

<sup>22</sup>The file described in this section has version number v1.3l and was last revised on 2005/03/30. The original author is Apostolos Syropoulos (`apostolo@platon.ee.duth.gr`), code from `kdgreek.sty` by David Kastrup `dak@neuroinformatik.ruhr-uni-bochum.de` was used to enhance the support for typesetting greek texts.

as an alternative. In our implementation we produce the letter stigma, not the digraph sigma tau.)

- Decades from 10 to 90 are denoted by letters iota, kappa, lambda, mu, nu, xi, omikron, pi, qoppa, again followed by the numeric mark. The qoppa used for this purpose has a special zig-zag form, which doesn't resemble at all the original 'q'-like qoppa.
- Hundreds from 100 to 900 are denoted by letters rho, sigma, tau, upsilon, phi, chi, psi, omega, sampi, followed by the numeric mark.
- Any number between 1 and 999 is obtained by a group of letters denoting the hundreds decades and units, followed by a numeric mark.
- To denote thousands one uses the same method, but this time the mark is placed in front of the letter, and under the baseline (it is inverted by 180 degrees). When a group of letters denoting thousands is followed by a group of letters denoting a number under 1000, then both marks are used.

`\greeknumeral` Using these conventions one obtains numbers up to 999 999. The command `\greeknumeral` makes it possible to typeset Greek numerals. There is also an `\Greeknumeral` “uppercase” version of this macro: `\Greeknumeral`.

Another system which was in wide use only in Athens, could express any positive number. This system is implemented in package `athnum`.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

27.1 `\*code`

27.2 `\LdfInit\CurrentOption{captions\CurrentOption}`

When the option `polutonikogreek` was used, redefine `\CurrentOption` to prevent problems later on.

27.3 `\gdef\CurrentOption{greek}%`

When this file is read as an option, i.e. by the `\usepackage` command, `greek` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@greek` to see whether we have to do something here.

27.4 `\ifx\l@greek@undefined`

27.5 `\@nopatterns{greek}`

27.6 `\adddialect\l@greek0\fi`

Now we declare the `polutoniko` language attribute.

27.7 `\bbl@declare@ttribute{greek}{polutoniko}{%`

This code adds the expansion of `\extrapolutonikogreek` to `\extragreek` and changes the definition of `\today` for Greek to produce polytonic month names.

27.8 `\expandafter\addto\expandafter\extragreek`

27.9 `\expandafter{\extrapolutonikogreek}%`

27.10 `\let\captionsgreek\captionspolutonikogreek`

27.11 `\let\gr@month\gr@c@month`

We need to take some extra precautions in order not to break older documents which still use the old `polutonikogreek` option.

27.12 `\let\l@polutonikogreek\l@greek`

27.13 `\let\datepolutonikogreek\dategreek`

27.14 `\let\extrapolutonikogreek\extragreek`

```

27.15 \let\noextrapolutonikogreek\noextragreek
27.16 }

```

Typesetting Greek texts implies that a special set of fonts needs to be used. The current support for greek uses the **cb** fonts created by Claudio Beccari<sup>23</sup>. The **cb** fonts provide all sorts of *font combinations*. In order to use these fonts we define the Local GRreek encoding (LGR, see the file `greek.fdd`). We make sure that this encoding is known to L<sup>A</sup>T<sub>E</sub>X, and if it isn't we abort.

```

27.17 \InputIfFileExists{lgrenc.def}{%
27.18 \message{Loading the definitions for the Greek font encoding}}{%
27.19 \errhelp{I can't find the lgrenc.def file for the Greek fonts}%
27.20 \errmessage{Since I do not know what the LGR encoding means^^J
27.21 I can't typeset Greek.^^J
27.22 I stop here, while you get a suitable lgrenc.def file}}\@end
27.23 }

```

Now we define two commands that offer the possibility to switch between Greek and Roman encodings.

**\greektext** The command `\greektext` will switch from Latin font encoding to the Greek font encoding. This assumes that the 'normal' font encoding is a Latin one. This command is a *declaration*, for shorter pieces of text the command `\textgreek` should be used.

```

27.24 \DeclareRobustCommand{\greektext}{%
27.25 \fontencoding{LGR}\selectfont
27.26 \def\encodingdefault{LGR}}

```

**\textgreek** This command takes an argument which is then typeset using the requested font encoding. In order to avoid many encoding switches it operates in a local scope.

```

27.27 \DeclareRobustCommand{\textgreek}[1]{\leavevmode{\greektext #1}}

```

**\textol** A last aspect of the set of fonts provided with this version of support for typesetting Greek texts is that it contains an outline family. In order to make it available we define the command `\textol`.

```

27.28 \def\outlfamily{\usefont{LGR}{cmro}{m}{n}}
27.29 \DeclareTextFontCommand{\textol}{\outlfamily}

```

The next step consists in defining commands to switch to (and from) the Greek language.

**\greekhyphenmins** This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

```

27.30 % Yannis Haralambous has suggested this value
27.31 \providehyphenmins{\CurrentOption}{\@ne\@ne}

```

**\captionsgreek** The macro `\captionsgreek` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```

27.32 \addto\captionsgreek{%
27.33 \def\prefacename{Pr'ologos}%
27.34 \def\refname{Anafor'es}%

```

---

<sup>23</sup>Apostolos Syropoulos wishes to thank him for his patience, collaboration, cooments and suggestions.

```

27.35 \def\abstractname{Per'ilhyh}%
27.36 \def\bibname{Bibliograf'ia}%
27.37 \def\chaptername{Kef'alaiio}%
27.38 \def\appendixname{Par'arthma}%
27.39 \def\contentsname{Perieq'omena}%
27.40 \def\listfigurename{Kat'alogos Sqhm'atwn}%
27.41 \def\listtablename{Kat'alogos Pin'akwn}%
27.42 \def\indexname{Euret'hrio}%
27.43 \def\figurename{Sq'hma}%
27.44 \def\tablename{P'inakas}%
27.45 \def\partname{M'eros}%
27.46 \def\enclname{Sunhmm'ena}%
27.47 \def\ccname{Koinopo'ihsh}%
27.48 \def\headtoname{Pros}%
27.49 \def\pagename{Sel'ida}%
27.50 \def\seenname{bl'epe}%
27.51 \def\alsoname{bl'epe ep'ishs}%
27.52 \def\proofname{Ap'odeixh}%
27.53 \def\glossaryname{Glwss'ari}%
27.54 }

```

`\captionspolutonikogreek` For texts written in the πολυτονικό (polytonic greek) the translations are the same as above, but some words are spelled differently. For now we just add extra definitions to `\captionsgreek` in order to override the earlier definitions.

```

27.55 \let\captionspolutonikogreek\captionsgreek
27.56 \addto\captionspolutonikogreek{%
27.57   \def\refname{>Anafor'es}%
27.58   \def\indexname{E<uret'hrio}%
27.59   \def\figurename{Sq~hma}%
27.60   \def\headtoname{Pr'os}%
27.61   \def\alsoname{bl'epe >ep'ishs}%
27.62   \def\proofname{>Ap'odeixh}%
27.63 }

```

`\gr@month` The macro `\dategreek` redefines the command `\today` to produce greek dates.  
`\dategreek` The name of the month is now produced by the macro `\gr@month` since it is needed in the definition of the macro `\Grtoday`.

```

27.64 \def\gr@month{%
27.65   \ifcase\month\or
27.66     Ianouar'iou\or Febrouar'iou\or Mart'iou\or April'iou\or
27.67     Ma''iou\or Ioun'iou\or Ioul'iou\or Augo'ustou\or
27.68     Septembr'iou\or Oktwbr'iou\or Noembr'iou\or Dekembr'iou\fi}
27.69 \def\dategreek{%
27.70   \def\today{\number\day \space \gr@month\space \number\year}}

```

`\gr@c@greek`

```

27.71 \def\gr@c@month{%
27.72   \ifcase\month\or >Ianouar'iou\or
27.73     Febrouar'iou\or Mart'iou\or >April'iou\or Ma''iou\or
27.74     >Ioun'iou\or >Ioul'iou\or A>ugo'ustou\or Septembr'iou\or
27.75     >Oktwbr'iou\or Noembr'iou\or Dekembr'iou\fi}

```

`\Grtoday` The macro `\Grtoday` produces the current date, only that the month and the day are shown as greek numerals instead of arabic as it is usually the case.

```

27.76 \def\Grtoday{%
27.77   \expandafter\Greeknatural\expandafter{\the\day}\space
27.78   \gr@c@month \space
27.79   \expandafter\Greeknatural\expandafter{\the\year}}

```

`\extragreek` The macro `\extragreek` will perform all the extra definitions needed for the Greek language. The macro `\noextragreek` is used to cancel the actions of `\extragreek`. For the moment these macros switch the fontencoding used and the definition of the internal macros `\@alph` and `\@Alph` because in Greek we do use the Greek numerals.

```

27.80 \addto\extragreek{\greektext}
27.81 \addto\noextragreek{\latintext}

```

`\gr@ill@value` When the argument of `\greeknumeral` has a value outside of the acceptable bounds ( $0 < x < 999999$ ) a warning will be issued (and nothing will be printed).

```

27.82 \def\gr@ill@value#1{%
27.83   \PackageWarning{babel}{Illegal value (#1) for greeknumeral}}

```

`\anw@true` When a large number with three *trailing* zero's is to be printed those zeros *and* the numeric mark need to be discarded. As each 'digit' is processed by a separate macro *and* because the processing needs to be expandable we need some helper macros that help remember to *not* print the numeric mark (`\anwtonos`).

The command `\anw@false` switches the printing of the numeric mark off by making `\anw@print` expand to nothing. The command `\anw@true` (re)enables the printing of the numeric mark. These macro's need to be robust in order to prevent improper expansion during writing to files or during `\uppercase`.

```

27.84 \DeclareRobustCommand\anw@false{%
27.85   \DeclareRobustCommand\anw@print{}}
27.86 \DeclareRobustCommand\anw@true{%
27.87   \DeclareRobustCommand\anw@print{\anwtonos}}
27.88 \anw@true

```

`\greeknumeral` The command `\greeknumeral` needs to be *fully* expandable in order to get the right information in auxiliary files. Therefore we use a big `\if`-construction to check the value of the argument and start the parsing at the right level.

```

27.89 \def\greeknumeral#1{%

```

If the value is negative or zero nothing is printed and a warning is issued.

```

27.90   \ifnum#1<\@ne\space\gr@ill@value{#1}%
27.91   \else
27.92     \ifnum#1<10\expandafter\gr@num@i\number#1%
27.93     \else
27.94       \ifnum#1<100\expandafter\gr@num@ii\number#1%
27.95       \else

```

We use the available shorthands for 1.000 (`\@m`) and 10.000 (`\@M`) to save a few tokens.

```

27.96         \ifnum#1<\@m\expandafter\gr@num@iii\number#1%
27.97         \else
27.98         \ifnum#1<\@M\expandafter\gr@num@iv\number#1%

```



```

27.99      \else
27.100      \ifnum#1<100000\expandafter\gr@num@v\number#1%
27.101      \else
27.102      \ifnum#1<1000000\expandafter\gr@num@vi\number#1%
27.103      \else
    If the value is too large, nothing is printed and a warning is issued.
27.104      \space\gr@ill@value{#1}%
27.105      \fi
27.106      \fi
27.107      \fi
27.108      \fi
27.109      \fi
27.110      \fi
27.111      \fi
27.112 }

```

**\Greeknatural** The command `\Greeknatural` prints uppercase greek numerals. The parsing is performed by the macro `\greeknatural`.

```

27.113 \def\Greeknatural#1{%
27.114   \expandafter\MakeUppercase\expandafter{\greeknatural{#1}}

```

**\greek@alph** In the previous release of this language definition the commands `\greek@aplh` and `\greek@Alph` were kept just for reasons of compatibility. Here again they become meaningful macros. They are defined in a way that even page numbering with greek numerals is possible. Since the macros `\@alph` and `\@Alph` will lose their original meaning while the Greek option is active, we must save their original value. macros `\@alph`

```

27.115 \let\latin@alph\@alph
27.116 \let\latin@Alph\@Alph

```

Then we define the Greek versions; the additional `\expandafters` are needed in order to make sure the table of contents will be correct, e.g., when we have appendixes.

```

27.117 \def\greek@alph#1{\expandafter\greeknatural\expandafter{\the#1}}
27.118 \def\greek@Alph#1{\expandafter\Greeknatural\expandafter{\the#1}}

```

Now we can set up the switching.

```

27.119 \addto\extrasgreek{%
27.120   \let\@alph\greek@alph
27.121   \let\@Alph\greek@Alph}
27.122 \addto\noextrasgreek{%
27.123   \let\@alph\latin@alph
27.124   \let\@Alph\latin@Alph}

```

**\greek@roman** To prevent roman numerals being typeset in greek letters we need to adopt the internal L<sup>A</sup>T<sub>E</sub>X commands `\@roman` and `\@Roman`. **Note that this may cause errors where roman ends up in a situation where it needs to be expanded; problems are known to exist with the AMS document classes.**

```

27.125 \let\latin@roman\@roman
27.126 \let\latin@Roman\@Roman
27.127 \def\greek@roman#1{\textlatin{\latin@roman{#1}}}
27.128 \def\greek@Roman#1{\textlatin{\latin@Roman{#1}}}
27.129 \addto\extrasgreek{%

```

```

27.130 \let\@roman\greek@roman
27.131 \let\@Roman\greek@Roman}
27.132 \addto\noextragreek{%
27.133 \let\@roman\latin@roman
27.134 \let\@Roman\latin@Roman}

```

`\greek&` The greek fonts do not contain an ampersand, so the  $\text{\LaTeX}$  command `\&` doesn't  
`\lt&` give the expected result if we do not do something about it.

```

27.135 \let\lt&\&
27.136 \def\greek&\textlatin{\lt&}
27.137 \addto\extragreek{\let&\greek&}
27.138 \addto\noextragreek{\let&\lt&}

```

What is left now is the definition of a set of macros to produce the various digits.

`\gr@num@i` As there is no representation for 0 in this system the zeros are simply discarded.  
`\gr@num@ii` When we have a large number with three *trailing* zero's also the numeric mark  
`\gr@num@iii` is discarded. Therefore these macros need to pass the information to each other  
about the (non-)translation of a zero.

```

27.139 \def\gr@num@i#1{%
27.140 \ifcase#1\or a\or b\or g\or d\or e\or \stigma\or z\or h\or j\fi
27.141 \ifnum#1=z@\else\anw@true\fi\anw@print}
27.142 \def\gr@num@ii#1{%
27.143 \ifcase#1\or i\or k\or l\or m\or n\or x\or o\or p\or \qoppa\fi
27.144 \ifnum#1=z@\else\anw@true\fi\gr@num@i}
27.145 \def\gr@num@iii#1{%
27.146 \ifcase#1\or r\or sv\or t\or u\or f\or q\or y\or w\or \sampi\fi
27.147 \ifnum#1=z@\anw@false\else\anw@true\fi\gr@num@ii}

```

`\gr@num@iv` The first three 'digits' always have the numeric mark, except when one is discarded  
`\gr@num@v` because it's value is zero.

```

27.148 \def\gr@num@iv#1{%
27.149 \ifnum#1=z@\else\katwtonos\fi
27.150 \ifcase#1\or a\or b\or g\or d\or e\or \stigma\or z\or h\or j\fi
27.151 \gr@num@iii}
27.152 \def\gr@num@v#1{%
27.153 \ifnum#1=z@\else\katwtonos\fi
27.154 \ifcase#1\or i\or k\or l\or m\or n\or x\or o\or p\or \qoppa\fi
27.155 \gr@num@iv}
27.156 \def\gr@num@vi#1{%
27.157 \katwtonos
27.158 \ifcase#1\or r\or sv\or t\or u\or f\or q\or y\or w\or \sampi\fi
27.159 \gr@num@v}

```

`\greek@tilde` In greek typesetting we need a number of characters with more than one accent. In the underlying family of fonts (the `cb` fonts) this is solved using Knuth's ligature mechanism. Characters we need to have ligatures with are the tilde, the acute and grave accent characters, the rough and smooth breathings, the subscript, and the double quote character. In text input the `~` is normally used to produce an unbreakable space. The command `\~` normally produces a tilde accent. For polytonic Greek we change the definition of `\~` to produce the tilde character itself, making sure it has category code 12.

```

27.160 \begingroup
27.161 \ifundefined{active@char|string!}{\catcode'\!=12\relax}
27.162 \catcode'\~=12
27.163 \lccode'\!='\~
27.164 \lowercase{\def\x{\endgroup
27.165 \def\greek@tilde{!}}\x}
27.166 \addto\extrapolutonikogreek{%
27.167 \babel@save\~\let\~\greek@tilde}

```

In order to get correct hyphenation we need to set the lower case code of a number of characters. The ‘v’ character has a special usage for the cb fonts: in fact this ligature mechanism detects the end of a word and assures that a final sigma is typeset with the proper sign which is different from that of an initial or medial sigma; the ‘v’ after an *isolated* sigma fools the ligature mechanism in order to typeset  $\sigma$  in place of  $\varsigma$ . Because of this we make sure its lowercase code is not changed. For “modern” greek we have to deal only with ‘ and ’ and so things are easy.

```

27.168 \addto\extragreek{%
27.169 \babel@savevariable{\lccode'v}\lccode'v='v%
27.170 \babel@savevariable{\lccode''}\lccode''=''%
27.171 \babel@savevariable{\lccode'\'}\lccode'\=''%
27.172 \addto\extrapolutonikogreek{%
27.173 \babel@savevariable{\lccode'\<}\lccode'\<='\<%
27.174 \babel@savevariable{\lccode'\>}\lccode'\>='\>%
27.175 \babel@savevariable{\lccode'\~}\lccode'\~='\~%
27.176 \babel@savevariable{\lccode'\|}\lccode'\|='\||%
27.177 \babel@savevariable{\lccode'\'}\lccode'\=''\'}

```

And in order to get rid of all accents and breathings when a string is \uppercase we also change a number of uppercase codes.

```

27.178 \addto\extragreek{%
27.179 \babel@savevariable{\uccode'\'}\uccode'\=''\'%
27.180 \babel@savevariable{\uccode'\'}\uccode'\'=159} %% 159 == ^~9f
27.181 \addto\extrapolutonikogreek{%
27.182 \babel@savevariable{\uccode'\~}\uccode'\~=159%
27.183 \babel@savevariable{\uccode'\>}\uccode'\>=159%
27.184 \babel@savevariable{\uccode'\<}\uccode'\<=159%
27.185 \babel@savevariable{\uccode'\|}\uccode'\|='\||%
27.186 \babel@savevariable{\uccode'\'}\uccode'\=''\'}

```

For this to work we make the character  $\sim 9f$  a shorthand that expands to nothing. In order for this to work we need to make a character look like  $\sim 9f$  in  $\text{\TeX}$ ’s eyes. The trick is to have another character and assign it a different lowercase code. Then execute the macros needed in a \lowercase environment. Usually the tilde character is used for such purposes. Before we do this we save its original lowercase code to restore it once we’re done.

```

27.187 \@tempcnta=\lccode'\~
27.188 \lccode'\~=159
27.189 \lowercase{%
27.190 \initiate@active@char{\~}%
27.191 \declare@shorthand{greek}{\~}{}}
27.192 \lccode'\~=\@tempcnta

```

We can also make the tilde character itself expand to a tilde with category code 12 to make the typing of texts easier.

```
27.193 \addto\extraspolutonikogreek{\languageshorthands{greek}}%
27.194 \declare@shorthand{greek}{~}{\greek@tilde}
```

We now define a few symbols which are used in the typesetting of greek numerals, as well as some other symbols which are usefull, such as the  $\epsilon\rho\omega$  symbol, etc.

```
27.195 \DeclareTextCommand{\anwtonos}{LGR}{\char"FE\relax}
27.196 \DeclareTextCommand{\katwtonos}{LGR}{\char"FF\relax}
27.197 \DeclareTextCommand{\qoppa}{LGR}{\char"12\relax}
27.198 \DeclareTextCommand{\stigma}{LGR}{\char"06\relax}
27.199 \DeclareTextCommand{\sampi}{LGR}{\char"1B\relax}
27.200 \DeclareTextCommand{\Digamma}{LGR}{\char"C3\relax}
27.201 \DeclareTextCommand{\ddigamma}{LGR}{\char"93\relax}
27.202 \DeclareTextCommand{\vardigamma}{LGR}{\char"07\relax}
27.203 \DeclareTextCommand{\euro}{LGR}{\char"18\relax}
27.204 \DeclareTextCommand{\permill}{LGR}{\char"19\relax}
```

Since the  $\sim$  cannot be used to produce an unbreakable white space we must redefine at least the commands `\fnum@figure` and `\fnum@table` so they do not produce a  $\sim$  instead of white space.

```
27.205 %\def\fnum@figure{\figurename\nobreakspace\thefigure}
27.206 %\def\fnum@table{\tablename\nobreakspace\thetable}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
27.207 \ldf@finish{\CurrentOption}
27.208 </code>
```

## 28 The French language

The file `frenchb.dtx`<sup>24</sup>, derived from `frenchy.sty`, defines all the language definition macros for the French language.

Customization for the French language is achieved following the book “Lexique des règles typographiques en usage à l’Imprimerie nationale” troisième édition (1994), ISBN-2-11-081075-0.

This file has been designed to be used with  $\text{\LaTeX 2}_{\epsilon}$ ,  $\text{\LaTeX}$ -2.09 and  $\text{\PlainTeX}$  formats. If you are still using  $\text{\LaTeX}$ -2.09, you *should* consider switching to  $\text{\LaTeX 2}_{\epsilon}$ !

The command `\selectlanguage{french}` switches to the French language<sup>25</sup>, with the following effects:

1. French hyphenation patterns are made active;
2. ‘double punctuation’ is made active for correct spacing in French;
3. `\today` prints the date in French;
4. the caption names are translated into French ( $\text{\LaTeX}$  only);
5. the default items in itemize environment are set to ‘—’ instead of •, and all vertical spacing and glue is deleted, a hook to reset standard  $\text{\LaTeX}$  spacing is provided (`\FrenchItemizeSpacingfalse`); it is possible to change ‘—’ to something else (‘—’ for instance) by redefining `\FrenchLabelItem`; apart from the global hook `\FrenchLabelItem`, it is also possible to change the ‘labelitems’ at any level (1 to 4) in French, using the standard  $\text{\LaTeX}$  syntax, for instance: `\renewcommand{\labelitemii}{\textbullet}`; in order to be effective in French, the redefinitions have to be made when French is the current language (i.e. *after* the `\begin{document}`), the changes are saved when switching to another language and will be remembered of, when switching back to French;
6. vertical spacing in general  $\text{\LaTeX}$  lists is shortened, a hook to reset standard  $\text{\LaTeX}$  settings is provided (`\FrenchListSpacingfalse`);
7. the first paragraph of each section is indented ( $\text{\LaTeX}$  only);
8. the space after `\dots` is removed in French.

Some commands are provided in `frenchb` to make typesetting easier:

1. French quotation marks can be entered using the commands `\og` and `\fg` which work in  $\text{\LaTeX 2}_{\epsilon}$ ,  $\text{\LaTeX}$ -2.09 and  $\text{\PlainTeX}$ , their appearance depending on what is available to draw them; if you use  $\text{\LaTeX 2}_{\epsilon}$  and T1-encoding you can also enter them as `<<~French quotation marks~>>` but then *don’t forget* the unbreakable spaces, (`\og` and `\fg` provide for correct line breaks and better horizontal spacing). `\og` and `\fg` can be used outside French, they provide then English quotes “ and ”.

---

<sup>24</sup>The file described in this section has version number ? and was last revised on ?.

<sup>25</sup>`\selectlanguage{français}` and `\selectlanguage{frenchb}` are kept for backward compatibility but should no longer be used.

2. A command `\up` is provided to typeset superscripts like `M\up{me}` (abbreviation for “Madame”), `1\up{er}` (for “premier”).
3. Family names should be typeset in small capitals and never be hyphenated, the macro `\bsc` (boxed small caps) does this, e.g., `Leslie~\bsc{Lamport}` will produce Leslie LAMPOR**T**.
4. Commands `\primo`, `\secundo`, `\tertio` and `\quarto` may be used to enumerate in lists.
5. Abbreviations for “Numéro” and “numéro” are obtained via the commands `\No`, `\no`.
6. Two commands are provided to typeset the symbol for “degré”: `\degre` prints the raw character and `\degres` should be used to typeset temperatures (e.g., “20~\degres C” with an unbreakable space), or for alcohols’ strengths (e.g., “45\degres” with *no* space in French).
7. In math mode the comma has to be surrounded with braces to avoid a spurious space being inserted after it, in decimal numbers for instance (see the `TEXbook` p. 134). The command `\DecimalMathComma` makes the comma be an ordinary character *in French only* (no space added); as a counterpart, if `\DecimalMathComma` is active, an explicit space has to be added in lists and intervals: `$[0,\ 1]$, $(x,\ y)$`. `\StandardMathComma` switches back to the standard behaviour of the comma.
8. A command `\nombre` is provided to easily typeset numbers: it works both in text and in math mode: inputting `\nombre{3141,592653}` will format this number properly according to the current language (French or non-French): each slice of three digits will be separated either with a comma in English or with a space in French (if you prefer a thin space instead of a normal space, just add the command `\ThinSpaceInFrenchNumbers` to the preamble of your document, or to `frenchb.cfg`). The command `\nombre` is a contribution of Vincent Jalby using ideas of David Carlisle in `comma.sty`.
9. `frenchb` has been designed to take advantage of the `xspace` package if present: adding `\usepackage{xspace}` in the preamble will force macros like `\fg`, `\ier`, `\ieme`, `\dots`, ..., to respect the spaces you type after them, for instance typing ‘1\ier juin’ will print ‘1<sup>er</sup> juin’ (no need for a forced space after 1\ier).
10. Two commands, `\FrenchLayout` and `\StandardLayout` (to be used *only in the preamble*) are provided to unify the layout of multilingual documents (it mainly concerns lists) regardless the current language (see section 29.10 for details).
11. Two commands `\AddThinSpaceBeforeFootnotes` and `\FrenchFootnotes` enable to customize the layout of footnotes following the French IN’s specifications; the first one, which can only be used *before* the `\begin{document}`, adds a thinspace in the running text before the number or symbol calling the footnote; the second one modifies the footnote’s layout: it typesets leading numbers as ‘1. ’ instead of ‘<sup>1</sup>’. `\FrenchFootnotes` has no effect on footnotes numbered with symbols (as in the `\thanks` command).

None of these commands are active by default, both can be best added to `frenchb.cfg` or to the preamble of the document. `\FrenchFootnotes` and `\StandardFootnotes`, which cancels the effect of `\FrenchFootnotes` for the text coming next, can be used anywhere in the document. The command `\StandardFootnotes` may be useful when some footnotes are numbered with letters (inside minipages for instance).

`\AddThinSpaceBeforeFootnotes` and `\FrenchFootnotes` act on *all* footnotes whatever the current language is.

All commands previously available in `francais.ldf` have been included in `frenchb.ldf` for compatibility, sometimes with updated definitions.

The `french` package, by Bernard GAULLE, was not designed to run with `babel` (although the latest versions claim to be `babel` compatible), but rather as a stand-alone package for the French language. It provides many more functionalities (like `\lettrine`, `\sommaire...`) not available in `frenchb`, at the cost of a much greater complexity and possible incompatibilities with other languages.

As `french` is known to produce the best layout available for French typography, I have borrowed many ideas from Bernard's file. I did my best to help users of both packages (`french` and `frenchb`) to exchange their sources files easily (see the example configuration file below in section 28), with one exception which affects the way French quotation marks are entered: `frenchb` uses *macros* (`\og` and `\fg`) while `french` uses active characters (`<<` and `>>`).

French typographic rules specify that some white space should be present before 'double punctuation' characters. These characters are `;` `!` `?` and `..`. In order to get this white space automatically, the category code of these characters is made `\active`. In French, the user *should* input these four characters preceded with a space, but as many people forget about it (even among native French writers!), the default behaviour of `frenchb` is to automatically add a `\thinspace` before `;` `!` `?` and a normal (unbreakable) space before `..` (this is the rule in French typography). It's up to the user to add or not a space *after* 'double punctuation' characters: usually a space is necessary, but not always (before a full point or a closing brace for instance), so this cannot be done automatically.

In (rare) cases where no space should be added before a 'double punctuation', either use `\string;` `\string!` `\string?` `\string?` instead of `;` `!` `?` and `..`, or switch locally to English. For instance you can type `C\string:TEX` or `\begin{otherlanguage}{english}{C:TEX}\end{otherlanguage}` to avoid the space before `:` in a MS-DOS path.

Some users dislike this automatic insertion of a space before 'double punctuation', and prefer to decide themselves whether a space should be added or not; so a hook `\NoAutoSpaceBeforeFDP` is provided: if this command is added (in file `frenchb.cfg`, or anywhere in a document) `frenchb` will respect your typing, and introduce a suitable space before 'double punctuation' *if and only if* a space is typed in the source file before those signs.

The command `\AutoSpaceBeforeFDP` switches back to the default behaviour of `frenchb`.

Once you have built your format, a good precaution would be to perform some basic tests about hyphenation in French. For  $\text{\LaTeX} 2_{\epsilon}$  I suggest this:

- run the following file, with the encoding suitable for your machine (*my-encoding* will be `latin1` for UNIX machines and PCs running Windows, `applemac` for Macintoshes, or `cp850` for PCs running DOS).

```
%% Test file for French hyphenation.
\documentclass{article}
\usepackage[my-encoding]{inputenc}
\usepackage[T1]{fontenc} % Use EC fonts for French
%\usepackage{aeuill}      % Uncomment this line and
                          % comment out the preceeding one
                          % to use AE virtual fonts.

\usepackage[francais]{babel}
\begin{document}
\showhyphens{signal container \’ev\’enement alg\’ebre}
\showhyphens{signal container événement algèbre}
\end{document}
```

- check the hyphenations proposed by T<sub>E</sub>X in your log-file; in French you should get with both 7-bit and 8-bit encodings  
`si-gnal contai-ner évé-ne-ment al-gèbre`.  
 Do not care about how accented characters are displayed in the log-file, what matters is the position of the ‘-’ hyphen signs *only*.

If they are all correct, your installation (probably) works fine, if one (or more) is (are) wrong, ask a local wizard to see what’s going wrong and perform the test again (or e-mail me about what happens).

Frequent mismatches:

- you get `sig-nal con-tainer`, this probably means that the hyphenation patterns you are using are for US-English, not for French;
- you get no hyphen at all in `évé-ne-ment`, this probably means that you are using CM fonts and the macro `\accent` to produce accented characters. Using EC fonts with built-in accented characters or M<sub>T</sub><sub>E</sub>X with CM fonts avoids this type of mismatch.

`frenchb` has been improved using helpful suggestions from many people, the main contributions came from Vincent Jalby. Thanks to all of them!

## Changes

First version released: 1.1 as of 1996/05/31 part of `babel-3.6beta`.

**Changes in version 1.1b:** update for `babel-3.6`.

**Changes in version 1.2:** new command `\nombre` to format numbers; removed command `\fup` borrowed from the `french` package (`\up` does a better job in L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>); also removed aliases `\french` and `\english` (`frenchb.cfg` is a better place for these).

**Changes in version 1.3:**

- The ‘xspace’ package, when present, now controls spacing after all (sensible) macros, formerly ‘xspace’ worked on `\fg` (suggested by Vincent Jalby);



- spacing after opening and before closing guillemets improved as suggested by Thierry Bouche;
- a replacement for poor looking guillemets in OT1 encoding (*math* fonts are used to emulate them) is provided if the file `ot2wncyr.fd` is found: this file defines an OT2 encoding using AMS Cyrillic fonts; these have built-in guillemets, they are *text* fonts, are free, and are distributed as META-FONT and Type1 fonts (good for pdf<sub>tex</sub>!), the replacement was suggested by Gérard Degrez; if the files `ot2wncyr.fd`, `wncy*.mf`, `wncy*.tfm`, and `wncy*.pfb` aren't available on your system, you *should* get them from CTAN; if your system complains about missing `wncy*.tfm` fonts, it means your  $\TeX$  system is *incomplete*, as a quick fix, you can either remove `ot2wncyr.fd` or add the command `\LasyGuillemets` to the preamble of your document or to `frenchb.cfg`, then `frenchb` will behave as it did in the previous versions. In case Cyrillic guillemets do not fit, it is possible to pick French guillemets from any font using the command `\FrenchGuillemetsFrom` which requires 4 arguments `\FrenchGuillemetsFrom{coding}{font}{char-left}{char-right}`, for instance, add `\FrenchGuillemetsFrom{T1}{ppl}{19}{20}` to the preamble of your document or to `frenchb.cfg`, to pick French guillemets from Palatino (fontname=ppl, char 19 and 20 are left and right guillemets in T1-encoding). This was suggested by Michel Bovani.
- the environment 'itemize' has been redesigned in French according to specifications from Jacques André and Thierry Bouche; it is possible to switch back to the settings of version 1.2: add `\FrenchItemizeSpacingfalse` *after* loading `frenchb` in the preamble (this can be useful to process old documents);
- two switches have been added to go back to standard  $\LaTeX$  list spacing `\FrenchItemizeSpacingfalse` and `\FrenchListSpacingfalse`;
- `\nombre` now properly handles signs in  $\LaTeX 2_{\epsilon}$ ;
- definition of `\dots` changed in French;
- in French, with the standard  $\LaTeX$  classes, captions in figures and tables are printed with an endash instead of a colon.

#### Changes in version 1.4:

- the redefinition of `\@makecaption` is changed not to overwrite the changes made by some classes (koma-script, amsart, ua-thesis...) as pointed out by Werner Lemberg;
- a hook, `\FrenchGuillemetsFrom`, is provided to pick French guillemets from any font (suggested by Michel Bovani, works *only* in OT1-encoding);
- a hook, `\FrenchLabelItem`, is provided to enable marks other than '–' (`\textendash`) in French lists (also suggested by Michel Bovani);
- `\DecimalMathComma`, `\StandardMathComma`, `\ThinSpaceInFrenchNumbers` added;
- `\FrenchLayout` and `\StandardLayout` added;

- an example of customization file `frenchb.cfg` is included in `frenchb.dtx`.

#### Changes in version 1.5:

- The settings for spacing in French lists are no longer tuned at the `\@trivlist` level but within `\list`; this enables the users to provide their own settings for the lists they define with `\list` (suggested by P. Pichaureau). Although the layout of the standard lists *has not changed*, some lists, based directly on `\@trivlist` or `\trivlist`, could possibly be typeset differently when upgrading from version 1.4 to 1.5. The command `\FrenchOldTrivlisttrue` could then, be useful to process older documents.
- Apart from the global hook `\FrenchLabelItem`, it is now also possible to change the ‘labelitems’ at any level (1 to 4) in French, using the standard L<sup>A</sup>T<sub>E</sub>X syntax, for instance: `\renewcommand{\labelitemii}{\textbullet}`.
- The internal name for the French language has been changed from `frenchb` to `french`, it means that `\captionfrench`, `\datefrench`, `\extrasfrench`, `\noextrasfrench`, are to be used now instead of `\captionfrenchb`, `\datefrenchb`, `\extrasfrenchb`, `\noextrasfrenchb`.
- From version 1.5f on, it is possible to customize the space inserted before a colon in French; its default value is `\space` (as in previous versions of `frenchb`), but it can now be changed to `\thinspace` by redefining `\Fcolonspace`.

#### Changes in version 1.6:

- Two new commands are provided: `\AddThinSpaceBeforeFootnotes` and `\FrenchFootnotes`; they enable to typeset footnotes according to the French IN’s specifications (suggested by Jacques André).
- `frenchb` will make use of `\textdegree` (TS1 encoding) to typeset degrees whenever possible.
- Default guillemets have been changed *in OT1 encoding only* in version 1.6c: the former ones were picked up in the `wncyr` fonts, which forced the cyrillic encoding to OT2 when `babel` was loaded with option `frenchb` before a cyrillic language (`russian`, `ukrainian` or `bulgarian`). Now, LM fonts for T1-encoding are available, we pick up the guillemets from them, for OT1-encoding.
- The config file `frenchb.cfg` is now loaded only when L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> is used (from version 1.6g).
- The command `\degrees` now works also in math mode (from version 1.6g), but not in bold versions (it is a text character basically).

### Customizing frenchb: an example of configuration file

```

28.1 \< *cfg>
28.2 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28.3 %% If you want to customize frenchb, please DO NOT hack into the code,
28.4 %% copy this file into a directory searched by TeX, preferably a

```

```

28.5 %% personal one on multi-user systems, and customize it as you like.
28.6 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28.7 %% WARNING: If you exchange your documents with colleagues using
28.8 %% a different TeX installation, it is best NOT TO HAVE a frenchb.cfg
28.9 %% file, and add instead the customization commands to the preamble
28.10 %% of your documents after babel and frenchb have been loaded.
28.11 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28.12 %%
28.13 %% Uncomment the following line if you dislike frenchb automatically
28.14 %% adding a space before French double punctuation (see frenchb.dtx
28.15 %% for more information).
28.16 %%
28.17 %%\NoAutoSpaceBeforeFDP
28.18 %%
28.19 %% frenchb inserts a normal space before a colon in French (following
28.20 %% I.N. specifications), but some people prefer a thinspace instead;
28.21 %% uncomment the following line if you prefer a thinspace.
28.22 %%
28.23 %%\renewcommand{\Fcolonspace}{\thinspace}
28.24 %%
28.25 %% Uncomment the following line to force lasy font emulation for
28.26 %% French guillemets in OT1 encoding; Polish guillemets are
28.27 %% FAR BETTER LOOKING, you should normally leave this line commented out.
28.28 %%
28.29 %%\LasyGuillemets
28.30 %%
28.31 %% The following option is for backward compatibility ONLY
28.32 %% (it might conflict with the russian option of babel).
28.33 %% Uncomment the following line if you want to get back to
28.34 %% the default guillemets used in versions <$ 1.6b for OT1-encoding
28.35 %% (no effect in T1-encoding).
28.36 %%
28.37 %%\CyrillicGuillemets
28.38 %%
28.39 %% If you dislike Polish guillemets in OT1-encoding, you can easily
28.40 %% pick up yours from other fonts, examples below: Palatino or
28.41 %% cyrillic CMR T2A encoded font.
28.42 %% The four arguments are: encoding, font name, character codes of
28.43 %% the opening and closing guillemets in the selected font.
28.44 %%
28.45 %%\FrenchGuillemetsFrom{T1}{ppl}{19}{20}
28.46 %%\FrenchGuillemetsFrom{T2A}{cmr}{190}{191}
28.47 %%
28.48 %% Uncomment the following line if you don't want frenchb to change
28.49 %% LaTeX standard settings for vertical spacing in 'itemize' lists.
28.50 %% LaTeX standard settings were used by frenchb in versions < 1.3,
28.51 %% so you may want to uncomment the following line to process older
28.52 %% documents.
28.53 %%
28.54 %%\FrenchItemizeSpacingfalse
28.55 %%
28.56 %% frenchb tunes vertical spaces in all lists (at \list level),
28.57 %% uncomment the following line if you prefer LaTeX standard settings
28.58 %% (this flag is new in version 1.3). When \ifFrenchItemizeSpacing is

```

28.59 %% 'true' (default setting), this flag has no effect on itemize lists.  
 28.60 %%  
 28.61 %%\FrenchListSpacingfalse  
 28.62 %%  
 28.63 %% The command \FrenchLabelItem can be used to set the 'labelitems'  
 28.64 %% for all levels in French. For instance, to get long dashes, use:  
 28.65 %%  
 28.66 %%\renewcommand{\FrenchLabelItem}{\textendash}  
 28.67 %%  
 28.68 %% You can also have different 'labelitems' for each level in French:  
 28.69 %%  
 28.70 %%\renewcommand{\Frlabelitemi}{\textendash}  
 28.71 %%\renewcommand{\Frlabelitemii}{\bfseries\textendash}  
 28.72 %%\renewcommand{\Frlabelitemiii}{\textbullet}  
 28.73 %%\renewcommand{\Frlabelitemiv}{}  
 28.74 %%  
 28.75 %% Uncomment the following line if you want a thinspace to be added  
 28.76 %% in the running text before the footnote number or symbol.  
 28.77 %%  
 28.78 %%\AddThinSpaceBeforeFootnotes  
 28.79 %%  
 28.80 %% Uncomment the following line if you want footnotes to be typeset  
 28.81 %% according the specifications of the French 'Imprimerie Nationale'.  
 28.82 %%  
 28.83 %%\FrenchFootnotes  
 28.84 %%  
 28.85 %% Uncomment the following line if you want the command \nombre to  
 28.86 %% insert thin spaces (1/6em) instead of normal spaces (0.3em)  
 28.87 %% between slices of 3 digits when typesetting numbers in French.  
 28.88 %%  
 28.89 %%\ThinSpaceInFrenchNumbers  
 28.90 %%  
 28.91 %% If you are bored to type {,} every time you want a decimal comma in  
 28.92 %% math mode, uncomment the following line (and don't forget to add a  
 28.93 %% forced space after the comma in lists and intervals: \$(x,\ y)\$ and  
 28.94 %% \$[0,\ 1]\$). I suggest NOT TO UNCOMMENT the following line,  
 28.95 %% and to switch between the decimal comma and the standard comma  
 28.96 %% using \DecimalMathComma and \StandardMathComma inside the document.  
 28.97 %%  
 28.98 %%\DecimalMathComma  
 28.99 %%  
 28.100 %% If you do not want the appearance of lists to depend on the current  
 28.101 %% language, add ONE of these two commands: \FrenchLayout (for a  
 28.102 %% document mainly in French) or \StandardLayout (for a document  
 28.103 %% mainly in English).  
 28.104 %%  
 28.105 %%\FrenchLayout  
 28.106 %%\StandardLayout  
 28.107 %%  
 28.108 %% With the standard LaTeX classes (article.cls, report.cls, book.cls)  
 28.109 %% you can change the separator used in figure and table captions in  
 28.110 %% French with \CaptionSeparator, for instance (the default value of  
 28.111 %% \CaptionSeparator in French is '\space\textendash\space'):  
 28.112 %%

```

28.113 %%\addto\captionfrench{\def\CaptionSeparator{\space\textendash\space}}
28.114 %%
28.115 %% You might want to change some of the translations of caption names,
28.116 %% you can do it this way, for instance:
28.117 %%
28.118 %%\addto\captionfrench{\def\figurename{{\scshape Figure}}}%
28.119 %%\addto\captionfrench{\def\tablename{{\scshape Table}}}%
28.120 %%\addto\captionfrench{\def\proofname{Preuve}}
28.121 %%
28.122 %% If French guillemets are available on your keyboard, you can use
28.123 %% them instead of the commands \og and \fg: REPLACE << and >> in
28.124 %% the following code by your ready-made guillemets (2 occurrences
28.125 %% for each) AND uncomment the resulting code.
28.126 %% WARNINGS:
28.127 %% 1) This will reduce the portability of your source files!
28.128 %% 2) This adds two active characters.
28.129 %% 3) If you add this stuff to the preamble of a document, you'll
28.130 %%     need to wrap it in \makeatletter ... \makeatother.
28.131 %%
28.132 %% \ifx\mule@def\undefined
28.133 %%   \initiate@active@char{<<}
28.134 %%   \initiate@active@char{>>}
28.135 %%   \AtBeginDocument{%
28.136 %%     \def<<{\og\ignorespaces}%
28.137 %%     \def>>{{\fg}}%
28.138 %%   }%
28.139 %% \else %% For the CJK package, see MULEenc.sty.
28.140 %%   \mule@def{11}{\og\ignorespaces}
28.141 %%   \mule@def{27}{{\fg}}
28.142 %% \fi
28.143 %%
28.144 %% The rest is for compatibility with Bernard Gaulle's french.sty:
28.145 %% if you want to typeset with babel/frenchb files originally written
28.146 %% for french.sty, you will probably want to uncomment these lines.
28.147 %%
28.148 %% Uncomment these lines if you want the aliases \numero and \Numero
28.149 %% (as in french.sty) for \no and \No.
28.150 %%
28.151 %%\let\numero=\no
28.152 %%\let\Numero=\No
28.153 %%
28.154 %% Uncomment the following lines if you want to substitute '\bsc' to
28.155 %% either (or both) of french.sty macros '\fsc' and '\lsc'.
28.156 %%
28.157 %%\let\fsc=\bsc
28.158 %%\let\lsc=\bsc
28.159 %%
28.160 %% Uncomment the following line if you want to substitute '\up' to
28.161 %% french.sty macro '\fup'.
28.162 %%
28.163 %%\let\fup=\up
28.164 %%
28.165 %% Uncomment the following lines if you intend to use commands \french
28.166 %% and \english to switch between languages, as in french.sty.

```

```

28.167 %%
28.168 %%\def\french{\leavevmode\selectlanguage{french}}
28.169 %%\def\english{\leavevmode\selectlanguage{english}}
28.170 %%
28.171 %% Uncomment the following lines if you intend to use the command
28.172 %% \AllTeX to refer to all flavours of TeX, (this command has been
28.173 %% made popular by french.sty).
28.174 %%
28.175 %%\newcommand*\AllTeX{%
28.176 %%      (L\kern-.36em\raise.3ex\hbox{\sc a}\kern-.15em)%
28.177 %%      T\kern-.1667em\lower.7ex\hbox{E}\kern-.125emX}
28.178 \<cfg>

```

## 29 T<sub>E</sub>Xnical details

### 29.1 Initial setup

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```

29.1 (*code)
29.2 %%
29.3 \LdfInit\CurrentOption\datefrench

\ifLaTeX To check the format in use (plain, LATEX or LATEX 2ε), we'll need two new 'if'.
\ifLaTeXe
29.4 \newif\ifLaTeX
29.5 \ifx\magnification\@undefined\LaTeXtrue\fi
29.6 \newif\ifLaTeXe
29.7 \ifx\@compatibilitytrue\@undefined\else\LaTeXtrue\fi

\if@Two@E We will need another 'if' : \if@Two@E is true if and only if LATEX 2ε is run-
ning not in compatibility mode. It is used in the definitions of the command
\nombre and \up. The definition is somewhat complicated, due to the fact that
\if@compatibility is not recognized as a \if in LATEX-2.09 based formats.
29.8 \newif\if@Two@E \@Two@Etrue
29.9 \def\@FI@{\fi}
29.10 \ifx\@compatibilitytrue\@undefined
29.11 \@Two@Efalse \def\@FI@{\relax}
29.12 \else
29.13 \if@compatibility \@Two@Efalse \fi
29.14 \@FI@

Check if hyphenation patterns for the French language have been loaded in
language.dat; we allow for the names 'french', 'français', 'canadien' or 'acadian'.
The latter two are both names used in Canada for variants of French that are in
use in that country.
29.15 \ifx\l@french\@undefined
29.16 \ifx\l@français\@undefined
29.17 \ifx\l@canadien\@undefined
29.18 \ifx\l@acadian\@undefined
29.19 \@nopatterns{French}
29.20 \adddialect\l@french0
29.21 \else
29.22 \let\l@french\l@acadian

```

```

29.23     \fi
29.24     \else
29.25         \let\l@french\l@canadien
29.26     \fi
29.27     \else
29.28         \let\l@french\l@francais
29.29     \fi
29.30 \fi

```

After the statement above `\l@french` is sure to always be defined.

The internal name for the French language will be ‘french’; ‘francais’ and ‘frenchb’ will be synonymous for ‘french’: first let both names use the same hyphenation patterns. Later we will have to set aliases for `\captionsofrench`, `\datefrench`, `\extrasfrench` and `\noextrasfrench`. As French uses the standard values of `\lefthyphenmin` (2) and `\righthyphenmin` (3), no special setting is required here.

```

29.31 \def\CurrentOption{french}
29.32 \ifx\l@francais\@undefined
29.33     \let\l@francais\l@french
29.34 \fi
29.35 \ifx\l@frenchb\@undefined
29.36     \let\l@frenchb\l@french
29.37 \fi

```

When this language definition file was loaded for one of the Canadian versions of French we need to make sure that a suitable hyphenation pattern register will be found by `TEX`.

```

29.38 \ifx\l@canadien\@undefined
29.39     \let\l@canadien\l@french
29.40 \fi
29.41 \ifx\l@acadian\@undefined
29.42     \let\l@acadian\l@french
29.43 \fi

```

This language definition can be loaded for different variants of the French language. The ‘key’ `babel` macros are only defined once, using ‘french’ as the language name, but `frenchb` and `francais` are synonymous. As some users who choose `frenchb` or `francais` as option of `babel`, might customize `\captionsofrenchb` or `\captionsofrancais` in the preamble, we merge their changes at the `\begin{document}` when they do so (only possible in  $\text{\LaTeX 2}_{\epsilon}$ ). The other three commands for `\date`, `\extras`, and `\noextras` are not likely to be modified by end-users. The other variants of languages are defined by checking if the relevant option was used and then adding one extra level of expansion.

```

29.44 \def\datefrancais{\datefrench}
29.45 \def\extrasfrancais{\extrasfrench}
29.46 \def\noextrasfrancais{\noextrasfrench}
29.47 \def\datefrenchb{\datefrench}
29.48 \def\extrasfrenchb{\extrasfrench}
29.49 \def\noextrasfrenchb{\noextrasfrench}
29.50 \ifLaTeXe
29.51     \AtBeginDocument{\let\captionsofrench\captionsofrench
29.52                     \ifx\captionsofrenchb\@undefined
29.53                         \let\captionsofrenchb\relax

```

```

29.54         \else
29.55             \let\captions@Frenchb\captionsfrenchb
29.56         \fi
29.57         \ifx\captionsfrançais\@undefined
29.58             \let\captions@Français\relax
29.59         \else
29.60             \let\captions@Français\captionsfrançais
29.61         \fi
29.62         \def\captionsfrench{\captions@French
29.63             \captions@Français\captions@Frenchb}%
29.64         \def\captionsfrançais{\captionsfrench}%
29.65         \def\captionsfrenchb{\captionsfrench}%
29.66         \iflanguage{french}{\captionsfrench}{}%
29.67     }
29.68 \else
29.69     \def\captionsfrançais{\captionsfrench}
29.70     \def\captionsfrenchb{\captionsfrench}
29.71 \fi
29.72 \@ifpackagewith{babel}{canadien}{%
29.73     \def\captionscanadien{\captionsfrench}%
29.74     \def\datecanadien{\datefrench}%
29.75     \def\extrascanadien{\extrasfrench}%
29.76     \def\noextrascanadien{\noextrasfrench}%
29.77 }{}
29.78 \@ifpackagewith{babel}{acadian}{%
29.79     \def\captionsacadian{\captionsfrench}%
29.80     \def\dateacadian{\datefrench}%
29.81     \def\extrasacadian{\extrasfrench}%
29.82     \def\noextrasacadian{\noextrasfrench}%
29.83 }{}

```

`\extrasfrench` The macro `\extrasfrench` will perform all the extra definitions needed for the French language. The macro `\noextrasfrench` is used to cancel the actions of `\extrasfrench`.

In French “apostrophe” is used in hyphenation in expressions like `l’ambulance` (French patterns provide entries for this kind of words). This means that the `\lccode` of “apostrophe” has to be non null in French for proper hyphenation of those expressions, and to be reset to null when exiting French.

```

29.84 \@namedef{extras\CurrentOption}{\lccode‘\’=‘\’}
29.85 \@namedef{noextras\CurrentOption}{\lccode‘\’=0}

```

It is best to use  $\text{\LaTeX 2}_{\epsilon}$ ’s font changing commands, and to emulate those we need when they are not available, as in  $\text{\PlainTeX}$  or  $\text{\LaTeX-2.09}$ . Be aware that old commands `\sc`, `\it`, *etc.* exist in  $\text{\LaTeX 2}_{\epsilon}$ , but they behave like they did in  $\text{\LaTeX-2.09}$  (i.e., they switch back to `\normalfont` instead of keeping the other font attributes unchanged).

```

29.86 \ifx\scshape\@undefined
29.87     \ifx\sc\@undefined
29.88         \let\scshape\relax
29.89     \else
29.90         \let\scshape\sc
29.91     \fi
29.92 \fi

```



```

29.93 \ifx\emph\@undefined
29.94   \ifx\em\@undefined
29.95     \let\emph\relax
29.96   \else
29.97     \def\emph#1{\em #1}
29.98   \fi
29.99 \fi

```

## 29.2 Caption names

The next step consists of defining the French equivalents for the  $\text{\LaTeX}$  caption names.

In French, captions in figures and tables should be printed with endash (‘–’) instead of the standard ‘:’. If another separator is preferred, see in the example configuration file above (section 28) how to change the default value of `\CaptionSeparator`.

We first store the standard definition of `\@makecaption` (e.g., the one provided in `article.cls`, `report.cls`, `book.cls` which is frozen for  $\text{\LaTeX} 2_{\epsilon}$  according to Frank Mittelbach), in `\STD@makecaption`. ‘`ATBeginDocument`’ we compare it to its current definition (some classes like koma-script classes, AMS classes, `ua-thesis.cls`...change it). If they are identical, `frenchb` just adds a hook called `\CaptionSeparator` to `\@makecaption`, `\CaptionSeparator` defaults to ‘: ’ as in the standard `\@makecaption`, and will be changed to ‘– ’ in French. If the definitions differ, `frenchb` doesn’t overwrite the changes, but prints a message in the `.log` file.

```

29.100 \ifLaTeXe
29.101   \long\def\STD@makecaption#1#2{%
29.102     \vskip\abovecaptionskip
29.103     \sbox\@tempboxa{#1: #2}%
29.104     \ifdim \wd\@tempboxa >\hsize
29.105       #1: #2\par
29.106     \else
29.107       \global \@minipagefalse
29.108       \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
29.109     \fi
29.110     \vskip\belowcaptionskip}
29.111   \def\CaptionSeparator{\string:\space}
29.112   \long\def\FB@makecaption#1#2{%
29.113     \vskip\abovecaptionskip
29.114     \sbox\@tempboxa{#1\CaptionSeparator #2}%
29.115     \ifdim \wd\@tempboxa >\hsize
29.116       #1\CaptionSeparator #2\par
29.117     \else
29.118       \global \@minipagefalse
29.119       \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
29.120     \fi
29.121     \vskip\belowcaptionskip}
29.122   \AtBeginDocument{%
29.123     \ifx\@makecaption\STD@makecaption
29.124       \let\@makecaption\FB@makecaption
29.125     \else
29.126       \ifx\@makecaption\@undefined\else

```

```

29.127 \PackageWarning{frenchb.ldb}%
29.128 {The definition of \protect\@makecaption\space
29.129 has been changed,\MessageBreak
29.130 frenchb will NOT customize it;\MessageBreak reported}%
29.131 \fi
29.132 \fi
29.133 \let\FB@makecaption\relax
29.134 \let\STD@makecaption\relax}
29.135 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.136 \def\CaptionSeparator{\string\space}}
29.137 \fi

```

`\captionsfrench` The macro `\captionsfrench` defines all strings used in the four standard document classes provided with  $\text{\LaTeX}$ . Some authors do not like some of these names; it is easy to change them in the preamble *after* loading `frenchb` (or in your file `frenchb.cfg`), e.g. `\addto\captionsfrench{\def\figurename{Figure}}` will print ‘Figure’ in Roman instead of ‘FIG.’.

```

29.138 \ifLaTeX
29.139 \@namedef{captions\CurrentOption}{%
29.140 \def\refname{R\’ef\’erences}%
29.141 \def\abstractname{R\’esum\’e}%
29.142 \def\bibname{Bibliographie}%
29.143 \def\prefacename{Pr\’eface}%
29.144 \def\chaptername{Chapitre}%
29.145 \def\appendixname{Annexe}%
29.146 \def\contentsname{Table des mati\’eres}%
29.147 \def\listfigurename{Table des figures}%
29.148 \def\listtablename{Liste des tableaux}%
29.149 \def\indexname{Index}%
29.150 \def\figurename{{\scshape Fig.}}%
29.151 \def\tablename{{\scshape Tab.}}%
29.152 \def\CaptionSeparator{\space\textendash\space}%

```

“Première partie” instead of “Part I”

```

29.153 \def\partname{\protect\@Fpt partie}%
29.154 \def\@Fpt{{\ifcase\value{part}\or Premi\’ere\or Deuxi\’eme\or
29.155 Troisi\’eme\or Quatri\’eme\or Cinqui\’eme\or Sixi\’eme\or
29.156 Septi\’eme\or Huiti\’eme\or Neuvi\’eme\or Dixi\’eme\or Onzi\’eme\or
29.157 Douzi\’eme\or Treizi\’eme\or Quatorzi\’eme\or Quinzi\’eme\or
29.158 Seizi\’eme\or Dix-septi\’eme\or Dix-huiti\’eme\or Dix-neuvi\’eme\or
29.159 Vingt\’eme\fi}\space\def\thepart{}}%
29.160 \def\pagename{page}%
29.161 \def\seename{{\emph{voir}}}%
29.162 \def\alsoname{{\emph{voir aussi}}}%
29.163 \def\enclname{P.~J. }%
29.164 \def\ccname{Copie \’a }%
29.165 \def\headtoname{}%
29.166 \def\proofname{D\’emonstration}% for AMS-\LaTeX
29.167 \def\glossaryname{Glossaire}%
29.168 }
29.169 \fi

```

## 29.3 Punctuation

The ‘double punctuation’ characters (; ! ? and :) have to be made \active for an automatic control of the amount of space to insert before them.

```
29.170 \initiate@active@char{:}
29.171 \initiate@active@char{;}
29.172 \initiate@active@char{!}
29.173 \initiate@active@char{?}
```

We specify that the French group of shorthands should be used.

```
29.174 \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.175   \languageshorthands{french}}
```

These characters are ‘turned on’ once, later their definition may vary.

```
29.176 \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.177   \bbl@activate{:}\bbl@activate{;}%
29.178   \bbl@activate{!}\bbl@activate{?}}
29.179 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.180   \bbl@deactivate{:}\bbl@deactivate{;}%
29.181   \bbl@deactivate{!}\bbl@deactivate{?}}
```

One more thing \extrasfrench needs to do is to make sure that \frenchspacing is in effect. If this is not the case the execution of \noextrasfrench will switch it off again.

```
29.182 \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.183   \bbl@frenchspacing}
29.184 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.185   \bbl@nonfrenchspacing}
```

\french@sh@;@ We have to tune the amount of white space before ; ! ? and :. This should only happen in horizontal mode, hence the test \ifhmode.

In horizontal mode, if a space has been typed before ‘;’ we remove it and put an unbreakable \thinspace instead. If no space has been typed, we add \FDP@thinspace which will be defined, up to the user’s wishes, as an automatic added thin space, or as \@empty.

```
29.186 \declare@shorthand{french}{;}{%
29.187   \ifhmode
29.188     \ifdim\lastskip>\z@
29.189       \unskip\penalty\@M\thinspace
29.190     \else
29.191       \FDP@thinspace
29.192     \fi
29.193   \fi}
```

Now we can insert a ; character.

```
29.194   \string;}
```

\french@sh@!@ Because these definitions are very similar only one is displayed in a way that the \french@sh@?@ definition can be easily checked.

```
29.195 \declare@shorthand{french}{!}{%
29.196   \ifhmode
29.197     \ifdim\lastskip>\z@
29.198       \unskip\penalty\@M\thinspace
29.199     \else
```

```

29.200      \FDP@thinspace
29.201      \fi
29.202      \fi
29.203      \string!}

29.204 \declare@shorthand{french}{?}{%
29.205      \ifhmode
29.206          \ifdim\lastskip>\z@
29.207              \unskip\penalty\@M\thinspace
29.208          \else
29.209              \FDP@thinspace
29.210          \fi
29.211      \fi
29.212      \string?}

```

`\french@sh@:` The ‘:’ requires a normal space before it, instead of a `\thinspace`.

```

29.213 \declare@shorthand{french}{:}{%
29.214      \ifhmode
29.215          \ifdim\lastskip>\z@
29.216              \unskip\penalty\@M\Fcolonspace
29.217          \else
29.218              \FDP@colonspace
29.219          \fi
29.220      \fi
29.221      \string:}

```

`\Fcolonspace` `\FDP@thinspace` and `\FDP@space` are defined as unbreakable spaces by `\AutoSpaceBeforeFDP` or as `\empty` by `\NoAutoSpaceBeforeFDP`.  
`\NoAutoSpaceBeforeFDP` Default is `\AutoSpaceBeforeFDP`.

```

29.222 \newcommand{\Fcolonspace}{\space}
29.223 \def\AutoSpaceBeforeFDP{%
29.224     \def\FDP@thinspace{\penalty\@M\thinspace}%
29.225     \def\FDP@colonspace{\penalty\@M\Fcolonspace}}
29.226 \def\NoAutoSpaceBeforeFDP{\let\FDP@thinspace\empty
29.227                               \let\FDP@colonspace\empty}
29.228 \AutoSpaceBeforeFDP

```

`\system@sh@:` When the active characters appear in an environment where their French behaviour is not wanted they should give an ‘expected’ result. Therefore we define `\system@sh@?` shorthands at system level as well.

```

\system@sh@;
29.229 \declare@shorthand{system}{:}{\string:}
29.230 \declare@shorthand{system}{!}{\string!}
29.231 \declare@shorthand{system}{?}{\string?}
29.232 \declare@shorthand{system}{;}{\string;}

```

## 29.4 French quotation marks

EC/LM fonts and standard PostScript fonts have built-in guillemets, we of course use them. CM fonts have no French guillemets built-in, so we have to emulate them:

- if a file ‘t1lmr.fd’ is found, we expect the LM fonts to be present on the system, so we pick up French guillemets from them; before version 1.6b, French

guillemets were borrowed from the ‘wncyr’ fonts, this has been changed because it resulted in a conflict with the russian option of `babel`. Former Cyrillic guillemets are still available through the command `\CyrillicGuillemets` (for backward compatibility).

- otherwise we use math symbols, either L<sup>A</sup>T<sub>E</sub>X’s ‘lasy’ font if available, or T<sub>E</sub>X symbols `\ll` and `\gg` otherwise;

The standard names for French quotation marks are `\guillemotleft` and `\guillemotright`, these commands are defined in `tlenc.def` for T1-encoding. In L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> formats, we first define these commands for OT1-encoding (for CM fonts), using either the Polish ‘pl\*’ fonts or L<sup>A</sup>T<sub>E</sub>X’s ‘lasy’ fonts. Other local text encodings *should* define them too, but if they don’t, the OT1 definitions will be used. The standard PostScript fonts should *always* be used together with T1-encoding (*not* OT1), for proper hyphenation and built-in (better looking) French quotation marks.

The next step is to provide correct spacing after `\guillemotleft` and before `\guillemotright`: a space precedes and follows quotation marks but no line break is allowed neither *after* the opening one, nor *before* the closing one. `\guill@spacing` which does the spacing, has been fine tuned by Thierry Bouche.

The top macros for quotation marks will be called `\og` (“ouvrez guillemets”) and `\fg` (“fermez guillemets”).

The top level definitions for French quotation marks are switched on and off through the `\extrasfrench` `\noextrasfrench` mechanism. Outside French, `\og` and `\fg` will typeset standard English opening and closing double quotes.

As `\DeclareTextCommand` cannot be used after the `\begin{document}` we introduce internal definitions `\begin@guill` and `\end@guill`.

We’ll try to be smart to users of D. CARLISLE’s `xspace` package: if this package is loaded there will be no need for `{}` or `\` to get a space after `\fg`.

`\guillemotleft` In L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> we provide a dummy definition for `\og` and `\fg`, just to display an error message in case `\og` or `\fg` have been defined elsewhere.

```
\og 29.233 \newcommand{\og}{\@empty}
\fg 29.234 \newcommand{\fg}{\@empty}
```

`\FrenchGuillemetsFrom`

```
29.235 \ifLaTeXe
29.236   \def\FrenchGuillemetsFrom#1#2#3#4{%
29.237     \DeclareFontEncoding{#1}{-}{-}%
29.238     \DeclareFontSubstitution{#1}{#2}{m}{n}%
29.239     \DeclareTextCommand{\guillemotleft}{OT1}{%
29.240       {\fontencoding{#1}\fontfamily{#2}\selectfont\char#3}}%
29.241     \DeclareTextCommand{\guillemotright}{OT1}{%
29.242       {\fontencoding{#1}\fontfamily{#2}\selectfont\char#4}}}
```

`\CyrillicGuillemets`

```
\PolishGuillemets 29.243 \def\CyrillicGuillemets{\FrenchGuillemetsFrom{OT2}{wncyr}{60}{62}}
\LasyGuillemets 29.244 \def\PolishGuillemets{\FrenchGuillemetsFrom{T1}{lmr}{19}{20}}
\bbl@frenchguillemets 29.245 \def\LasyGuillemets{%
\bbl@nonfrenchguillemets 29.246 \DeclareTextCommand{\guillemotleft}{OT1}{\hbox{%
29.247   \fontencoding{U}\fontfamily{lasy}\selectfont\kern-0.20em{}}}%
29.248 \DeclareTextCommand{\guillemotright}{OT1}{\hbox{%
```

```

29.249 \fontencoding{U}\fontfamily{lasy}\selectfont)\kern-0.20em)}}}
29.250 \IfFileExists{t1lmr.fd}{\PolishGuillemets}{\LasyGuillemets}
29.251 \DeclareTextSymbolDefault{\guillemotleft}{OT1}
29.252 \DeclareTextSymbolDefault{\guillemotright}{OT1}
29.253 \def\guill@spacing{\penalty\@M\hskip.8\fontdimen2\font
29.254 plus.3\fontdimen3\font
29.255 minus.8\fontdimen4\font}
29.256 \DeclareRobustCommand*\begin@guill{\leavevmode
29.257 \guillemotleft\penalty\@M\guill@spacing}
29.258 \DeclareRobustCommand*\end@guill{\ifdim\lastskip>\z@ \unskip\fi
29.259 \penalty\@M\guill@spacing\guillemotright\xspace}
29.260 \AtBeginDocument{\ifx\xspace\undefined\let\xspace\relax\fi}
29.261 \def\bbl@frenchguillemets{\renewcommand{\og}{\begin@guill}%
29.262 \renewcommand{\fg}{\end@guill}}
29.263 \def\bbl@nonfrenchguillemets{\renewcommand{\og}{‘}%
29.264 \renewcommand{\fg}{\ifdim\lastskip>\z@ \unskip\fi ’}}

```

For *Plain*TeX, and L<sup>A</sup>T<sub>E</sub>X-2.09 we define `\begin@guill` and `\end@guill` using math symbols `\ll` and `\gg`.

```

29.265 \else
29.266 \def\begin@guill{\leavevmode\raise0.25ex
29.267 \hbox{$\scriptscriptstyle\ll$}%
29.268 \penalty\@M\hskip.8\fontdimen2\font
29.269 plus.3\fontdimen3\font
29.270 minus.3\fontdimen4\font}
29.271 \def\end@guill{\ifdim\lastskip>\z@ \unskip\penalty\@M\fi
29.272 \penalty\@M\hskip.8\fontdimen2\font
29.273 plus.3\fontdimen3\font minus.3\fontdimen4\font
29.274 \raise0.25ex\hbox{$\scriptscriptstyle\gg$}}
29.275 \let\xspace\relax
29.276 \def\bbl@frenchguillemets{\let\og\begin@guill
29.277 \let\fg\end@guill}
29.278 \def\bbl@nonfrenchguillemets{\def\og{‘}%
29.279 \def\fg{\ifdim\lastskip>\z@ \unskip\fi ’}}
29.280 \fi
29.281 \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.282 \bbl@frenchguillemets}
29.283 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.284 \bbl@nonfrenchguillemets}

```

## 29.5 French lists

`\bbl@frenchlistspacing` Vertical spacing in general lists should be shorter in French texts than the defaults provided by L<sup>A</sup>T<sub>E</sub>X. Note that the easy way, just changing values of vertical spacing parameters when entering French and restoring them to their defaults on exit would not work; as most lists are based on `\list` we will redefine `\list` (up to version 1.4, the more internal command `\@trivlist` was redefined, this ensured that all lists would have common settings, but didn’t allow the users to provide their own settings, as pointed out by P. Pichareau). If standard LaTeX settings are preferred, it is easy to issue the command `\FrenchListSpacingfalse` in the preamble or in `frenchb.cfg`. Please note that changing the flag `\FrenchListSpacing` will *not* take effect immediately, but next time language French is switched on.

The amount of vertical space before and after a list is given by `\topsep` +

`\parskip` (+ `\partopsep` if the list starts a new paragraph). IMHO, `\parskip` should be added *only* when the list starts a new paragraph, so I subtract `\parskip` from `\topsep` and add it back to `\partopsep`; this will normally make no difference because `\parskip`'s default value is 0pt, but will be noticeable when `\parskip` is *not* null.

Of course, this code is only for L<sup>A</sup>T<sub>E</sub>X.

```
29.285 \newif\ifFrenchListSpacing \FrenchListSpacingtrue
29.286 \newif\ifFrenchOldTrivlist
29.287 \ifLaTeX
29.288 \let\listORI\list
```

`\endlist` is not redefined, but `\endlistORI` is provided for the users who prefer to define their own lists from the original command, they can code: `\begin{listORI}{...}\end{listORI}`.

```
29.289 \let\endlistORI\endlist
29.290 \def\FR@listsettings{%
29.291   \setlength{\itemsep}{0.4ex plus 0.2ex minus 0.2ex}%
29.292   \setlength{\parsep}{0.4ex plus 0.2ex minus 0.2ex}%
29.293   \setlength{\topsep}{0.8ex plus 0.4ex minus 0.4ex}%
29.294   \setlength{\partopsep}{0.4ex plus 0.2ex minus 0.2ex}%
```

`\parskip` is of type ‘skip’, its mean value only (*not the glue*) should be subtracted from `\topsep` and added to `\partopsep`, so convert `\parskip` to a ‘dimen’ using `\@tempdima`.

```
29.295   \@tempdima=\parskip
29.296   \addtolength{\topsep}{-\@tempdima}%
29.297   \addtolength{\partopsep}{\@tempdima}%
29.298 \def\listFR#1#2{\listORI{#1}{\FR@listsettings #2}}%
```

Keep the `\@trivlist` redefinition from version 1.4 (only for compatibility reasons). The flag `\ifFrenchOldTrivlist` could happen to be useful to process older documents.

```
29.299 \let\@trivlistORI\@trivlist
29.300 \def\@trivlistFR{\FR@listsettings\@trivlistORI}
29.301 \def\bbl@frenchlistspacing{\ifFrenchListSpacing\let\list\listFR\fi
29.302   \ifFrenchOldTrivlist\let\@trivlist\@trivlistFR
29.303   \let\list\listORI\fi}
29.304 \def\bbl@nonfrenchlistspacing{\let\list\listORI
29.305   \let\@trivlist\@trivlistORI}
29.306 \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.307   \bbl@frenchlistspacing}
29.308 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.309   \bbl@nonfrenchlistspacing}
29.310 \fi
```

`\bbl@frenchitemize` The layout of French itemize-lists has changed between version 1.2 and 1.3.  
`\bbl@nonfrenchitemize` Jacques André and Thierry Bouche pointed out to me that vertical spacing between items, before and after the list, should *null* with *no glue* added. Moreover horizontal spacing was not correct either: the item labels of a first level list should be vertically aligned on the paragraph’s first character (at `\parindent` from the left margin). Checking the book “Lexique des règles typographiques en usage à l’Imprimerie nationale” confirmed their points, so the itemize environment has been totally redefined for French in version 1.3.

Several people pointed out to me that the layout of lists can either be set by the current language or be tuned independently of the language as part of the layout of the document. So hooks should be provided to switch off the special settings made in `frenchb`. Setting `\FrenchItemizeSpacingfalse` *after* loading `frenchb` in the preamble switches back to settings of version 1.2 (this can be useful to process old documents). If you want all list spacings to be exactly what they are in standard L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, then add also `\FrenchListSpacingfalse` in the preamble *after* loading `frenchb`. Both switches can also be set in `frenchb.cfg`. Please note that changing the flags `\FrenchItemizeSpacing` and `\FrenchListSpacing` will *not* take effect immediately, but next time language French is switched on.

The `•` is never used in French itemize-lists, a long dash ‘`–`’ is preferred for all levels. The item label used in French is stored in `\FrenchLabelItem`, it defaults to ‘`–`’ and can be changed using `\renewcommand` (see the example configuration file above).

```

29.311 \newif\ifFrenchItemizeSpacing \FrenchItemizeSpacingtrue
29.312 \ifLaTeX
29.313   \newcommand{\FrenchLabelItem}{\textendash}
29.314   \newcommand{\Frlabelitemi}{\FrenchLabelItem}
29.315   \newcommand{\Frlabelitemii}{\FrenchLabelItem}
29.316   \newcommand{\Frlabelitemiii}{\FrenchLabelItem}
29.317   \newcommand{\Frlabelitemiv}{\FrenchLabelItem}
29.318   \def\bbl@frenchitemize{%
29.319     \let\@ltiORI\labelitemi
29.320     \let\@ltiiORI\labelitemii
29.321     \let\@ltiiiORI\labelitemiii
29.322     \let\@ltivORI\labelitemiv
29.323     \let\itemizeORI\itemize
29.324     \let\labelitemi\Frlabelitemi
29.325     \let\labelitemii\Frlabelitemii
29.326     \let\labelitemiii\Frlabelitemiii
29.327     \let\labelitemiv\Frlabelitemiv
29.328   \ifFrenchItemizeSpacing

```

Make sure `\itemize` uses `\@trivlistORI` even with `\FrenchOldTrivlisttrue`.

```

29.329   \def\itemize{\let\@trivlist\@trivlistORI
29.330     \ifnum \@itemdepth >\thr@@\@toodeep\else
29.331       \advance\@itemdepth\@ne
29.332       \edef\@itemitem{labelitem\romannumeral\the\@itemdepth}%
29.333       \expandafter
29.334       \listORI
29.335       \csname\@itemitem\endcsname
29.336       {\settowidth{\labelwidth}{\csname\@itemitem\endcsname}%
29.337         \setlength{\leftmargin}{\labelwidth}%
29.338         \addtolength{\leftmargin}{\labelsep}%
29.339         \ifnum\@listdepth=0
29.340           \setlength{\itemindent}{\parindent}%
29.341         \else
29.342           \addtolength{\leftmargin}{\parindent}%
29.343         \fi
29.344         \setlength{\itemsep}{\z@}%
29.345         \setlength{\parsep}{\z@}%
29.346         \setlength{\topsep}{\z@}%
29.347         \setlength{\partopsep}{\z@}%

```



`\parskip` is of type ‘skip’, its mean value only (*not the glue*) should be subtracted from `\topsep` and added to `\partopsep`, so convert `\parskip` to a ‘dimen’ using `\@tempdima`.

```

29.348      \@tempdima=\parskip
29.349      \addtolength{\topsep}{- \@tempdima}%
29.350      \addtolength{\partopsep}{\@tempdima}%
29.351      \fi}%
29.352      \fi}

```

The user’s changes in labelitems are saved when leaving French for further use when switching back to French.

```

29.353      \def\bbl@nonfrenchitemize{\let\Frlabelitemi\labelitemi
29.354                                     \let\Frlabelitemii\labelitemii
29.355                                     \let\Frlabelitemiii\labelitemiii
29.356                                     \let\Frlabelitemiv\labelitemiv
29.357                                     \let\labelitemi\@ltiORI
29.358                                     \let\labelitemii\@ltiiORI
29.359                                     \let\labelitemiii\@ltiiiORI
29.360                                     \let\labelitemiv\@ltivORI
29.361                                     \let\itemize\itemizeORI}
29.362      \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.363        \bbl@frenchitemize}
29.364      \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.365        \bbl@nonfrenchitemize}
29.366      \fi

```

## 29.6 French indentation of sections

`\bbl@frenchindent` In French the first paragraph of each section should be indented, this is another difference with US-English. Add this code only in L<sup>A</sup>T<sub>E</sub>X.

```

29.367 \ifLaTeX
29.368   \let@aifORI\@afterindentfalse
29.369   \def\bbl@frenchindent{\let\@afterindentfalse\@afterindenttrue
29.370                               \@afterindenttrue}
29.371   \def\bbl@nonfrenchindent{\let\@afterindentfalse\@aifORI
29.372                               \@afterindentfalse}
29.373   \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.374     \bbl@frenchindent}
29.375   \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.376     \bbl@nonfrenchindent}
29.377 \fi

```

## 29.7 Formatting footnotes

`\AddThinSpaceBeforeFootnotes` `\AddThinSpaceBeforeFootnotes` redefines `\@footnotemark` (whose definition is saved at the `\begin{document}` in order to include any customization that packages might have done) to add a thinspace before the number or symbol calling a footnote (any space typed in is removed first). `\AddThinSpaceBeforeFootnotes` has no effect on the layout of the footnote itself. Note that `\thanks` in `\maketitle` also relies on `\@footnotemark`, so the thinspace is added there too.

```

29.378 \newif\ifthinspace@FN
29.379 \newif\ifFR@fntlayout

```

```

29.380 \newdimen\parindentFFN
29.381 \ifLaTeXe
29.382   \newcommand{\AddThinSpaceBeforeFootnotes}{\thinspace@FNtrue}
29.383   \AtBeginDocument{\let\@footnotemarkORI\@footnotemark
29.384                     \def\@footnotemarkFR{\leavevmode\unskip\unkern
29.385                                     \,\@footnotemarkORI}%
29.386                     \ifthinspace@FN
29.387                     \let\@footnotemark\@footnotemarkFR
29.388                     \fi}

```

We then define `\@makefnttextFR`, a variant of `\@makefnttext` which is responsible for the layout of footnotes, to match the specifications of the French ‘Imprimerie Nationale’: Footnotes will be indented by `\parindentFFN`, numbers (if any) typeset on the baseline (instead of textsuperscripts) and followed by a dot and an half quad space. Whenever symbols are used to number footnotes (as in `\thanks` for instance), we switch back to the standard layout (the French layout of footnotes is meant for footnotes numbered by arabic or roman digits). The value of `\parindentFFN` will be defined at the `\begin{document}`, as the maximum of `\parindent` and 1.5em.

```

29.389   \def\ftnISSymbol{\@fnsymbol\c@footnote}
29.390   \long\def\@makefnttextFR#1{\ifx\thefootnote\ftnISSymbol
29.391                               \@makefnttextORI{#1}%
29.392                               \else
29.393                               \parindent=\parindentFFN
29.394                               \rule{z@}{\footnotesep}
29.395                               \setbox\@tempboxa\hbox{\@thefnmark}%
29.396                               \ifdim\wd\@tempboxa>z@
29.397                               \llap{\@thefnmark}.\kern.5em
29.398                               \fi #1
29.399                               \fi}%

```

We now define two commands `\FrenchFootnotes` and `\StandardFootnotes` which select French or Standard layout for footnotes; we have to save the standard definition of `\@makefnttext` at the `\begin{document}`, and then redefine `\@makefnttext` according to the value of an internal flag set by `\FrenchFootnotes` and reset by `\StandardFootnotes`.

```

29.400   \AtBeginDocument{\parindentFFN=\parindent
29.401                     \ifdim\parindentFFN<1.5em\parindentFFN=1.5em\fi
29.402                     \let\@makefnttextORI\@makefnttext
29.403                     \long\def\@makefnttext#1{%
29.404                         \ifFR@fntlayout
29.405                         \@makefnttextFR{#1}%
29.406                         \else
29.407                         \@makefnttextORI{#1}%
29.408                         \fi
29.409                     }%
29.410   }
29.411   \newcommand{\FrenchFootnotes}{\FR@fntlayouttrue}
29.412   \newcommand{\StandardFootnotes}{\FR@fntlayoutfalse}
29.413 \fi

```

## 29.8 Formatting numbers

`\DecimalMathComma` As mentioned in the T<sub>E</sub>Xbook p. 134, the comma is of type `\mathpunct` in math mode: it is automatically followed by a space. This is convenient in lists and intervals but unpleasant when the comma is used as a decimal separator in French: it has to be entered as `{,}`. `\DecimalMathComma` makes the comma be an ordinary character (of type `\mathord`) in French *only* (no space added); `\StandardMathComma` switches back to the standard behaviour of the comma.

```

29.414 \newcount\std@mcc
29.415 \newcount\dec@mcc
29.416 \std@mcc=\mathcode'\,,
29.417 \dec@mcc=\std@mcc
29.418 \@tempcnta=\std@mcc
29.419 \divide\@tempcnta by "1000
29.420 \multiply\@tempcnta by "1000
29.421 \advance\dec@mcc by -\@tempcnta
29.422 \newcommand{\DecimalMathComma}{\iflanguage{french}%
29.423                                     {\mathcode'\,,=\dec@mcc}{}}%
29.424                                     \addto\extrasfrench{\mathcode'\,,=\dec@mcc}}
29.425 \newcommand{\StandardMathComma}{\mathcode'\,,=\std@mcc
29.426                                     \addto\extrasfrench{\mathcode'\,,=\std@mcc}}
29.427 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.428     \mathcode'\,,=\std@mcc}

```

In English the decimal part starts with a point and thousands should be separated by a comma: an approximation of  $1000\pi$  should be inputed as `$3{,}141.592{,}653$` in math mode and as `3,141.592,653` in text.

In French the decimal part starts with a comma and thousands should be separated by a space; the same approximation of  $1000\pi$  should be inputed as `$3\,;141{,}592\,;653$` in math mode and as something like `3~141,592~653` in text: in math mode, the comma is of type `\mathpunct` (thus normally followed by a space) while the point is of type `\mathord` (no space added).

Thierry Bouche suggested that a second type of comma, of type `\mathord` would be useful in math mode, and proposed to introduce a command (named `\decimalsep` in this package), the expansion of which would depend on the current language.

Vincent Jalby suggested a command `\nombre` to conveniently typeset numbers: inputting `\nombre{3141,592653}` either in text or in math mode will format this number properly according to the current language (French or non-French).

`\nombre` accepts an optional argument which happens to be useful with the package ‘dcolumn’, it specifies the decimal separator used in the *source code*: `\newcolumnntype{d}{D{,}{\decimalsep}{-1}}`

```

\begin{tabular}{d}\hline
3,14 \\\
\nombre[,]{123,4567} \\\
\nombre[,]{9876,543}\\\hline
\end{tabular}

```

will print a column of numbers aligned on the decimal point (comma or point depending on the current language), each slice of 3 digits being separated by a space or a comma according to the current language.

`\decimalsep` We need a internal definition, valid in both text and math mode, for the comma  
`\thousandsep`

(\@comma@) and another one for the unbreakable fixed length space (no glue) used in French (\f@thousandsep).

The commands \decimalsep and \thousandsep get default definitions (for the English language) when frenchb is loaded; these definitions will be updated when the current language is switched to or from French.

```

29.429 \mathchardef\m@comma=\dec@mcc
29.430 \def\@comma@\ifmmode\m@comma\else,\fi}
29.431 \def\f@thousandsep{\ifmmode\mskip5.5mu\else\penalty\@M\kern.3em\fi}
29.432 \def\ThinSpaceInFrenchNumbers{\def\f@thousandsep{%
29.433     \ifmmode\mskip3mu\else\penalty\@M\kern.16667em\fi}}
29.434 \newcommand{\decimalsep}{.}
29.435 \newcommand{\thousandsep}{\@comma@}
29.436 \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.437     \def\decimalsep{\@comma@}%
29.438     \def\thousandsep{\f@thousandsep}}
29.439 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.440     \def\decimalsep{.}%
29.441     \def\thousandsep{\@comma@}}

```

Signs can now be entered inside \nombre. When \nombre is used in text-mode, signs should be text symbols to get the series, shape... from the current text-font. When signs are not available in text-mode, we provide some defaults.

```

29.442 \providecommand{\textminus}{\textendash}
29.443 \providecommand{\textplusminus}{\ensuremath{\pm}}
29.444 \providecommand{\textminusplus}{\ensuremath{\mp}}
29.445 \def\fb@minus{\ifmmode-\else\textminus\fi}
29.446 \def\fb@plusminus{\ifmmode\pm\else\textplusminus\fi}
29.447 \def\fb@minusplus{\ifmmode\mp\else\textminusplus\fi}

```

**\nombre** The decimal separator used when *inputting* a number with \nombre *has to be a comma*. \nombre splits the inputted number into two parts: what comes before the first comma will be formatted by \@integerpart while the rest (if not empty) will be formatted by \@decimalpart. Both parts, once formatted separately will be merged together with between them, either the decimal separator \decimalsep or (in L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> *only*) the optional argument of \nombre.

```

29.448 \if@Two@E
29.449 \newcommand{\nombre}[2][\decimalsep]{\def\@decimalsep{#1}%
29.450     \@@nombre#2\@empty,\@empty,\@nil}
29.451 \else
29.452 \def\@decimalsep{\decimalsep}
29.453 \newcommand{\nombre}[1]{\@nombre#1\@empty,\@empty,\@nil}
29.454 \fi
29.455 \def\@firstofmany#1#2,{#1}
29.456 \def\@@nombre#1,#2,#3\@nil{%
29.457     \def\nb@sign{}}%
29.458     \edef\nb@first{\@firstofmany #1\@empty,}%
29.459     \edef\nb@suite{\@secondoftwo #1\@empty,}%
29.460     \if+\nb@first \def\nb@sign{+}\fi
29.461     \if-\nb@first \def\nb@sign{\fb@minus}\fi
29.462     \expandafter\ifx\nb@first\pm \def\nb@sign{\fb@plusminus}\fi
29.463     \expandafter\ifx\nb@first\mp \def\nb@sign{\fb@minusplus}\fi
29.464     \ifx\@empty\nb@sign

```

```

29.465      \let\@tmp\nb@suite\edef\nb@suite{\nb@first\@tmp}%
29.466      \fi
29.467      \nb@sign\expandafter\@nombre\nb@suite#2,#3\@nil}
29.468 \def\@nombre#1,#2,#3\@nil{%
29.469      \ifx\@empty#2%
29.470      \@integerpart{#1}%
29.471      \else
29.472      \@integerpart{#1}\@decimalsep\@decimalpart{#2}%
29.473      \fi}

```

The easiest bit is the decimal part: We attempt to read the first four digits of the decimal part, if it has less than 4 digits, we just have to print them, otherwise `\thousandsep` has to be appended after the third digit, and the algorithm is applied recursively to the rest of the decimal part.

```

29.474 \def\@decimalpart#1{\@decimalpart#1\@empty\@empty\@empty}
29.475 \def\@decimalpart#1#2#3#4{#1#2#3%
29.476   \ifx\@empty#4%
29.477   \else
29.478   \thousandsep\expandafter\@decimalpart\expandafter#4%
29.479   \fi}

```

Formatting the integer part is more difficult because the slices of 3 digits start from the *bottom* while the number is read from the top! This (tricky) code is borrowed from David Carlisle's `comma.sty`.

```

29.480 \def\@integerpart#1{\@integerpart{#1}\@empty\@empty\@empty}
29.481 \def\@integerpart#1#2#3#4{%
29.482   \ifx\@empty#2%
29.483   \@addthousandsep#1\relax
29.484   \else
29.485   \ifx\@empty#3%
29.486   \@addthousandsep\@empty\@empty#1#2\relax
29.487   \else
29.488   \ifx\@empty#4%
29.489   \@addthousandsep\@empty#1#2#3\relax
29.490   \else
29.491   \@integerpartafterfi{#1#2#3#4}%
29.492   \fi
29.493   \fi
29.494   \fi}
29.495 \def\@integerpartafterfi#1\fi\fi\fi{\fi\fi\fi\@integerpart{#1}}
29.496 \def\@addthousandsep#1#2#3#4{#1#2#3%
29.497   \if#4\relax
29.498   \else
29.499   \thousandsep\expandafter\@addthousandsep\expandafter#4%
29.500   \fi}

```

## 29.9 Dots...

$\text{\LaTeX 2}_{\epsilon}$ 's standard definition of `\dots` in text-mode is `\textellipsis` which includes a `\kern` at the end; this space is not wanted in some cases (before a closing brace for instance) and `\kern` breaks hyphenation of the next word. We define `\Frtextellipsis` for French (in  $\text{\LaTeX 2}_{\epsilon}$  only).

The `\if` construction in the  $\text{\LaTeX 2}_{\epsilon}$  definition of `\dots` doesn't allow the use of `xspace` (`xspace` is always followed by a `\fi`), so we use the AMS- $\text{\LaTeX}$  con-

struction of `\dots`; this has to be done ‘AtBeginDocument’ not to be overwritten when `amsmath.sty` is loaded after `babel`.

`\Frtextellipsis`

```

29.501 \ifLaTeXe
29.502   \DeclareTextCommandDefault{\Frtextellipsis}{%
29.503     .\kern\fontdimen3\font.\kern\fontdimen3\font.\xspace}
    \Mdots@ and \Tdots@ORI hold the definitions of \dots in Math and Text mode.
    They default to those of amsmath-2.0, and will revert to standard LATEX definitions
    ‘AtBeginDocument’, if amsmath has not been loaded. \Mdots@ doesn’t change
    when switching from/to French, while \Tdots@ is \Frtextellipsis in French
    and \Tdots@ORI otherwise.
29.504   \newcommand{\Tdots@ORI}{\@xp\textellipsis}
29.505   \newcommand{\Tdots@}{\Tdots@ORI}
29.506   \newcommand{\Mdots@}{\@xp\mdots@}
29.507   \AtBeginDocument{\DeclareRobustCommand{\dots}{\relax
29.508                     \csname\ifmmode M\else T\fi dots@\endcsname}%
29.509                     \ifx\@xp\@undefined\let\@xp\relax\fi
29.510                     \ifx\mdots@\@undefined\let\Tdots@ORI\textellipsis
29.511                                     \let\Mdots@\mathellipsis\fi}
29.512   \def\bbl@frenchdots{\let\Tdots@\Frtextellipsis}
29.513   \def\bbl@nonfrenchdots{\let\Tdots@\Tdots@ORI}
29.514   \expandafter\addto\csname extras\CurrentOption\endcsname{%
29.515     \bbl@frenchdots}
29.516   \expandafter\addto\csname noextras\CurrentOption\endcsname{%
29.517     \bbl@nonfrenchdots}
29.518 \fi

```

## 29.10 Global layout

In multilingual documents, some typographic rules must depend on the current language (e.g., hyphenation, typesetting of numbers, spacing before double punctuation. . .), others should, IMHO, be kept global to the document: especially the layout of lists (see 29.5) and the indentation of the first paragraph of sections (see 29.6).

`\FrenchLayout` In a multilingual document, a unified look, either the French one or the standard  
`\StandardLayout` one, can be assigned to the whole document: adding `\FrenchLayout` will give a global “French look” to the document (e.g., lists, regardless the current language, will be typeset as in French) and `\StandardLayout` forces a global “US-English” look. Both of these commands can only be used *before* the `\begin{document}`. `\StandardLayout` can also be of interest for class designers who do not want `frenchb` to interfere with their global layout choices.

As of version 1.4, `\FrenchLayout` and `\StandardLayout` only affect:

- the layout of lists (see 29.5),
- the indentation of the first paragraph of sections (see 29.6).

```

29.519 \ifLaTeXe
29.520   \newcommand{\FrenchLayout}{%
29.521     \renewcommand{\StandardLayout}{%

```

```

29.522 \PackageWarning{frenchb.ldf}%
29.523 {\protect\StandardLayout\space makes no change\MessageBreak
29.524 (\protect\FrenchLayout\space has been selected before
29.525 \MessageBreak for the whole document)}}%
29.526 }%
29.527 \AtBeginDocument{\bbl@frenchitemize\bbl@frenchlistspacing
29.528 \bbl@frenchindent}%
29.529 \let\bbl@nonfrenchitemize\relax
29.530 \let\bbl@nonfrenchlistspacing\relax
29.531 \let\bbl@nonfrenchindent\relax}
29.532 \newcommand{\StandardLayout}{%
29.533 \renewcommand{\FrenchLayout}{%
29.534 \PackageWarning{frenchb.ldf}%
29.535 {\protect\FrenchLayout\space makes no change\MessageBreak
29.536 (\protect\StandardLayout\space has been selected before
29.537 \MessageBreak for the whole document)}}%
29.538 }%
29.539 \let\@ltiORI\labelitemi
29.540 \let\@ltiiORI\labelitemii
29.541 \let\@ltiiiORI\labelitemiii
29.542 \let\@ltivORI\labelitemiv
29.543 \let\itemizeORI\itemize
29.544 \let\bbl@frenchitemize\relax
29.545 \let\bbl@frenchlistspacing\relax
29.546 \let\bbl@frenchindent\relax}
29.547 \@onlypreamble\FrenchLayout
29.548 \@onlypreamble\StandardLayout
29.549 \fi

```

## 29.11 Extra utilities

All that is left to do now is to provide the French user with some extra utilities.

`\up` `\up` eases the typesetting of superscripts like ‘1<sup>er</sup>’. `\up` relies on `\textsuperscript` `\ieme` when available (i. e., in L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>).

`\up@size` The internal macro `\up@size` holds the size at which the superscript will be typeset. The reason for this is that we have to specify it differently for different formats.

```

29.550 \ifx\sevenrm\@undefined
29.551 \ifx\@ptsize\@undefined
29.552 \let\up@size\small
29.553 \else
29.554 \ifx\selectfont\@undefined

```

In this case the format is the original L<sup>A</sup>T<sub>E</sub>X-2.09:

```

29.555 \ifcase\@ptsize
29.556 \let\up@size\ixpt\or
29.557 \let\up@size\xpt\or
29.558 \let\up@size\xipt
29.559 \fi

```

When `\selectfont` is defined we probably have NFSS available:

```

29.560 \else

```

```

29.561 \ifcase\@ptsize
29.562 \def\up@size{\fontsize\@ixpt{10pt}\selectfont}\or
29.563 \def\up@size{\fontsize\@xpt{11pt}\selectfont}\or
29.564 \def\up@size{\fontsize\@xipt{12pt}\selectfont}
29.565 \fi
29.566 \fi
29.567 \fi
29.568 \else

```

If we end up here it must be a plain based T<sub>E</sub>X format, so:

```

29.569 \let\up@size\sevenrm
29.570 \fi

```

Now we can define `\up`. When L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> runs in compatibility mode (L<sup>A</sup>T<sub>E</sub>X-2.09 emulation), `\textsuperscript` is also defined, but does no good job, so we give two different definitions for `\up` using `\if@Two@E`.

```

29.571 \if@Two@E
29.572 \DeclareRobustCommand*\up}[1]{\textsuperscript{#1}}
29.573 \else
29.574 \DeclareRobustCommand*\up}[1]{\leavevmode\raiselex\hbox{\up@size#1}}
29.575 \fi

```

`\ieme` is provided for compatibility with `francais.sty`, the other 5 for compatibility with `french.sty`:

```

29.576 \def\ieme{\up{\lowercase{e}}\xspace}
29.577 \def\iemes{\up{\lowercase{es}}\xspace}
29.578 \def\ier{\up{\lowercase{er}}\xspace}
29.579 \def\iers{\up{\lowercase{ers}}\xspace}
29.580 \def\iere{\up{\lowercase{re}}\xspace}
29.581 \def\ieres{\up{\lowercase{res}}\xspace}

```

`\No` And some more macros for numbering, first two support macros.

```

\ng 29.582 \DeclareRobustCommand*\FrenchEnumerate}[1]{%
\primo 29.583 #1\up{\lowercase{o}}\kern+.3em}
\frimo 29.584 \DeclareRobustCommand*\FrenchPopularEnumerate}[1]{%
29.585 #1\up{\lowercase{o}}\kern+.3em}

```

Typing `\primo` should result in ‘1<sup>o</sup>’,

```

29.586 \def\primo{\FrenchEnumerate1}
29.587 \def\secundo{\FrenchEnumerate2}
29.588 \def\tertio{\FrenchEnumerate3}
29.589 \def\quarto{\FrenchEnumerate4}

```

while typing `\fprimo` gives ‘1<sup>o</sup>’.

```

29.590 \def\fprimo{\FrenchPopularEnumerate1}
29.591 \def\fsecundo{\FrenchPopularEnumerate2}
29.592 \def\ftertio{\FrenchPopularEnumerate3}
29.593 \def\fquarto{\FrenchPopularEnumerate4}

```

Let’s provide two macros for the common abbreviations of “Numéro”.

```

29.594 \DeclareRobustCommand*\No{N\up{\lowercase{o}}\kern+.2em}
29.595 \DeclareRobustCommand*\no{n\up{\lowercase{o}}\kern+.2em}

```



`\bsc` As family names should be written in small capitals and never be hyphenated, we provide a command (its name comes from Boxed Small Caps) to input them easily; this is a simpler implementation of commands `\fsc` and `\lsc` from `french.sty`: no automatic uppercase/lowercase conversion is performed. Usage: `Jean~\bsc{Duchemin}`.

```
29.596 \DeclareRobustCommand*{\bsc}[1]{\leavevmode\hbox{\scshape #1}}
```

Some definitions for special characters. The first eight are mandatory for `\oe` etc. to work properly in moving arguments, the others just for convenience. We won't define `\tilde` as a Text Symbol not to conflict with the macro `\tilde` for math mode and use the name `\tild` instead. Note that `\boi` may *not* be used in math mode, its name in math mode is `\backslash`.

`\degre` needs a special treatment: it is `\char6` in T1-encoding and `\char23` in OT1-encoding, both can be accessed by the command `\r{}` for ring accent.

```
29.597 \ifLaTeXe
29.598 \DeclareTextSymbol{\ae}{T1}{230}
29.599 \DeclareTextSymbol{\ae}{OT1}{26}
29.600 \DeclareTextSymbol{\oe}{T1}{247}
29.601 \DeclareTextSymbol{\oe}{OT1}{27}
29.602 \DeclareTextSymbol{\AE}{T1}{198}
29.603 \DeclareTextSymbol{\AE}{OT1}{29}
29.604 \DeclareTextSymbol{\OE}{T1}{215}
29.605 \DeclareTextSymbol{\OE}{OT1}{30}
29.606 \DeclareTextSymbol{\at}{T1}{64}
29.607 \DeclareTextSymbol{\at}{OT1}{64}
29.608 \DeclareTextSymbol{\circonflexe}{T1}{94}
29.609 \DeclareTextSymbol{\circonflexe}{OT1}{94}
29.610 \DeclareTextSymbol{\tild}{T1}{126}
29.611 \DeclareTextSymbol{\tild}{OT1}{126}
29.612 \DeclareTextSymbolDefault{\at}{OT1}
29.613 \DeclareTextSymbolDefault{\circonflexe}{OT1}
29.614 \DeclareTextSymbolDefault{\tild}{OT1}
29.615 \DeclareRobustCommand*{\boi}{\textbackslash}
29.616 \DeclareRobustCommand*{\degre}{\r{}}
29.617 \else
29.618 \def\T@one{T1}
29.619 \ifx\f@encoding\T@one
29.620 \newcommand{\degre}{\char6}
29.621 \else
29.622 \newcommand{\degre}{\char23}
29.623 \fi
29.624 \newcommand{\at}{\char64}
29.625 \newcommand{\circonflexe}{\char94}
29.626 \newcommand{\tild}{\char126}
29.627 \newcommand{\boi}{\textbackslash}
29.628 \fi
```

`\degres` We now define a macro `\degres` for typesetting the abbreviation for ‘degrees’ (as in ‘degrees Celsius’). As the bounding box of the character ‘degree’ has *very* different widths in CM/EC and PostScript fonts, we fix the width of the bounding box of `\degres` to 0.3em, this lets the symbol ‘degree’ stick to the preceding (e.g., `45\degres`) or following character (e.g., `20~\degres C`).

If the T<sub>E</sub>X Companion fonts are available (`textcomp.sty`), we pick up `\textdegree` from them instead of using emulating ‘degrees’ from the `\r{}` accent. Otherwise we overwrite the (poor) definition of `\textdegree` given in `latin1.def`, `applemac.def` etc. (called by `inputenc.sty`) by our definition of `\degres`. We also advice the user (once only) to use TS1-encoding.

```

29.629 \ifLaTeXe
29.630   \def\Warning@degree@TSone{%
29.631     \PackageWarning{frenchb.1df}{%
29.632       Degrees would look better in TS1-encoding:
29.633       \MessageBreak add \protect
29.634       \usepackage{textcomp} to the preamble.
29.635       \MessageBreak Degrees used}}
29.636   \AtBeginDocument{\expandafter\ifx\csname M@TS1\endcsname\relax
29.637     \DeclareRobustCommand*\degres{%
29.638       \leavevmode\hbox to 0.3em{\hss\degre\hss}}%
29.639     \Warning@degree@TSone
29.640     \global\let\Warning@degree@TSone\relax}%
29.641     \let\textdegree\degres
29.642   \else
29.643     \DeclareRobustCommand*\degres{%
29.644       \hbox{\UseTextSymbol{TS1}{\textdegree}}}%
29.645   \fi}
29.646 \else
29.647   \DeclareRobustCommand*\degres{%
29.648     \leavevmode\hbox to 0.3em{\hss\degre\hss}}
29.649 \fi

```

The following macros are used in the redefinition of `\^` and `\"` to handle the letter i: they allow users to type simply `\^i` and `\"i` instead of `\^{i}` and `\"i`.

MT<sub>E</sub>X’s macros dealing with accents conflict with those of L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, so we check whether `\csubinverse` is defined or not. If `\csubinverse` is *defined*, we are in MT<sub>E</sub>X.

```

29.650 \ifLaTeXe
29.651   \AtBeginDocument{%
29.652     \ifx\csubinverse\@undefined
29.653       \DeclareTextCompositeCommand{\^}{OT1}{i}{\^{i}}%
29.654       \DeclareTextCompositeCommand{\"}{OT1}{i}{\\"i}%
29.655     \fi}
29.656 \fi

```

## 29.12 Date and clean up

`\datefrench` The macro `\datefrench` redefines the command `\today` to produce French dates.

```

29.657 \@namedef{date\CurrentOption}{%
29.658   \def\today{\number\day
29.659     \ifnum1=\day {\ier}\fi
29.660     \space \ifcase\month
29.661       \or janvier\or f'evrier\or mars\or avril\or mai\or juin\or
29.662       juillet\or ao\^ut\or septembre\or octobre\or novembre\or
29.663       d'ecembre\fi
29.664     \space \number\year}}

```

The macro `\ldf@quit` takes care for setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value. The config file searched for has to be ‘frenchb.cfg’, and `\CurrentOption` has been set to ‘french’, so `\ldf@finish\CurrentOption` cannot be used: we first load ‘frenchb.cfg’ (in LaTeX2e only), then call `\ldf@quit\CurrentOption`. The macro-space used by some control sequences we do not need any longer, is freed.

```

29.665 \ifLaTeXe
29.666   \loadlocalcfg{frenchb}
29.667 \fi
29.668 \let\T@one\relax
29.669 \let\@FI@\relax
29.670 \let\ifLaTeX\@undefined
29.671 \let\LaTeXtrue\@undefined
29.672 \let\LaTeXfalse\@undefined
29.673 \let\ifLaTeXe\@undefined
29.674 \let\LaTeXetrue\@undefined
29.675 \let\LaTeXefalse\@undefined
29.676 \ldf@quit\CurrentOption
29.677 \end{code}

```

## 30 The Italian language

The file `italian.dtx`<sup>26</sup> defines all the language-specific macros for the Italian language.

The features of this language definition file are the following:

1. The Italian hyphenation is invoked, provided that file `ithyph.tex` was loaded when the  $\text{\LaTeX} 2_{\epsilon}$  format was built; in case it was not, read the information coming with your implementation of the  $\text{\TeX}$  software and the `babel` documentation.
2. The language dependent fixed words to be inserted by such commands as `\chapter`, `\caption`, `\tableofcontents`, etc. are redefined in accordance with the Italian typographical practice.
3. Since Italian can be easily hyphenated and Italian practice allows to break a word before the last two letters, hyphenation parameters have been set accordingly, but a very high demerit value has been set in order to avoid word breaks in the penultimate line of a paragraph. Specifically the `\clubpenalty`, and the `\widowpenalty` are set to rather high values and `\finalhyphendemerits` is set to such a high value that hyphenation is prohibited between the last two lines of a paragraph.
4. Some language specific shortcuts have been defined so as to allow etymological hyphenation, specifically " inserts a break point in any word boundary that the typesetter chooses, provided it is not followed by and accented letter (very unlikely in Italian, where compulsory accents fall only on the last and ending vowel of a word, but may take place with compound words that include foreign roots), and "|" when the desired break point falls before an accented letter.
5. The shortcut "" introduces the raised (English) opening double quotes; this shortcut proves its usefulness when one reminds that the Italian keyboard misses the backtick key, and the backtick on a Windows based platform may be obtained only by pressing the `Alt` key while inputting the numerical code 0096; very, very annoying!
6. The shortcuts "< and "> insert the French guillemots, sometimes used in Italian typography; with the T1 font encoding the ligatures << and >> should insert such signs directly, but not all the virtual fonts that claim to follow the T1 font encoding actually contain the guillemots; with the OT1 encoding the guillemots are not available and must be faked in some way. By using the "< and "> shortcuts (even with the T1 encoding) the necessary tests are performed and in case the suitable glyphs are taken from other fonts normally available with any good, modern  $\text{\LaTeX}$  distribution.
7. Three new specific commands `\unit`, `\ped`, and `\ap` are introduced so as to enable the correct composition of technical mathematics according to the ISO 31/XI recommendations.

---

<sup>26</sup>The file described in this section has version number v1.2p and was last revised on 2005/03/30. The original author is Maurizio Codogno, ([mau@beatles.cselt.stet.it](mailto:mau@beatles.cselt.stet.it)). It has been largely revised by Johannes Braams and Claudio Beccari

For this language a limited number of shortcuts has been defined, table 6, some of which are used to overcome certain limitations of the Italian keyboard; in section 30.3 there are other comments and hints in order to overcome some other keyboard limitations.

"	inserts a compound word mark where hyphenation is legal; it allows etymological hyphenation which is recommended for technical terms, chemical names and the like; it does not work if the next character is represented with a control sequence or is an accented character.
"	the same as the above without the limitation on characters represented with control sequences or accented ones.
""	inserts open quotes “.
"<	inserts open guillemots.
">	inserts closed guillemots.
"/	equivalent to <code>\slash</code>

Table 6: Shortcuts for the Italian language

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
30.1 (*code)
30.2 \LdfInit{italian}{captionsitalian}%
```

When this file is read as an option, i.e. by the `\usepackage` command, `italian` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@italian` to see whether we have to do something here.

```
30.3 \ifx\l@italian\@undefined
30.4     \@nopatterns{Italian}%
30.5     \adddialect\l@italian0\fi
```

The next step consists of defining commands to switch to (and from) the Italian language.

`\captionsitalian` The macro `\captionsitalian` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```
30.6 \addto\captionsitalian{%
30.7   \def\prefacename{Prefazione}%
30.8   \def\refname{Riferimenti bibliografici}%
30.9   \def\abstractname{Sommario}%
30.10  \def\bibname{Bibliografia}%
30.11  \def\chaptername{Capitolo}%
30.12  \def\appendixname{Appendice}%
30.13  \def\contentsname{Indice}%
30.14  \def\listfigurename{Elenco delle figure}%
30.15  \def\listtablename{Elenco delle tabelle}%
30.16  \def\indexname{Indice analitico}%
30.17  \def\figurename{Figura}%
30.18  \def\tablename{Tabella}%
```

```

30.19 \def\partname{Parte}%
30.20 \def\enclname{Allegati}%
30.21 \def\ccname{e~p.~c.}%
30.22 \def\headtoname{Per}%
30.23 \def\pagename{Pag.}% % in Italian the abbreviation is preferred
30.24 \def\seename{vedi}%
30.25 \def\alsoname{vedi anche}%
30.26 \def\proofname{Dimostrazione}%
30.27 \def\glossaryname{Glossario}%
30.28 }%

```

`\dateitalian` The macro `\dateitalian` redefines the command `\today` to produce Italian dates.

```

30.29 \def\dateitalian{%
30.30 \def\today{\number\day~\ifcase\month\or
30.31 gennaio\or febbraio\or marzo\or aprile\or maggio\or giugno\or
30.32 luglio\or agosto\or settembre\or ottobre\or novembre\or
30.33 dicembre\fi\space \number\year}}%

```

`\italianhyphenmins` The italian hyphenation patterns can be used with both `\lefthyphenmin` and `\righthyphenmin` set to 2.

```

30.34 \providehyphenmins{\CurrentOption}{\tw@\tw@}

```

`\extrasitalian` Lower the chance that clubs or widows occur.

```

\noextrasitalian 30.35 \addto\extrasitalian{%
30.36 \babel@savevariable\clubpenalty
30.37 \babel@savevariable\widowpenalty
30.38 \clubpenalty3000\widowpenalty3000}%

```

Never ever break a word between the last two lines of a paragraph in italian texts.

```

30.39 \addto\extrasitalian{%
30.40 \babel@savevariable\finalhyphendemerits
30.41 \finalhyphendemerits50000000}%

```

In order to enable the hyphenation of words such as “nell’altezza” we give the ‘ a non-zero lower case code. When we do that T<sub>E</sub>X finds the following hyphenation points nel-l’al-tez-za instead of none.

```

30.42 \addto\extrasitalian{%
30.43 \lccode‘’=‘’}%
30.44 \addto\noextrasitalian{%
30.45 \lccode‘’=0}%

```

## 30.1 Support for etymological hyphenation

In his article on Italian hyphenation [1] Beccari pointed out that the Italian language gets hyphenated on a phonetic basis, although etymological hyphenation is allowed; this is in contrast with what happens in Latin, for example, where etymological hyphenation is always used. Since the patterns for both languages would become too complicated in order to cope with etymological hyphenation, in his paper Beccari proposed the definition of an active character ‘\_’ such that it could insert a “soft” discretionary hyphen on the compound word boundary. For

several reasons that idea and the specific active character proved to be unpractical and was abandoned.

This problem is so important with the majority of the European languages, that **babel** from the very beginning developed the tradition of making the " character active so as to perform several actions that turned useful with every language. One of these actions consisted in defining the shortcut "I that was extensively used in German and in many other languages in order to insert a discretionary hyphen such that hyphenation would not be precluded in the rest of the word as it happens with the standard T<sub>E</sub>X command \-.

Meanwhile the **ec** fonts with the double Cork encoding (thus formerly called the **dc** fonts) have become more or less standard and are widely used by virtually all Europeans that write languages with many special national characters; by so doing they avoid the use of the \accent primitive which would be required with the standard **cm** fonts; with the latter fonts the primitive command \accent is such that hyphenation becomes almost impossible, in any case strongly impeached.

The **ec** fonts contain a special character, named “compound word mark”, that occupies position 23 in the font scheme and may be input with the sequence ^^W. Up to now, apparently, this special character has never been used in a practical way for the typesetting of languages rich of compound words; also it has never been inserted in the hyphenation pattern files of any language. Beccari modified his pattern file **ithyph.tex v4.8b** for Italian so as to contain five new patterns that involve ^^W, and he tried to give the **babel** active character " a new shortcut definition, so as to allow the insertion of the “compound word mark” in the proper place within any word where two semantic fragments join up. With such facility for marking the compound word boundaries, etymological hyphenation becomes possible even if the patterns know nothing about etymology (but the typesetter hopefully does!). In Italian such etymological hyphenation is desirable with technical terms, chemical names, and the like.

Even this solution proved to be inconvenient on certain UN\*X platforms, so Beccari resorted to another approach that uses the **babel** active character " and relies on the category code of the character that follows ".

```
30.46 \initiate@active@char{"}%
30.47 \addto\extrasitalian{\bbl@activate{"}\languageshorthands{italian}}%
```

\it@cwm The active character " is now defined for language **italian** so as to perform different actions in math mode compared to text mode; specifically in math mode a double quote is inserted so as to produce a double prime sign, while in text mode the temporary macro \it@next is defined so as to defer any further action until the next token category code has been tested.

```
30.48 \declare@shorthand{italian}{"}{%
30.49 \ifmmode
30.50     \def\it@next{'}%
30.51 \else
30.52     \def\it@next{\futurelet\it@temp\it@cwm}%
30.53 \fi
30.54 \it@next
30.55 }%
```

\it@cwm The \it@next service control sequence is such that upon its execution a temporary variable \it@temp is made equivalent to the next token in the input list without

actually removing it. Such temporary token is then tested by the macro `\it@cwm` and if it is found to be a letter token, then it introduces a compound word separator control sequence `\it@allowhyphens` whose expansion introduces a discretionary hyphen and an unbreakable space; in case the token is not a letter, then it is tested against `|12`: if so a compound word separator is inserted and the `|` token is removed, otherwise another test is performed so as to see if another double quote sign follows: in this case a double open quote mark is inserted, otherwise two other tests are performed so as to see if guillemots have to be inserted, otherwise nothing is done. The double quote shortcut for inserting a double open quote sign is useful for people who are inputting Italian text by means of an Italian keyboard that unfortunately misses the grave or backtick key. By this shortcut `"` becomes equivalent to `“` for inserting raised open high double quotes.

```

30.56 \def\it@cwm{\nobreak\discretionary{-}{-}{\hskip\z@skip}%
30.57 \DeclareRobustCommand*\it@cwm{\let\it@@next\relax
30.58 \ifcat\noexpand\it@temp a%
30.59     \def\it@@next{\it@cwm}%
30.60 \else
30.61     \if\noexpand\it@temp \string|%
30.62         \def\it@@next{\it@cwm\@gobble}%
30.63     \else
30.64         \if\noexpand\it@temp \string<%
30.65             \def\it@@next{\it@ocap\@gobble}%
30.66         \else
30.67             \if\noexpand\it@temp \string>%
30.68                 \def\it@@next{\it@ccap\@gobble}%
30.69             \else
30.70                 \if\noexpand\it@temp\string/%
30.71                     \def\it@@next{\slash\@gobble}%
30.72                 \else
30.73                     \ifx\it@temp"%
30.74                         \def\it@@next{"'\@gobble}%
30.75                     \fi
30.76                 \fi
30.77             \fi
30.78         \fi
30.79     \fi
30.80 \fi
30.81 \it@@next}%

```

By this definition of `"` if one types macro `"istruzione` the possible break points become `ma-cro-istru-zio-ne`, while without the `"` mark they would be `ma-croi-stru-zio-ne`, according to the phonetic rules such that the macro prefix is not taken as a unit. A chemical name such as `des"clor"fenir"amina"cloridrato` is breakable as `des-clor-fe-nir-ami-na-clo-ri-dra-to` instead of `de-sclor-fe-ni-ra-mi-na...`

In other language description files a shortcut is defined so as to allow a break point without actually inserting any hyphen sign; examples are given such as `entrada/salida`; actually if one wants to allow a breakpoint after the slash, it is much clearer to type `\slash` instead of `/` and `LATEX` does everything by itself; here the shortcut `"/` was introduced to stand for `\slash` so that one can type `input"/output` and allow a line break after the slash. This shortcut works only for the slash, since in Italian such constructs are extremely rare.

Attention: the expansion of `"` takes place before the actual expansion of `OT1`



or T1 accented sequences such as `\‘{a}`; therefore this etymological hyphenation facility works as it should only when the semantic word fragments *do not start* with an accented letter; this in Italian is always avoidable, because compulsory accents fall only on the last vowel, but it may be necessary to mark a compound word where one or more components come from a foreign language and contain diacritical marks according to the spelling rules of that language. In this case the special shorthand `"|` may be used that performs exactly as `"` normally does, except that the `|` sign is removed from the token input list: `kilo"|{\“o}rsted` gets hyphenated as `ki-lo-ör-sted`.

## 30.2 Facilities required by the ISO 31/XI regulations

The ISO 31/XI regulations require that units of measure are typeset in upright font in any circumstance, math or text, and that in text mode they are separated from the numerical indication of the measure with an unbreakable (thin) space.

The same regulations require also that super and subscripts (apices and pedices) are in upright font, *not in math italics*, when they represent “adjectives” or appositions to mathematical or physical variables that do not represent countable or measurable entities such as, for example,  $V_{\max}$  or  $V_{\text{rms}}$  for a maximum or a root mean square voltage, compared to  $V_i$  or  $V_T$  as the  $i$ -th voltage in a set, or a voltage that depends on the thermodynamic temperature  $T$ . See [2] for a complete description of the ISO regulations in connection with typesetting.

More rarely it happens to use superscripts that are not mathematical variables, such as the notation  $\mathbf{A}^T$  to denote the transpose of matrix  $\mathbf{A}$ ; text superscripts are useful also as ordinals or in old fashioned abbreviations in text mode; for example the feminine ordinal 1<sup>a</sup> or the old fashioned obsolete abbreviation F<sup>lli</sup> for Fratelli in company names (compare with “Bros.” for brothers in American English); text subscripts are mostly used in logos.

`\unit` First we define the new (internal) commands `\bbl@unit`, `\bbl@ap`, and `\bbl@ped` `\ap` as robust ones.

```

\ped30.82 \DeclareRobustCommand*\bbl@unit}[1]{%
30.83   \textormath{\,\mbox{#1}}{\,\,\mathrm{#1}}}%
30.84 \DeclareRobustCommand*\bbl@ap}[1]{%
30.85   \textormath{\textsuperscript{#1}}{\mathrm{#1}}}%
30.86 \DeclareRobustCommand*\bbl@ped}[1]{%
30.87   \textormath{\$_{\mbox{\fontsize\sf@size\z@
30.88     \selectfont#1}}}{\mathrm{#1}}}%

```

Then we can use `\let` to define the user level commands, but in case the macros already have a different meaning before entering in Italian mode typesetting, we first memorize their meaning so as to restore them on exit.

```

30.89 \addto\extrasitalian{%
30.90   \babel@save\unit\let\unit\bbl@unit
30.91   \babel@save\ap\let\ap\bbl@ap
30.92   \babel@save\ped\let\ped\bbl@ped
30.93 }%

```

## 30.3 Accents

Most of the other language description files introduce a number of shortcuts for inserting accents and other language specific diacritical marks in a more comfort-

able way compared with the lengthy standard  $\TeX$  conventions. When an Italian keyboard is being used on a Windows based platform, it exhibits such limitations that up to now no convenient shortcuts have been developed; the reason lies in the fact that the Italian keyboard lacks the grave accent (also known as “backtick”), which is compulsory on all accented vowels except the ‘e’, but, on the opposite, it carries the keys with all the accented lowercase vowels; the keyboard lacks also the tie  $\sim$  (tilde) key, while the curly braces require pressing three keys simultaneously.

The best solution Italians have found so far is to use a smart editor that accepts shortcut definitions such that, for example, by striking " $\{$ " one gets directly  $\{$  on the screen and the same sign is saved into the `.tex` file; the same smart editor should be capable of translating the accented characters into the standard  $\TeX$  sequences when writing a file to disk (for the sake of file portability), and to transform the standard  $\TeX$  sequences into the corresponding signs when loading a `.tex` file from disk to memory. Such smart editors do exist and can be downloaded from the CTAN archives.

For what concerns the missing backtick key, which is used also for inputting the open quotes, it must be noticed that the shortcut " $"$ " described above completely solves the problem for *double* raised open quotes; according to the traditions of particular publishing houses, since there are no compulsory regulations on the matter, the French guillemots may be used; in this case the T1 font encoding solves the problem by means of its built in ligatures  $\ll$  and  $\gg$ . But...

### 30.4 *Caporali* or French double quotes

Although the T1 font encoding ligatures solve the problem, there are some circumstances where even the T1 font encoding cannot be used, either because the author/typesetter wants to use the OT1 encoding, or because he/she uses a font set that does not comply completely with the T1 font encoding; some virtual fonts, for example, are supposed to implement the double Cork font encoding but actually miss some glyphs; one such virtual font set is given by the **ae** virtual fonts, because they are supposed to implement such double font encoding simply using the **cm** fonts, of which the type 1 PostScript version exist and is freely available. Since guillemots (in Italian *caporali*) do not exist in any **cm** latin font, their glyphs must be substituted with something else that approaches them.

Since in French typesetting guillemots are compulsory, the French language definition file resorts to a clever font substitution; such file exploits the  $\LaTeX 2_{\epsilon}$  font selection machinery so as to get the guillemots from the Cyrillic fonts, because it suffices to locally change the default encoding. There are several sets of Cyrillic fonts, but the ones that obey the OT2 font encoding are generally distributed with all recent implementations of the  $\TeX$  software; they are part of the American Mathematical Society fonts and come both as METAFONT source files and Type 1 PostScript `.pfb` files. The availability of such fonts should be guaranteed by the presence of the `OT2cmr.fd` font description file. Actually the presence of this file does not guarantee the completeness of your  $\TeX$  implementation; should  $\LaTeX$  complain about a missing Cyrillic `.tfm` file (that kind of file that contains the font metric parameters) and/or about missing Cyrillic (`.mf`) files, then your  $\TeX$  system is *incomplete* and you should download such fonts from the CTAN archives. Temporarily you may issue the command `\LtxSymbCaporali` so as to approximate the missing glyphs with the  $\LaTeX$  symbol fonts. In some case warning messages are issued so as to inform the typesetter about the necessity of resorting to some

*poor man* solution.

`\LtxSymbCaporali` The “safety” macro `\LtxSymbCaporali`, to be issued by the typesetter when he/  
`\it@ocap` she lacks the proper fonts, is very similar to the corresponding French one except  
`\it@ccap` that is not tied to any particular font encoding:

```

30.94 \def\LtxSymbCaporali{%
30.95     \DeclareRobustCommand*\it@ocap{\mbox{%
30.96         \fontencoding{U}\fontfamily{lasy}\selectfont(\kern-0.20em}%
30.97         \ignorespaces}%
30.98     \DeclareRobustCommand*\it@ccap{\ifdim\lastskip>z@\unskip\fi
30.99     \mbox{%
30.100         \fontencoding{U}\fontfamily{lasy}\selectfont)\kern-0.20em}}}%
30.101 }%
```

Actually the above macro simply defines the aliases for the shortcuts "< and "> so as to avoid all the warning messages that are being issued if the T1 encoded fonts in use lack the guillemots or if the Cyrillic font encoding OT2 settings can't be defined. Beware, though, that if you are using some T1 encoded fonts, and you don't know if they are complete as the `ec` fonts are, and you type directly << or >>, you miss all the testing and the warning messages that Italian shortcuts "< and "> offer and you might end up with little squares in place of the missing guillemots.

The other two macros `\it@ocap` and `\it@ccap` differ from the corresponding French ones in the sense that in Italian typography no space must be inserted between the *caporali* quotes and the text they enclose; if any space is incorrectly inserted by the typesetter after the open guillemots or before the closed ones, the macros for Italian remove this erroneous space; furthermore the Italian `babel` option is supposed to work only with  $\text{\LaTeX 2}_{\epsilon}$ , therefore it is not necessary to test the  $\text{\TeX}$  format name.

We start with some operations that can be done once for all; we define a new boolean `@CyrEncKnown` in order to know if we can resort to the Cyrillic fonts

```

30.102 \newif\if@CyrEncKnown
30.103 \IfFileExists{ot2cmr.fd}%
30.104     {\@CyrEncKnowntrue\DeclareFontEncoding{OT2}{-}{-}}%
30.105     {\@CyrEncKnownfalse}%
```

Then we define an option warning so as to inform the typesetter on the “poor man” substitution we make

```

30.106 \DeclareRobustCommand*\ItalianWarning{%
30.107     \GenericWarning{(Italian Option)\space\space}%
30.108     {Italian Option Warning: No Cyrillic fonts available\MessageBreak
30.109     LaTeX Symbol approximation will be used for caporali}}%
```

Now we need the actual commands for the substituted caporali

```

30.110 \DeclareRobustCommand*\CapAperti{%
30.111     \if@CyrEncKnown
30.112         {\fontencoding{OT2}\fontfamily{wncyr}\selectfont\char60}%
30.113     \else
30.114         \ItalianWarning
30.115         {\fontencoding{U}\fontfamily{lasy}\selectfont(\kern-0.20em}%
30.116     \fi
30.117 }%
30.118 \DeclareRobustCommand*\CapChiusi{%
```

```

30.119 \if@CyrEncKnown
30.120     {\fontencoding{OT2}\fontfamily{wncyr}\selectfont\char62}%
30.121 \else
30.122     \ItalianWarning
30.123     {\fontencoding{U}\fontfamily{lasy}\selectfont)\kern-0.20em)}%
30.124 \fi
30.125 }%

```

Finally we define the alias commands for the Italian shortcuts "<" and ">". Before we need some device to spot if the assumed T1 complying font really contains the guillemots; unfortunately virtual fonts have black boxes in place of the missing characters, for which, in any case the corresponding T<sub>E</sub>X metrics are given; therefore we cannot test if the font misses the guillemots by “measuring” their width. Up to now the only fonts I (CB) know that claims to comply to the T1 encoding, but misses the guillemots is the group of **ae** font families and shapes, that are a virtualized 256 glyph strict version of the **cm fonts**; since the latter do not contain the guillemots, neither do the former. I decided then to examine the first two characters of the font family; if they are ‘ae’, then we are working with such incomplete font set; otherwise we assume the guillemots are present.

```

30.126 \newif\ifT@one@noCap
30.127 \def\get@ae#1#2#3!{\def\bbl@ae{#1#2}}%
30.128 \def\set@T@one@noCap{\expandafter\get@ae\fontfamily!%
30.129 \def\bbl@temp{ae}\ifx\bbl@ae\bbl@temp\T@one@noCaptrue\else
30.130 \T@one@noCapfalse\fi}%

```

Now we are ready to define the real code:

```

30.131 \DeclareRobustCommand*\it@ocap{%
30.132 \leavevmode
30.133 \ifx\cf@encoding\bbl@t@one
30.134     {\set@T@one@noCap
30.135     \ifT@one@noCap
30.136         \CapAperti
30.137     \else
30.138         <<%
30.139     \fi}%
30.140 \else
30.141     \CapAperti
30.142 \fi\ignorespaces}%
30.143 \DeclareRobustCommand*\it@ccap{\ifdim\lastskip>\z@unskip\fi%
30.144 \ifx\cf@encoding\bbl@t@one
30.145     {\set@T@one@noCap
30.146     \ifT@one@noCap
30.147         \CapChiusi
30.148     \else
30.149         >>%
30.150     \fi}%
30.151 \else
30.152     \CapChiusi
30.153 \fi}%

```

## 30.5 Finishing commands

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category

code of @ to its original value.

30.154 \ldf@finish{italian}%

30.155 </code>

## References

- [1] Beccari C., “Computer Aided Hyphenation for Italian and Modern Latin”, TUGboat vol. 13, n. 1, pp. 23-33 (1992).
- [2] Beccari C., “Typesetting mathematics for science and technology according to ISO 31/XI”, TUGboat vol. 18, n. 1, pp. 39-48 (1997).

## 31 The Latin language

The file `latin.dtx`<sup>27</sup> defines all the language-specific macros for the Latin language both in modern and medieval spelling.

For this language two “styles” of typesetting are implemented: “regular” or modern-spelling Latin, and medieval Latin. The medieval Latin specific commands can be activated by means of the language attribute `medieval`; the medieval spelling differs from the modern one by the systematic use of the lower case ‘u’ also where in modern spelling the letter ‘v’ is used; when typesetting with capital letters, on the opposite, the letter ‘V’ is used also in place of ‘U’. Medieval spelling also includes the ligatures `\ae` (æ), `\oe` (œ), `\AE` (Æ), and `\OE` (Œ) that are not used in modern spelling, nor were used in the classical times.

Furthermore a third typesetting style `withprosodicmarks` is defined in order to use special shortcuts for inserting breves and macrons when typesetting grammars, dictionaries, teaching texts, and the like, where prosodic marks are important for the complete information on the words or the verses. The shortcuts, listed in table 7 and described in section 32, may interfere with other packages; therefore by default this third style is off and no interference is introduced. If this third style is used and interference is experienced, there are special commands for turning on and off the specific short hand commands of this style.

For what concerns `babel` and typesetting with  $\text{\LaTeX}$ , the differences between the two styles of spelling reveal themselves in the strings used to name for example the “Preface” that becomes “Praefatio” or “Præfatio” respectively. Hyphenation rules are also different, but the hyphenation pattern file `lahyph.tex` takes care of both versions of the language. Needless to say that such patterns must be loaded in the  $\text{\LaTeX}$  format by by running `initex` (or whatever the name of the initializer) on `latex.ltx`.

The name strings for chapters, figures, tables, etcetera, are suggested by prof. Raffaella Tabacco, a classicist of the University of Turin, Italy, to whom we address our warmest thanks. The names suggested by Krzysztof Konrad Żelechowski, when different, are used as the names for the medieval variety, since he made a word and spelling choice more suited for this variety.

For this language some shortcuts are defined according to table 7; all of them are supposed to work with both spelling styles, except where the opposite is explicitly stated.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

31.1 `\*code`

31.2 `\LdfInit{latin}{captionslatin}`

When this file is read as an option, i.e. by the `\usepackage` command, `latin` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@latin` to see whether we have to do something here.

31.3 `\ifx\l@latin\@undefined`

31.4 `\@nopatterns{Latin}`

31.5 `\adddialect\l@latin0\fi`

Now we declare the `medieval` language attribute.

---

<sup>27</sup>The file described in this section has version number v2.0f and was last revised on 2005/03/30. The original author is Claudio Beccari with contributions by Krzysztof Konrad Żelechowski, (`kkz@alfa.mimuw.edu.pl`)

- `ˆi` inserts the breve accent as  $\ddot{i}$ ; valid also for the other lowercase vowels, but it does not operate on the medieval ligatures  $\text{æ}$  and  $\text{œ}$ .
- `=a` inserts the macron accent as  $\bar{a}$ ; valid also for the other lowercase vowels, but it does not operate on the medieval ligatures  $\text{æ}$  and  $\text{œ}$ .
- `"` inserts a compound word mark where hyphenation is legal; the next character must not be a medieval ligature  $\text{æ}$  or  $\text{œ}$ , nor an accented letter (foreign names).
- `"|` same as above, but operates also when the next character is a medieval ligature or an accented letter.

Table 7: Shortcuts defined for the Latin language. The characters `ˆ` and `=` are active only when the language attribute `withprosodicmarks` has been declared, otherwise they are disabled; see section 32 for more details.

```

31.6 \bbl@declare@ttribute{latin}{medieval}{%
31.7   \addto\captionslatin{\def\prefacename{Pr{\ae}fatio}}%
31.8   \def\november{Nouembris}%
31.9   \expandafter\addto\expandafter\extraslatin
31.10  \expandafter{\extrasmedievallatin}%
31.11 }
```

The third typesetting style `withprosodicmarks` is defined here

```

31.12 \bbl@declare@ttribute{latin}{withprosodicmarks}{%
31.13   \expandafter\addto\expandafter\extraslatin
31.14   \expandafter{\extraswithprosodicmarks}%
31.15 }
```

It must be remembered that the `medieval` and the `withprosodicmarks` styles may be used together.

The next step consists of defining commands to switch to (and from) the Latin language<sup>28</sup>.

`\captionslatin` The macro `\captionslatin` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```

31.16 \@namedef{captionslatin}{%
31.17   \def\prefacename{Praefatio}%
31.18   \def\refname{Conspectus librorum}%
31.19   \def\abstractname{Summarium}%
31.20   \def\bibname{Conspectus librorum}%
31.21   \def\chaptername{Caput}%
31.22   \def\appendixname{Additamentum}%
31.23   \def\contentsname{Index}%
31.24   \def\listfigurename{Conspectus descriptionum}%
31.25   \def\listtablename{Conspectus tabularum}%
31.26   \def\indexname{Index rerum notabilium}%
31.27   \def\figurename{Descriptio}%
31.28   \def\tablename{Tabula}%
31.29   \def\partname{Pars}%
31.30   \def\enclname{Adduntur}% Or " Additur" ? Or simply Add.?
```

<sup>28</sup>Most of these names were kindly suggested by Raffaella Tabacco.

```

31.31 \def\ccname{Exemplar}%      Use the recipient's dative
31.32 \def\headtoname{\ignorespaces}% Use the recipient's dative
31.33 \def\pagename{Charta}%
31.34 \def\seename{cfr.}%
31.35 \def\alsoname{cfr.}% R.Tabacco never saw "cfr. atque" or similar forms
31.36 \def\proofname{Demonstratio}%
31.37 \def\glossaryname{Glossarium}%
31.38 }

```

In the above definitions there are some points that might change in the future or that require a minimum of attention from the typesetter.

1. the `\enclname` is translated by a passive verb, that literally means “(they) are being added”; if just one enclosure is joined to the document, the plural passive is not suited any more; nevertheless a generic plural passive might be incorrect but suited for most circumstances. On the opposite “Additur”, the corresponding singular passive, might be more correct with one enclosure and less suited in general: what about the abbreviation “Add.” that works in both cases, but certainly is less elegant?
2. The `\headtoname` is empty and gobbles the possible following space; in practice the typesetter should use the dative of the recipient’s name; since nowadays not all such names can be translated into Latin, they might result indeclinable. The clever use of an appellative by the typesetter such as “Domino” or “Dominae” might solve the problem, but the header might get too impressive. The typesetter must make a decision on his own.
3. The same holds true for the copy recipient’s name in the “Cc” field of `\ccname`.

`\datelatin` The macro `\datelatin` redefines the command `\today` to produce Latin dates; the choice of faked small caps Latin numerals is arbitrary and may be changed in the future. For medieval latin the spelling of ‘Novembris’ should be *Nouembris*. This is taken care of by using a control sequence which can be redefined when the attribute ‘medieval’ is selected.

```

31.39 \def\datelatin{%
31.40   \def\november{Novembris}%
31.41   \def\today{%
31.42     {\check@mathfonts\fontsize\sf@size\z@\math@fontsfalse\selectfont
31.43       \uppercase\expandafter{\romannumeral\day}}\nobreakspace
31.44     \ifcase\month\or
31.45     Ianuarii\or Februarii\or Martii\or Aprilis\or Maii\or Iunii\or
31.46     Iulii\or Augusti\or Septembris\or Octobris\or \november\or
31.47     Decembris\fi
31.48     \space{\uppercase\expandafter{\romannumeral\year}}}}

```

`\romandate` Thomas Martin Widmann ([viralbus@daimi.au.dk](mailto:viralbus@daimi.au.dk)) developed a macro originally named `\latindate` (but to be renamed `\romandate` so as not to conflict with the standard `babel` conventions) that should compute and translate the current date into a date *ab urbe condita* with days numbered according to the kalendae and idus; for the moment this is a placeholder for Thomas’ macro, waiting for a self standing one that keeps local all the intermediate data, counters, etc. If he succeeds, here is the place to add his macro.



`\latinhyphenmins` The Latin hyphenation patterns can be used with both `\lefthyphenmin` and `\righthyphenmin` set to 2.

```
31.49 \providehyphenmins{\CurrentOption}{\tw@\tw@}
```

`\extraslatin` For this language the `\clubpenalty`, `\widowpenalty` are set to rather high values and `\finalhyphendemerits` is set to such a high value that hyphenation is prohibited between the last two lines of a paragraph.

```
31.50 \addto\extraslatin{%
31.51   \babel@savevariable\clubpenalty
31.52   \babel@savevariable\widowpenalty
31.53   \clubpenalty3000\widowpenalty3000}
```

Never ever break a word between the last two lines of a paragraph in latin texts.

```
31.54 \addto\extraslatin{%
31.55   \babel@savevariable\finalhyphendemerits
31.56   \finalhyphendemerits50000000}
```

With medieval Latin we need the suitable correspondence between upper case V and lower case u, since in that spelling there is only one sign, and the u shape is the (uncial) version of the capital V. Everything else is identical with Latin.

```
31.57 \addto\extrasmedievallatin{%
31.58   \babel@savevariable{\lccode'\V}%
31.59   \babel@savevariable{\uccode'\u}%
31.60   \lccode'\V=' \u \uccode'\u=' \V}
```

`\SetLatinLigatures` We need also the lccodes for æ and œ; since they occupy different positions in the OT1 T<sub>E</sub>X-fontencoding compared to the T1 one, we must save the lc- and the uccodes for both encodings, but we specify the new lc- and uccodes separately as it appears natural not to change encoding while typesetting the same language. The encoding is assumed to be set before starting to use the Latin language, so that if Latin is the default language, the font encoding must be chosen before requiring the `babel` package with the `latin` option, in any case before any `\selectlanguage` or `\foreignlanguage` command.

All this fuss is made in order to allow the use of the medieval ligatures æ and œ while typesetting with the medieval spelling; I have my doubts that the medieval spelling should be used at all in modern books, reports, and the like, as the uncial 'u' shape of the lower case 'v' and the above ligatures were used until the middle of the XVII century. Since my opinion (CB) may be wrong, I managed to set up the instruments and it is up to the typesetter to use them or not.

```
31.61 \addto\extrasmedievallatin{%
31.62   \babel@savevariable{\lccode'\^e6}% T1   \ae
31.63   \babel@savevariable{\uccode'\^e6}% T1   \ae
31.64   \babel@savevariable{\lccode'\^c6}% T1   \AE
31.65   \babel@savevariable{\lccode'\^f7}% T1   \oe
31.66   \babel@savevariable{\uccode'\^f7}% T1   \OE
31.67   \babel@savevariable{\lccode'\^d7}% T1   \OE
31.68   \babel@savevariable{\lccode'\^1a}% OT1  \ae
31.69   \babel@savevariable{\uccode'\^1a}% OT1  \ae
31.70   \babel@savevariable{\lccode'\^1d}% OT1  \AE
31.71   \babel@savevariable{\lccode'\^1b}% OT1  \oe
31.72   \babel@savevariable{\uccode'\^1b}% OT1  \OE
31.73   \babel@savevariable{\lccode'\^1e}% OT1  \OE
```

```

31.74 \SetLatinLigatures}
31.75 \providecommand\SetLatinLigatures{%
31.76 \def\@tempA{T1}\ifx\@tempA\fontencoding
31.77 \catcode'\^e6=11 \lccode'\^e6=\^e6 \uccode'\^e6=\^c6 % \ae
31.78 \catcode'\^c6=11 \lccode'\^c6=\^e6 % \AE
31.79 \catcode'\^f7=11 \lccode'\^f7=\^f7 \uccode'\^f7=\^d7 % \oe
31.80 \catcode'\^d7=11 \lccode'\^d7=\^f7 % \OE
31.81 \else
31.82 \catcode'\^1a=11 \lccode'\^1a=\^1a \uccode'\^1a=\^1d % \ae
31.83 \catcode'\^1d=11 \lccode'\^1d=\^1a % \AE (^)]
31.84 \catcode'\^1b=11 \lccode'\^1b=\^1b \uccode'\^1b=\^1e % \oe
31.85 \catcode'\^1e=11 \lccode'\^1e=\^1b % \OE (^^)
31.86 \fi
31.87 \let\@tempA\@undefined
31.88 }

```

With the above definitions we are sure that `\MakeUppercase` works properly and `\MakeUppercase{C{\ae}sar}` correctly ‘yields’ `CÆSAR`; correspondingly `\MakeUppercase{Heluetia}` correctly yields `HELVETIA`.

## 32 Latin shortcuts

For writing dictionaries or didactic texts we defined a third language attribute, or a third typesetting style, where a couple of other active characters are defined: `^` for marking a vowel with the breve sign, and `=` for marking a vowel with the macro sign. Please take notice that neither the OT1 font encoding, nor the T1 one for most vowels, contain directly the marked vowels, therefore hyphenation of words containing these “accents” may become problematic; for this reason the above active characters not only introduce the required accent, but also the necessary code for allowing hyphenation in the rest of the word.

It must be remarked that the active characters `^` and `=` may have other meanings in other contexts. For example the equals sign is used by the graphic extensions for specifying keyword options for handling the graphic elements to be included in the document. At the same time, as mentioned in the previous paragraph, diacritical marking in Latin is used only for typesetting certain kind of documents, such as grammars and dictionaries. It is reasonable that the breve and macron active characters may be switched on and off at will, and in particular that they are off by default if the attribute `withprosodicmarks` has not been set.

`\ProsodicMarksOn` We begin by adding to the normal typesetting style the definitions of the new  
`\ProsodicMarksOff` commands `\ProsodicMarksOn` and `\ProsodicMarksOff` that should produce error messages when the third style is not declared:

```

32.1 \addto\extraslatin{\def\ProsodicMarksOn{%
32.2 \GenericError{(latin)\@spaces\@spaces\@spaces\@spaces}{%
32.3 {Latin language error: \string\ProsodicMarksOn\space
32.4 is defined by setting the\MessageBreak
32.5 language attribute to ‘withprosodicmarks’\MessageBreak
32.6 If you continue you are likely to encounter\MessageBreak
32.7 fatal errors that I can’t recover}%
32.8 {See the Latin language description in the babel
32.9 documentation for explanation}{\@ehd}}}

```

32.10 `\addto\extraslatin{\let\ProsodicMarksOff\relax}`

Then we temporarily set the caret and the equals sign to active characters so that they can receive their definitions:

32.11 `\catcode'\= \active`

32.12 `\catcode'\^ \active`

and we add the necessary declarations to the macros that are being activated when the Latin language and its typesetting styles are declared:

32.13 `\addto\extraslatin{\languageshorthands{latin}}%`

32.14 `\addto\extraswithprosodicmarks{\bbl@activate{^}}%`

32.15 `\addto\extraswithprosodicmarks{\bbl@activate{=}}%`

32.16 `\addto\noextraswithprosodicmarks{\bbl@deactivate{^}}%`

32.17 `\addto\noextraswithprosodicmarks{\bbl@deactivate{=}}%`

32.18 `\addto\extraswithprosodicmarks{\ProsodicMarks}`

`\ProsodicMarks` Next we define the defining macro for the active characters

32.19 `\def\ProsodicMarks{%`

32.20 `\def\ProsodicMarksOn{\catcode'\^ 13\catcode'\= 13\relax}%`

32.21 `\def\ProsodicMarksOff{\catcode'\^ 7\catcode'\= 12\relax}%`

Notice that with the above redefinitions of the commands `\ProsodicMarksOn` and `\ProsodicMarksOff`, the operation of the newly defined shortcuts may be switched on and off at will, so that even if a picture has to be inserted in the document by means of the commands and keyword options of the `graphicx` package, it suffices to switch them off before invoking the picture including command, and switched on again afterwards; or, even better, since the picture very likely is being inserted within a `figure` environment, it suffices the switch them off within the environment, being conscious that their deactivation remains local to the environment.

32.22 `\initiate@active@char{^}%`

32.23 `\initiate@active@char{=}%`

32.24 `\declare@shorthand{latin}{^a}{%`

32.25 `\textormath{\u{a}\allowhyphens}{\hat{a}}}%`

32.26 `\declare@shorthand{latin}{^e}{%`

32.27 `\textormath{\u{e}\allowhyphens}{\hat{e}}}%`

32.28 `\declare@shorthand{latin}{^i}{%`

32.29 `\textormath{\u{i}\allowhyphens}{\hat{\imath}}}%`

32.30 `\declare@shorthand{latin}{^o}{%`

32.31 `\textormath{\u{o}\allowhyphens}{\hat{o}}}%`

32.32 `\declare@shorthand{latin}{^u}{%`

32.33 `\textormath{\u{u}\allowhyphens}{\hat{u}}}%`

32.34 `\declare@shorthand{latin}{=a}{%`

32.35 `\textormath{\={a}\allowhyphens}{\bar{a}}}%`

32.36 `\declare@shorthand{latin}{=e}{%`

32.37 `\textormath{\={e}\allowhyphens}{\bar{e}}}%`

32.38 `\declare@shorthand{latin}{=i}{%`

32.39 `\textormath{\={i}\allowhyphens}{\bar{\imath}}}%`

32.40 `\declare@shorthand{latin}{=o}{%`

32.41 `\textormath{\={o}\allowhyphens}{\bar{o}}}%`

32.42 `\declare@shorthand{latin}{=u}{%`

32.43 `\textormath{\={u}\allowhyphens}{\bar{u}}}%`

32.44 `}`

Notice that the short hand definitions are given only for lower case letters; it would not be difficult to extend the set of definitions to upper case letters, but it

appears of very little use in view of the kind of documents where prosodic marks are supposed to be used. Nevertheless in those rare cases when it's required to set some uppercase letters with their prosodic marks, it is always possible to use the standard L<sup>A</sup>T<sub>E</sub>X commands such as `\u{I}` for typesetting  $\breve{I}$ , or `\={A}` for typesetting  $\breve{A}$ .

Finally we restore the caret and equals sign initial default category codes.

```
32.45 \catcode'\= 12\relax
32.46 \catcode'\^ 7\relax
```

It must be understood that by using the above prosodic marks, line breaking is somewhat impeached; since such prosodic marks are used almost exclusively in dictionaries, grammars, and poems (only in school textbooks), this shouldn't be of any importance for what concerns the quality of typesetting.

### 33 Etymological hyphenation

In order to deal in a clean way with prefixes and compound words to be divided etymologically, the active character " is given a special definition so as to behave as a discretionary break with hyphenation allowed after it. Most of the code for dealing with the active " is already contained in the core of `babel`, but we are going to use it as a single character shorthand for Latin.

```
33.1 \initiate@active@char{"}%
33.2 \addto\extraslatin{\bbl@activate{"}%
33.3 }
```

A temporary macro is defined so as to take different actions in math mode and text mode: specifically in the former case the macro inserts a double quote as it should in math mode, otherwise another delayed macro comes into action.

```
33.4 \declare@shorthand{latin}{"}{%
33.5   \ifmmode
33.6     \def\lt@next{''}%
33.7   \else
33.8     \def\lt@next{\futurelet\lt@temp\lt@cwm}%
33.9   \fi
33.10  \lt@next
33.11 }%
```

In text mode the `\lt@next` control sequence is such that upon its execution a temporary variable `\lt@temp` is made equivalent to the next token in the input list without actually removing it. Such temporary token is then tested by the macro `\lt@cwm` and if it is found to be a letter token, then it introduces a compound word separator control sequence `\lt@allowhyphens` whose expansion introduces a discretionary hyphen and an unbreakable space; in case the token is not a letter, the token is tested again to find if it is the character `l`, in which case it is gobbled and a discretionary break is introduced.

```
33.12 \def\lt@allowhyphens{\nobreak\discretionary{-}{}}\hskip\z@skip}
33.13 \newcommand*{\lt@cwm}{\let\lt@nxt\relax
33.14   \ifcat\noexpand\lt@temp a%
33.15     \let\lt@nxt\lt@allowhyphens
33.16   \else
33.17     \if\noexpand\lt@temp\stringl%
33.18       \def\lt@nxt{\lt@allowhyphens@gobble}%
```

```

33.19 \fi
33.20 \fi
33.21 \lt@n@xt}%

```

Attention: the category code comparison does not work if the temporary control sequence `\lt@temp` has been let equal to an implicit character, such as `\ae`; therefore this etymological hyphenation facility does not work with medieval Latin spelling when " immediately precedes a ligature. in order to overcome this drawback the shorthand " | may be used in such cases; it behaves exactly as ", but it does not test the implicit character control sequence. An input such as `super"|{\ae}quitas`<sup>29</sup> gets hyphenated as `su-per-æqui-tas` instead of `su-pe-ræ-qui-tas`.

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

33.22 \ldf@finish{latin}
33.23 \code

```

---

<sup>29</sup>This word does not exist in “regular” Latin, and it is used just as an example.

## 34 The Portuguese language

The file `portuges.dtx`<sup>30</sup> defines all the language-specific macros for the Portuguese language as well as for the Brazilian version of this language.

For this language the character " is made active. In table 8 an overview is given of its purpose.

"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
""	like "-", but producing no hyphen sign (for words that should break at some sign such as "entrada/salida."
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).
\-	like the old \-, but allowing hyphenation in the rest of the word.

Table 8: The extra definitions made by `portuges.ldf`

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the @ sign, etc.

34.1 `{*code}`

34.2 `\LdfInit\CurrentOption{captions\CurrentOption}`

When this file is read as an option, i.e. by the `\usepackage` command, `portuges` will be an 'unknown' language in which case we have to make it known. So we check for the existence of `\l@portuges` to see whether we have to do something here. Since it is possible to load this file with any of the following four options to babel: `portuges`, `portuguese`, `brazil` and `brazilian` we also allow that the hyphenation patterns are loaded under any of these four names. We just have to find out which one was used.

```

34.3 \ifx\l@portuges\@undefined
34.4   \ifx\l@portuguese\@undefined
34.5     \ifx\l@brazil\@undefined
34.6       \ifx\l@brazilian\@undefined
34.7         \@nopatterns{Portuguese}
34.8         \adddialect\l@portuges0
34.9       \else
34.10        \let\l@portuges\l@brazilian
34.11      \fi
34.12    \else
34.13      \let\l@portuges\l@brazil
34.14    \fi
34.15  \else
34.16    \let\l@portuges\l@portuguese
34.17  \fi
34.18 \fi

```

By now `\l@portuges` is defined. When the language definition file was loaded under a different name we make sure that the hyphenation patterns can be found.

---

<sup>30</sup>The file described in this section has version number v1.2p and was last revised on 2005/03/31. Contributions were made by Jose Pedro Ramalheite (JRAMALHE@CERNVM or Jose-Pedro\_Ramalheite@MACMAIL) and Arnaldo Viegas de Lima arnaldo@VNET.IBM.COM.

```

34.19 \expandafter\ifx\csname l@\CurrentOption\endcsname\relax
34.20 \expandafter\let\csname l@\CurrentOption\endcsname\l@portuges
34.21 \fi

```

Now we have to decide whether this language definition file was loaded for Portuguese or Brazilian use. This can be done by checking the contents of `\CurrentOption`. When it doesn't contain either 'portuges' or 'portuguese' we make `\bbl@tempb` empty.

```

34.22 \def\bbl@tempa{portuguese}
34.23 \ifx\CurrentOption\bbl@tempa
34.24 \let\bbl@tempb\@empty
34.25 \else
34.26 \def\bbl@tempa{portuges}
34.27 \ifx\CurrentOption\bbl@tempa
34.28 \let\bbl@tempb\@empty
34.29 \else
34.30 \def\bbl@tempb{brazil}
34.31 \fi
34.32 \fi
34.33 \ifx\bbl@tempb\@empty

```

The next step consists of defining commands to switch to (and from) the Portuguese language.

`\captionsportuges` The macro `\captionsportuges` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```

34.34 \@namedef{captions\CurrentOption}{%
34.35 \def\prefacename{Pref\'acio}%
34.36 \def\refname{Refer\'encias}%
34.37 \def\abstractname{Resumo}%
34.38 \def\bibname{Bibliografia}%
34.39 \def\chaptername{Cap\'{\i}tulo}%
34.40 \def\appendixname{Ap\'endice}%

```

Some discussion took place around the correct translations for 'Table of Contents' and 'Index'. the translations differ for Portuguese and Brazilian based the following history:

The whole issue is that some books without a real index at the end misused the term 'Índice' as table of contents. Then, what happens is that some books appeared with 'Índice' at the beginning and a 'Índice Remissivo' at the end. Remissivo is a redundant word in this case, but was introduced to make up the difference. So in Brasil people started using 'Sumário' and 'Índice Remissivo'. In Portugal this seems not to be very common, therefore we chose 'Índice' instead of 'Índice Remissivo'.

```

34.41 \def\contentsname{Conte\'udo}%
34.42 \def\listfigurename{Lista de Figuras}%
34.43 \def\listtablename{Lista de Tabelas}%
34.44 \def\indexname{\'Indice}%
34.45 \def\figurename{Figura}%
34.46 \def\tablename{Tabela}%
34.47 \def\partname{Parte}%
34.48 \def\enclname{Anexo}%

```

```

34.49 \def\ccname{Com c\'opia a}%
34.50 \def\headtoname{Para}%
34.51 \def\pagename{P\'agina}%
34.52 \def\seename{ver}%
34.53 \def\alsoname{ver tamb\'em}%

```

An alternate term for ‘Proof’ could be ‘Prova’.

```

34.54 \def\proofname{Demonstra\c{c}\~ao}%
34.55 \def\glossaryname{Gloss\'ario}%
34.56 }

```

`\dateportuges` The macro `\dateportuges` redefines the command `\today` to produce Portuguese dates.

```

34.57 \@namedef{date\CurrentOption}{%
34.58 \def\today{\number\day\space de\space\ifcase\month\or
34.59 Janeiro\or Fevereiro\or Mar\c{c}o\or Abril\or Maio\or Junho\or
34.60 Julho\or Agosto\or Setembro\or Outubro\or Novembro\or Dezembro%
34.61 \fi
34.62 \space de\space\number\year}}
34.63 \else

```

For the Brazilian version of these definitions we just add a “dialect”.

```

34.64 \expandafter
34.65 \addialect\csname l@CurrentOption\endcsname\l@portuges

```

`\captionsbrazil` The “captions” are different for both versions of the language, so we define the macro `\captionsbrazil` here.

```

34.66 \@namedef{captions\CurrentOption}{%
34.67 \def\prefacename{Pref\'acio}%
34.68 \def\refname{Refer\~encias}%
34.69 \def\abstractname{Resumo}%
34.70 \def\bibname{Refer\~encias Bibliogr\'aficas}%
34.71 \def\chaptername{Cap\'itulo}%
34.72 \def\appendixname{Ap\~endice}%
34.73 \def\contentsname{Sum\'ario}%
34.74 \def\listfigurename{Lista de Figuras}%
34.75 \def\listtablename{Lista de Tabelas}%
34.76 \def\indexname{\'Indice Remissivo}%
34.77 \def\figurename{Figura}%
34.78 \def\tablename{Tabela}%
34.79 \def\partname{Parte}%
34.80 \def\enclname{Anexo}%
34.81 \def\ccname{C\'opia para}%
34.82 \def\headtoname{Para}%
34.83 \def\pagename{P\'agina}%
34.84 \def\seename{veja}%
34.85 \def\alsoname{veja tamb\'em}%
34.86 \def\proofname{Demonstra\c{c}\~ao}%
34.87 \def\glossaryname{Glossary}% <-- Needs translation
34.88 }

```

`\datebrazil` The macro `\datebrazil` redefines the command `\today` to produce Brazilian dates, for which the names of the months are not capitalized.



```

34.89 \namedef{date\CurrentOption}{%
34.90 \def\today{\number\day\space de\space\ifcase\month\or
34.91 janeiro\or fevereiro\or mar\c{c}o\or abril\or maio\or junho\or
34.92 julho\or agosto\or setembro\or outubro\or novembro\or dezembro%
34.93 \fi
34.94 \space de\space\number\year}}
34.95 \fi

```

`\portugeshyphenmins` Set correct values for `\lefthyphenmin` and `\righthyphenmin`.

```

34.96 \providehyphenmins{\CurrentOption}{\tw@\thr@@}

```

`\extrasportuges` The macro `\extrasportuges` will perform all the extra definitions needed for the Portuguese language. The macro `\noextrasportuges` is used to cancel the actions of `\extrasportuges`.

For Portuguese the " character is made active. This is done once, later on its definition may vary. Other languages in the same document may also use the " character for shorthands; we specify that the portuguese group of shorthands should be used.

```

34.97 \initiate@active@char{"}
34.98 \namedef{extras\CurrentOption}{\languageshorthands{portuges}}
34.99 \expandafter\addto\csname extras\CurrentOption\endcsname{%
34.100 \bbl@activate{"}}

```

Don't forget to turn the shorthands off again.

```

34.101 \addto\noextrasportuges{\bbl@deactivate{"}}

```

First we define access to the guillemets for quotations,

```

34.102 \declare@shorthand{portuges}{"<"}{%
34.103 \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
34.104 \declare@shorthand{portuges}{">"}{%
34.105 \textormath{\guillemotright}{\mbox{\guillemotright}}}

```

then we define two shorthands to be able to specify hyphenation breakpoints that behave a little different from `\-`.

```

34.106 \declare@shorthand{portuges}{"-"}{\nobreak-\bbl@allowhyphens}
34.107 \declare@shorthand{portuges}{""}{\hskip\z@skip}

```

And we want to have a shorthand for disabling a ligature.

```

34.108 \declare@shorthand{portuges}{"|"}{%
34.109 \textormath{\discretionary{-}{-}{\kern.03em}}{}}

```

`\-` All that is left now is the redefinition of `\-`. The new version of `\-` should indicate an extra hyphenation position, while allowing other hyphenation positions to be generated automatically. The standard behaviour of `TEX` in this respect is very unfortunate for languages such as Dutch and German, where long compound words are quite normal and all one needs is a means to indicate an extra hyphenation position on top of the ones that `TEX` can generate from the hyphenation patterns.

```

34.110 \expandafter\addto\csname extras\CurrentOption\endcsname{%
34.111 \babel@save\-\}
34.112 \expandafter\addto\csname extras\CurrentOption\endcsname{%
34.113 \def\-\{\allowhyphens\discretionary{-}{-}{-}\allowhyphens}}

```

`\ord` We also provide an easy way to typeset ordinals, both in the male (`\ord` or `\ro`)  
`\ro` and the female (`\orda` or `\ra`) form.

```

\ord 34.114 \def\ord{$~{\rm o}$}
\orda 34.115 \def\orda{$~{\rm a}$}
      34.116 \let\ro\ord\let\ra\orda

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

34.117 \ldf@finish\CurrentOption
34.118 \code

```

## 35 The Spanish language

The file `spanish.dtx`<sup>31</sup> defines all the language-specific macros for the Spanish language.

Customization is made following mainly the books on the subject by José Martínez de Sousa. By typesetting `spanish.dtx` directly you will get the full documentation (regrettably is in Spanish only, but it is pretty long). References in this part refers to that document. There are several additional features documented in the Spanish version only.

This style provides:

- Translations following the International L<sup>A</sup>T<sub>E</sub>X conventions, as well as `\today`.
- Shorthands listed in Table 9. Examples in subsection 3.4 are illustrative. Note that `"~` has a special meaning in `spanish` different to other languages, and is used mainly in linguistic contexts.

<code>'a</code>	acute accented a. Also for: e, i, o, u (both lowercase and uppercase).
<code>'n</code>	$\tilde{n}$ (also uppercase).
<code>~n</code>	$\tilde{n}$ (also uppercase). Deprecated.
<code>"u</code>	$\ddot{u}$ (also uppercase).
<code>"a</code>	Ordinal numbers (also "A, "o, "0).
<code>"c</code>	$\zeta$ (also uppercase).
<code>"rr</code>	rr, but -r when hyphenated
<code>"-</code>	Like <code>\-</code> , but allowing hyphenation in the rest the word.
<code>"=</code>	Like <code>-</code> , but allowing hyphenation in the rest the word.
<code>"~</code>	The hyphen is repeated at the very beginning of the next line if the word is hyphenated at this point.
<code>"</code>	Like <code>"-</code> but producing no hyphen sign.
<code>~-</code>	Like <code>-</code> but with no break after the hyphen. Also for: en-dashes ( <code>~--</code> ) and em-dashes ( <code>~---</code> ).
<code>"/</code>	A slash slightly lowered, if necessary.
<code>" </code>	disable ligatures at this point.
<code>"&lt;</code>	Left guillemets.
<code>"&gt;</code>	Right guillemets.
<code>&lt;&lt;</code>	<code>\begin{quoting}</code> . (See text.)
<code>&gt;&gt;</code>	<code>\end{quoting}</code> . (See text.)

Table 9: Extra definitions made by file `spanish.ldf`

- `\deactivatetilden` deactivates the `~n` and `~N` shorthands.
- *In math mode* a dot followed by a digit is replaced by a decimal comma.

<sup>31</sup>The file described in this section has version number v4.2b and was last revised on 2004/02/20. The original author from v4.0 on is Javier Bezos. Previous versions were by Julio Sánchez.

- Spanish ordinals and abbreviations with `\sptext` as, for instance, `1\sptext{er}`. The preceptive dot is included.
- Accented functions: `lím`, `máx`, `mín`, `mód`. You may globally omit the accents with `\unaccentedoperators`. Spaced functions: `arc cos`, etc. You may globally kill that space with `\unspacedoperators`. `\dotlessi` is provided for use in math mode.
- A `\quoting` environment and a related pair of shorthands `<<` and `>>`. The command `\deactivatequoting` deactivates these shorthand in case you want to use `<` and `>` in some AMS commands and numerical comparisons.
- The command `\selectspanish` selects the `spanish` language *and* its shorthands. (Intended for the preamble.)
- `\frenchspacing` is used.
- Ellipsis are best typed `...` or, within a sentence, `\dots`.
- There is a small space before `\%`.
- `\lsc` provides lowercase small caps. (See subsection 3.10.)

Just in case `spanish` is the main language, the group `\layoutspanish` is activated, which modifies the standard classes through the whole document (it cannot be deactivated) in the following way:

- Both `enumerate` and `itemize` are adapted to Spanish rules.
- Both `\alph` and `\Alph` include  $\tilde{n}$  after  $n$ .
- Symbol footmarks are one, two, three, etc., asterisks.
- OT1 guillemets are generated with two `lasy` symbols instead of small `\ll` and `\gg`.
- `\roman` is redefined to write small caps roman numerals, since lowercase roman numerals are not allowed. However, *MakeIndex* rejects entries containing pages in that format. The `.idx` file must be preprocessed if the document has this kind of entries with the provided `romanidx.tex` tool—just `TEX` it and follow the instructions.
- There is a dot after section numbers in titles and toc.

This group is ignored if you write `\selectspanish*` in the preamble.

Some additional commands are provided to be used in the `spanish.cfg` file:

- With `\es@activeacute` acute accents are always active, overriding the default `babel` behaviour.
- `\es@enumerate` sets the labels to be used by `enumerate`. The same applies to `\es@itemize` and `itemize`.
- `\es@operators` stores the operator commands. All of them are canceled with

```
\let\es@operators\relax
```

The commands `\deactivatequoting`, `\deactivatetilden` and `\selectspanish` may be used in this file, too.

A subset of these commands is provided for use in Plain TeX (with `\input spanish.sty`).

## 35.1 The Code

This file provides definition for both L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> and non L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> formats.

Identify the `ldf` file.

```
35.1 \*code
35.2 \ProvidesLanguage{spanish.ldf}
35.3      [2005/03/31 v4.2b Spanish support from the babel system]
```

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc. When this file is read as an option, i.e. by the `\usepackage` command, `spanish` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@spanish` to see whether we have to do something here.

```
35.4 \LdfInit{spanish}\captionsspanish
35.5 \ifx\undefined\l@spanish
35.6   \@nopatterns{Spanish}
35.7   \adddialect\l@spanish0
35.8 \fi
```

We define some tools which will be used in that style file: (1) we make sure that `~` is active, (2) `\es@delayed` delays the expansion of the code in conditionals (in fact, quite similar to `\bbl@afterfi`).

```
35.9 \edef\es@savedcatcodes{%
35.10   \catcode'\noexpand\~= \the\catcode'\~
35.11   \catcode'\noexpand\"= \the\catcode'\"}
35.12 \catcode'\~= \active
35.13 \catcode\"= 12
35.14 \long\def\es@delayed#1\then#2\else#3\fi{%
35.15   #1%
35.16   \expandafter\@firstoftwo
35.17   \else
35.18   \expandafter\@secondoftwo
35.19   \fi
35.20   {#2}{#3}}
```

Two tests are introduced. The first one tells us if the format is L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, and the second one if the format is plain or any other. If both are false, the format is L<sup>A</sup>T<sub>E</sub>X 2.09.

```
35.21 \es@delayed
35.22 \expandafter\ifx\csname documentclass\endcsname\relax\then
35.23   \let\if@LaTeXe\iffalse
35.24 \else
35.25   \let\if@LaTeXe\iftrue
35.26 \fi
35.27 \es@delayed
35.28 \expandafter\ifx\csname newenvironment\endcsname\relax\then
35.29   \let\if@plain\iftrue
35.30 \else
35.31   \let\if@plain\iffalse
35.32 \fi
```

Translations for captions.

```

35.33 \addto\captionsspanish{%
35.34   \def\prefacename{Prefacio}%
35.35   \def\refname{Referencias}%
35.36   \def\abstractname{Resumen}%
35.37   \def\bibName{Bibliograf'\i}a}%
35.38   \def\chaptername{Cap'\i}tulo}%
35.39   \def\appendixname{Ap'endice}%
35.40   \def\listfigurename{'Indice de figuras}%
35.41   \def\listtablename{'Indice de cuadros}%
35.42   \def\indexname{'Indice alfab'etico}%
35.43   \def\figurename{Figura}%
35.44   \def\tablename{Cuadro}%
35.45   \def\partname{Parte}%
35.46   \def\enclname{Adjunto}%
35.47   \def\ccname{Copia a}%
35.48   \def\headtoname{A}%
35.49   \def\pagename{P'agina}%
35.50   \def\seename{v'ease}%
35.51   \def\alsoname{v'ease tambi'en}%
35.52   \def\proofname{Demostraci'on}%
35.53   \def\glossaryname{Glosario}}
35.54
35.55 \expandafter\ifx\csname chapter\endcsname\relax
35.56   \addto\captionsspanish{\def\contentsname{'Indice}}
35.57 \else
35.58   \addto\captionsspanish{\def\contentsname{'Indice general}}
35.59 \fi

```

And the date.

```

35.60 \def\datespanish{%
35.61   \def\today{\the\day~de \ifcase\month\or enero\or febrero\or
35.62     marzo\or abril\or mayo\or junio\or julio\or agosto\or
35.63     septiembre\or octubre\or noviembre\or diciembre\fi
35.64     \ de\ifnum\year>1999\es@yearl\fi~\the\year}}
35.65 \def\spanishdatedel{\def\es@yearl{1}}
35.66 \def\spanishdatede{\let\es@yearl\@empty}
35.67 \spanishdatede

```

The basic macros to select the language, in the preamble or the config file.

Use of `\selectlanguage` should be avoided at this early stage because the active chars are not yet active. `\selectspanish` makes them active.

```

35.68 \def\selectspanish{%
35.69   \def\selectspanish{%
35.70     \def\selectspanish{%
35.71       \PackageWarning{spanish}{Extra \string\selectspanish ignored}}%
35.72     \es@select}}
35.73
35.74 \@onlypreamble\selectspanish
35.75
35.76 \def\es@select{%
35.77   \let\es@select\undefined
35.78   \selectlanguage{spanish}%
35.79   \catcode'\active\catcode'\~=\active}

```

Instead of joining all the extras directly in `\extrasspanish`, we subdivide them

in three further groups.

```

35.80 \def\extrasspanish{%
35.81   \textspanish
35.82   \mathspanish
35.83   \ifx\shorthandsspanish\@empty
35.84     \spanishdeactivate{.'~<>}%
35.85     \languageshorthands{none}%
35.86   \else
35.87     \shorthandsspanish
35.88   \fi}
35.89 \def\noextrasspanish{%
35.90   \ifx\textspanish\@empty\else
35.91     \notextspanish
35.92   \fi
35.93   \ifx\mathspanish\@empty\else
35.94     \nomathspanish
35.95   \fi
35.96   \ifx\shorthandsspanish\@empty\else
35.97     \noshorthandsspanish
35.98   \fi
35.99   \es@reviveshortands}

```

And the first of these sub-groups is defined.

```

35.100 \addto\textspanish{%
35.101   \babel@save\sptext
35.102   \def\sptext{\protect\es@sptext}}

```

The definition of `\sptext` is more elaborated than that of `\textsuperscript`.

With uppercase superscript text the `scriptscriptsize` is used. The mandatory dot is already included. There are two versions, depending on the format.

```

35.103 \ifes@LaTeXe %<<<<<<
35.104   \newcommand\es@sptext[1]{%
35.105     {. \setbox\z@\hbox{8}\dimen@ht\z@
35.106       \csname S@\f@size\endcsname
35.107       \edef\@tempa{\def\noexpand\@tempc{#1}%
35.108         \lowercase{\def\noexpand\@tempb{#1}}}\@tempa
35.109       \ifx\@tempb\@tempc
35.110         \fontsize\sf@size\z@
35.111         \selectfont
35.112         \advance\dimen@-1.15ex
35.113       \else
35.114         \fontsize\ssf@size\z@
35.115         \selectfont
35.116         \advance\dimen@-1.5ex
35.117       \fi
35.118       \math@fontsfalse\raise\dimen@\hbox{#1}}}
35.119 \else %<<<<<<
35.120   \let\sptextfont\rm
35.121   \newcommand\es@sptext[1]{%
35.122     {. \setbox\z@\hbox{8}\dimen@ht\z@
35.123       \edef\@tempa{\def\noexpand\@tempc{#1}%
35.124         \lowercase{\def\noexpand\@tempb{#1}}}\@tempa
35.125       \ifx\@tempb\@tempc
35.126         \advance\dimen@-0.75ex
35.127       \raise\dimen@\hbox{$\scriptstyle\sptextfont#1$}%

```

```

35.128 \else
35.129 \advance\dimen@-0.8ex
35.130 \raise\dimen@\hbox{$\scriptscriptstyle\sptextfont#1$}%
35.131 \fi}}
35.132 \fi %<<<<<<

```

Now, lowercase small caps. First, we test if there are actual small caps for the current font. If not, faked small caps are used. The `\selectfont` in `\es@lsc` could seem redundant, but it's not.

```

35.133 \ifes@LaTeXe %<<<<<<
35.134 \addto\textspanish{%
35.135 \babel@save\lsc
35.136 \def\lsc{\protect\es@lsc}}
35.137
35.138 \def\es@lsc#1{%
35.139 \leavevmode
35.140 \hbox{\scshape\selectfont
35.141 \expandafter\ifx\csname\f@encoding/\f@family/\f@series
35.142 /n/\f@size\expandafter\endcsname
35.143 \csname\curr@fontshape/\f@size\endcsname
35.144 \csname S@\f@size\endcsname
35.145 \fontsize\sf@size\z@\selectfont
35.146 \PackageInfo{spanish}{Replacing undefined sc font\MessageBreak
35.147 shape by faked small caps}%
35.148 \MakeUppercase{#1}%
35.149 \else
35.150 \MakeLowercase{#1}%
35.151 \fi}}
35.152 \fi %<<<<<<

```

The quoting environment. This part is not available in Plain, hence the test. Overriding the default `\everypar` is a bit tricky.

```

35.153 \newif\ifes@listquot
35.154
35.155 \ifes@plain\else %<<<<<<
35.156 \csname newtoks\endcsname\es@quottoks
35.157 \csname newcount\endcsname\es@quotdepth
35.158
35.159 \newenvironment{quoting}
35.160 {\leavevmode
35.161 \advance\es@quotdepth1
35.162 \csname lquot\romannumeral\es@quotdepth\endcsname%
35.163 \ifnum\es@quotdepth=\@ne
35.164 \es@listquotfalse
35.165 \let\es@quotpar\everypar
35.166 \let\everypar\es@quottoks
35.167 \everypar\expandafter{\the\es@quotpar}%
35.168 \es@quotpar{\the\everypar
35.169 \ifes@listquot\global\es@listquotfalse\else\es@quotcont\fi}%
35.170 \fi
35.171 \toks@\expandafter{\es@quotcont}%
35.172 \edef\es@quotcont{\the\toks@
35.173 \expandafter\noexpand
35.174 \csname rquot\romannumeral\es@quotdepth\endcsname}}
35.175 {\csname rquot\romannumeral\es@quotdepth\endcsname}

```



```

35.176
35.177 \def\lquoti{\guillemotleft{}}
35.178 \def\rquoti{\guillemotright{}}
35.179 \def\lquotii{' '}
35.180 \def\rquotii{' '}
35.181 \def\lquotiii{' '}
35.182 \def\rquotiii{' '}
35.183
35.184 \let\es@quotcont\@empty

```

If there is a margin par inside quoting, we don't add the quotes. `\es@listquot` stores the quotes to be used before item labels; otherwise they could appear after the labels.

```

35.185 \addto\@marginparreset{\let\es@quotcont\@empty}
35.186
35.187 \def\es@listquot{%
35.188   \csname rquot\romannumeral\es@quotdepth\endcsname
35.189   \global\es@listquottrue}
35.190 \fi %<<<<<<

```

Now, the `\frenchspacing`, followed by `\...` and `\%`

```

35.191 \addto\textspanish{\bbl@frenchspacing}
35.192 \addto\notextspanish{\bbl@nonfrenchspacing}
35.193
35.194 \addto\textspanish{%
35.195   \let\es@save@dot\.%
35.196   \babel@save\.%
35.197   \def\.{\@ifnextchar.{\es@dots}{\es@save@dot}}}}
35.198
35.199 \def\es@dots.{\leavevmode\hbox{...}\spacefactor\@M}
35.200
35.201 \ifes@LaTeXe %<<<<<<
35.202 \addto\textspanish{%
35.203   \let\percentsign\%%
35.204   \babel@save\%%
35.205   \def\%{\unskip\,\percentsign{}}}
35.206 \else
35.207 \addto\textspanish{%
35.208   \let\percentsign\%%
35.209   \babel@save\%%
35.210   \def\%{\unskip\ifmmode\,\else$\m@th\,$\fi\percentsign{}}}
35.211 \fi

```

We follow with the math group. It's not easy to add an accent in an operator. The difficulty is that we must avoid using text (that is, `\mbox`) because we have no control on font and size, and at time we should access `\i`, which is a text command forbidden in math mode. `\dotlessi` must be converted to uppercase if necessary in  $\text{\LaTeX 2}_{\epsilon}$ . There are two versions, depending on the format.

```

35.212 \addto\mathspanish{%
35.213   \babel@save\dotlessi
35.214   \def\dotlessi{\protect\es@dotlessi}}
35.215
35.216 \let\nomathspanish\relax %% Unused, but called
35.217
35.218 \ifes@LaTeXe %<<<<<<

```

```

35.219 \def\es@texti{\i}
35.220 \addto\@uclclist{\dotlessi\es@texti}
35.221 \fi %<<<<<
35.222
35.223 \ifes@LaTeXe %<<<<<
35.224 \def\es@dotlessi{%
35.225 \ifmmode
35.226 {\ifnum\mathgroup=\m@ne
35.227 \imath
35.228 \else
35.229 \count@\escapechar \escapechar=\m@ne
35.230 \expandafter\expandafter\expandafter
35.231 \split@name\expandafter\string\the\textfont\mathgroup\@nil
35.232 \escapechar=\count@
35.233 \@ifundefined{f@encoding\string\i}%
35.234 {\edef\f@encoding{\string?}}}%
35.235 \expandafter\count@\the\csname f@encoding\string\i\endcsname
35.236 \advance\count@"7000
35.237 \mathchar\count@
35.238 \fi}%
35.239 \else
35.240 \i
35.241 \fi}
35.242 \else %<<<<<
35.243 \def\es@dotlessi{%
35.244 \ifmmode
35.245 \mathchar"7010
35.246 \else
35.247 \i
35.248 \fi}
35.249 \fi %<<<<<

```

The switches for accents and spaces in math.

```

35.250 \def\accentedoperators{%
35.251 \def\es@op@ac##1{\acute{##1}}%
35.252 \def\es@op@i{\acute{\dotlessi}}
35.253 \def\unaccentedoperators{%
35.254 \def\es@op@ac##1{##1}%
35.255 \def\es@op@i{i}}
35.256 \accentedoperators
35.257
35.258 \def\spacedoperators{\let\es@op@sp\,}
35.259 \def\unspacedoperators{\let\es@op@sp\@empty}
35.260 \spacedoperators

```

The operators are stored in `\es@operators`, which in turn is included in the math group. Since `\operator@font` is defined in  $\text{\LaTeX 2}_{\epsilon}$  only, we defined in the plain variant.

```

35.261 \addto\mathspanish{\es@operators}
35.262
35.263 \ifes@LaTeXe\else %<<<<<
35.264 \let\operator@font\rm
35.265 \def\@empty{}
35.266 \fi %<<<<<
35.267

```

```

35.268 \def\es@operators{%
35.269 \babel@save\lim
35.270 \def\lim{\mathop{\operator@font l\protect\es@op@i m}}%
35.271 \babel@save\limsup
35.272 \def\limsup{\mathop{\operator@font l\es@op@i m\,sup}}%
35.273 \babel@save\liminf
35.274 \def\liminf{\mathop{\operator@font l\es@op@i m\,inf}}%
35.275 \babel@save\max
35.276 \def\max{\mathop{\operator@font m\es@op@ac ax}}%
35.277 \babel@save\inf
35.278 \def\inf{\mathop{\operator@font \protect\es@op@i nf}}%
35.279 \babel@save\min
35.280 \def\min{\mathop{\operator@font m\protect\es@op@i n}}%
35.281 \babel@save\bmod
35.282 \def\bmod{%
35.283 \nonscript\mskip-\medmuskip\mkern5mu%
35.284 \mathbin{\operator@font m\es@op@ac od}\penalty900\mkern5mu%
35.285 \nonscript\mskip-\medmuskip}%
35.286 \babel@save\pmod
35.287 \def\pmod##1{%
35.288 \allowbreak\mkern18mu({\operator@font m\es@op@ac od}\,\,\,##1)}%
35.289 \def\es@a##1 {%
35.290 \es@delayed
35.291 \if^##1~\then % is it empty? do nothing and continue
35.292 \es@a
35.293 \else
35.294 \es@delayed
35.295 \if&##1\then % is it &? do nothing and finish
35.296 \else
35.297 \begingroup
35.298 \let\,\@empty % \, is ignored when def'ing the macro name
35.299 \let\acute\@firstofone % same
35.300 \edef\es@b{\expandafter\noexpand\csname##1\endcsname}%
35.301 \def\,{\noexpand\es@op@sp}%
35.302 \def\acute####1{%
35.303 \if i####1%
35.304 \noexpand\es@op@i
35.305 \else
35.306 \noexpand\es@op@ac####1%
35.307 \fi}%
35.308 \edef\es@a{\endgroup
35.309 \noexpand\babel@save\expandafter\noexpand\es@b
35.310 \def\expandafter\noexpand\es@b{%
35.311 \mathop{\noexpand\operator@font##1}\nolimits}}%
35.312 \es@a % It restores itself
35.313 \es@a
35.314 \fi
35.315 \fi}%
35.316 \let\es@b\spanishoperators
35.317 \addto\es@b{ }%
35.318 \expandafter\es@a\es@b sen tg arc\,sen arc\,cos arc\,tg & }
35.319
35.320 \def\spanishoperators{cotg cosec senh tgh}

```

Now comes the text shorthands. They are grouped in `\shorthandsspanish`

and this style performs some operations before the babel shortands are called. The goals are to allow expression like  $a^x$  and to deactivate the shortands making them of category ‘other.’ After providing a ‘i shorthand, the new macros are defined.

```

35.321 \DeclareTextCompositeCommand{\'}{OT1}{i}{\@tabacckludge'\i}
35.322
35.323 \def\es@set@shorthand#1{%
35.324   \expandafter\edef\csname es@savecat\string#1\endcsname
35.325     {\the\catcode'#1}%
35.326   \initiate@active@char{#1}%
35.327   \catcode'#1=\csname es@savecat\string#1\endcsname\relax
35.328   \expandafter\let\csname es@math\string#1\endcsname\expandafter\endcsname
35.329   \csname normal@char\string#1\endcsname}
35.330
35.331 \def\es@use@shorthand{%
35.332   \es@delayed
35.333   \ifx\thepage\relax\then
35.334     \string
35.335   \else{%
35.336     \es@delayed
35.337     \ifx\protect\@unexpandable\protect\then
35.338       \noexpand
35.339     \else
35.340       \es@use@sh
35.341     \fi}%
35.342   \fi}
35.343
35.344 \def\es@text@sh#1{\csname active@char\string#1\endcsname}
35.345 \def\es@math@sh#1{\csname es@math\string#1\endcsname}
35.346
35.347 \def\es@use@sh{%
35.348   \es@delayed
35.349   \if@safe@actives\then
35.350     \string
35.351   \else{%
35.352     \es@delayed
35.353     \ifmmode\then
35.354       \es@math@sh
35.355     \else
35.356       \es@text@sh
35.357     \fi}%
35.358   \fi}
35.359
35.360 \gdef\es@activate#1{%
35.361   \begingroup
35.362   \lccode'\~='#1
35.363   \lowercase{%
35.364     \endgroup
35.365     \def~{\es@use@shorthand~}}
35.366
35.367 \def\spanishdeactivate#1{%
35.368   \@tfor\@tempa:=#1\do{\expandafter\es@spdeactivate\@tempa}}
35.369
35.370 \def\es@spdeactivate#1{%

```

```

35.371 \if.#1%
35.372 \mathcode'\.\=\es@period@code
35.373 \else
35.374 \begingroup
35.375 \lccode'\~=' #1
35.376 \lowercase{%
35.377 \endgroup
35.378 \expandafter\let\expandafter~%
35.379 \csname normal@char\string#1\endcsname}%
35.380 \catcode'#1\csname es@savecat\string#1\endcsname\relax
35.381 \fi}
35.382
35.383 \def\es@reviveshorthands{%
35.384 \es@restore{"}\es@restore{~}%
35.385 \es@restore{<}\es@restore{>}%
35.386 \es@quoting}
35.387
35.388 \def\es@restore#1{%
35.389 \catcode'#1=\active
35.390 \begingroup
35.391 \lccode'\~=' #1
35.392 \lowercase{%
35.393 \endgroup
35.394 \bbl@deactivate{~}}

```

But spanish allows two category codes for ', so both should be taken into account in \bbl@pr@m@s.

```

35.395 \begingroup
35.396 \catcode'\'=12
35.397 \lccode'\~=' \lccode'\=' '
35.398 \lowercase{%
35.399 \gdef\bbl@pr@m@s{%
35.400 \es@delayed
35.401 \ifx~\@let@token\then
35.402 \pr@@@s
35.403 \else
35.404 {\es@delayed
35.405 \ifx'\@let@token\then
35.406 \pr@@@s
35.407 \else
35.408 {\es@delayed
35.409 \ifx~\@let@token\then
35.410 \pr@@@t
35.411 \else
35.412 \egroup
35.413 \fi}%
35.414 \fi}%
35.415 \fi}}
35.416 \endgroup
35.417 \expandafter\ifx\csname @tabacckludge\endcsname\relax
35.418 \let\es@tak\@
35.419 \else
35.420 \let\es@tak\@tabacckludge
35.421 \fi

```

```

35.422
35.423 \ifes@LaTeXe %<<<<<<
35.424 \def\@tabacckludge#1{\expandafter\es@tak\string#1}
35.425 \let\@tabacckludge
35.426 \else\ifes@plain %<<<<<<
35.427 \def\@tabacckludge#1{\csname\string#1\endcsname}
35.428 \else %<<<<<<
35.429 \def\@tabacckludge#1{\csname a\string#1\endcsname}
35.430 \fi\fi %<<<<<<
35.431
35.432 \expandafter\ifx\csname add@accent\endcsname\relax
35.433 \def\add@accent#1#2{\accent#1 #2}
35.434 \fi

```

Instead of redefining `\'`, we redefine the internal macro for the OT1 encoding.

```

35.435 \ifes@LaTeXe %<<<<<<
35.436 \def\es@accent#1#2#3{%
35.437 \expandafter\@text@composite
35.438 \csname OT1\string#1\endcsname#3\@empty\@text@composite
35.439 {\bbl@allowhyphens\add@accent{#2}{#3}\bbl@allowhyphens
35.440 \setbox\@tempboxa\hbox{#3}
35.441 \global\mathchardef\accent@spacefactor\spacefactor}%
35.442 \spacefactor\accent@spacefactor}}
35.443 \else %<<<<<<
35.444 \def\es@accent#1#2#3{%
35.445 \bbl@allowhyphens\add@accent{#2}{#3}\bbl@allowhyphens
35.446 \spacefactor\sfcode'#3 }
35.447 \fi %<<<<<<

```

The shorthands are activated in the aux file. Now, we begin the shorthands group.

```

35.448 \addto\shorthandsspanish{\languageshorthands{spanish}}
35.449 \let\noshorthandsspanish\relax

```

First, decimal comma.

```

35.450 \def\spanishdecimal#1{\def\es@decimal{{#1}}}
35.451 \def\decimalcomma{\spanishdecimal{,}}
35.452 \def\decimalpoint{\spanishdecimal{.}}
35.453 \decimalcomma
35.454
35.455 \es@set@shorthand{.}
35.456
35.457 \@namedef{es@math\string.}{%
35.458 \@ifnextchar\egroup
35.459 {\mathchar\es@period@code\relax}%
35.460 {\es@text@sh.}}
35.461
35.462 \declare@shorthand{system}{.}{\mathchar\es@period@code\relax}
35.463 \addto\shorthandsspanish{%
35.464 \mathchardef\es@period@code\the\mathcode'\.%
35.465 \babel@savevariable{\mathcode'\.}%
35.466 \mathcode'\.=8000 %
35.467 \es@activate{.}}
35.468

```

```

35.469 \AtBeginDocument{%
35.470   \catcode'\.=12
35.471   \if@files
35.472     \immediate\write\@mainaux{%
35.473       \string\catcode'\string\.=12}%
35.474   \fi}
35.475
35.476 \declare@shorthand{spanish}{.1}{\es@decimal1}
35.477 \declare@shorthand{spanish}{.2}{\es@decimal2}
35.478 \declare@shorthand{spanish}{.3}{\es@decimal3}
35.479 \declare@shorthand{spanish}{.4}{\es@decimal4}
35.480 \declare@shorthand{spanish}{.5}{\es@decimal5}
35.481 \declare@shorthand{spanish}{.6}{\es@decimal6}
35.482 \declare@shorthand{spanish}{.7}{\es@decimal7}
35.483 \declare@shorthand{spanish}{.8}{\es@decimal8}
35.484 \declare@shorthand{spanish}{.9}{\es@decimal9}
35.485 \declare@shorthand{spanish}{.0}{\es@decimal0}

      Now accents and tools
35.486 \es@set@shorthand{}
35.487 \def\es@umlaut#1{%
35.488   \bbl@allowhyphens\add@accent{127}#1\bbl@allowhyphens
35.489   \spacefactor\sfcode'#1 }

      We override the default " of babel, intended for german.
35.490 \if@LaTeXe %<<<<<
35.491   \addto\shorthandsspanish{%
35.492     \es@activate{"}%
35.493     \es@activate{~}%
35.494     \babel@save\bbl@umlauta
35.495     \let\bbl@umlauta\es@umlaut
35.496     \expandafter\babel@save\csname OT1\string\~\endcsname
35.497     \expandafter\def\csname OT1\string\~\endcsname{\es@accent\~{126}}%
35.498     \expandafter\babel@save\csname OT1\string\' \endcsname
35.499     \expandafter\def\csname OT1\string\' \endcsname{\es@accent\'{19}}
35.500 \else %<<<<<
35.501   \addto\shorthandsspanish{%
35.502     \es@activate{"}%
35.503     \es@activate{~}%
35.504     \babel@save\bbl@umlauta
35.505     \let\bbl@umlauta\es@umlaut
35.506     \babel@save\~%
35.507     \def\~{\es@accent\~{126}}%
35.508     \babel@save\'%
35.509     \def\'#1{\if#1i\es@accent\'{19}\i\else\es@accent\'{19}{#1}\fi}}
35.510 \fi %<<<<<

35.511 \declare@shorthand{spanish}{a}{\protect\es@sptext{a}}
35.512 \declare@shorthand{spanish}{A}{\protect\es@sptext{A}}
35.513 \declare@shorthand{spanish}{o}{\protect\es@sptext{o}}
35.514 \declare@shorthand{spanish}{O}{\protect\es@sptext{O}}
35.515 \declare@shorthand{spanish}{e}{\protect\es@sptext@r{e}}
35.516 \declare@shorthand{spanish}{E}{\protect\es@sptext@r{E}}
35.517
35.518 \def\es@sptext@r#1#2{\es@sptext{#1#2}}
35.519

```

```

35.520 \declare@shorthand{spanish}{\u}{\u}
35.521 \declare@shorthand{spanish}{\U}{\U}
35.522
35.523 \declare@shorthand{spanish}{\c}{\c{c}}
35.524 \declare@shorthand{spanish}{\C}{\c{C}}
35.525
35.526 \declare@shorthand{spanish}{\<}{\guillemotleft{}}
35.527 \declare@shorthand{spanish}{\>}{\guillemotright{}}
35.528 \declare@shorthand{spanish}{\-\bbl@allowhyphens}{\bbl@allowhyphens}
35.529 \declare@shorthand{spanish}{\=}{\%}
35.530 {\bbl@allowhyphens\char\hyphenchar\font\hskip\z@skip}
35.531 \declare@shorthand{spanish}{\~}{\%}
35.532 {\bbl@allowhyphens\discretionary{\char\hyphenchar\font}{\%}
35.533 {\char\hyphenchar\font}{\char\hyphenchar\font}\bbl@allowhyphens}
35.534 \declare@shorthand{spanish}{\r}{\%}
35.535 {\bbl@allowhyphens\discretionary{\char\hyphenchar\font}{\%}
35.536 {\r}\bbl@allowhyphens}
35.537 \declare@shorthand{spanish}{\R}{\%}
35.538 {\bbl@allowhyphens\discretionary{\char\hyphenchar\font}{\%}
35.539 {\R}\bbl@allowhyphens}
35.540 \declare@shorthand{spanish}{\y}{\%}
35.541 {\@ifundefined{scalebox}{\%}
35.542 {\ensuremath{\tau}}}%
35.543 {\raisebox{1ex}{\scalebox{-1}{\resizebox{.45em}{1ex}{2}}}}%
35.544 \declare@shorthand{spanish}{\"}{\hskip\z@skip}
35.545 \declare@shorthand{spanish}{\"/}{\%}
35.546 {\setbox\z@\hbox{/}%
35.547 \dimen@ht\z@
35.548 \advance\dimen@-1ex
35.549 \advance\dimen@\dp\z@
35.550 \dimen@.31\dimen@
35.551 \advance\dimen@-\dp\z@
35.552 \ifdim\dimen@>0pt
35.553 \kern.01em\lower\dimen@\box\z@\kern.03em
35.554 \else
35.555 \box\z@
35.556 \fi}
35.557 \declare@shorthand{spanish}{\'}{\%}
35.558 {\setbox\z@\hbox{'}%
35.559 \leavevmode\raise\dp\z@\box\z@}
35.560 \declare@shorthand{spanish}{\!}{\%}
35.561 {\setbox\z@\hbox{!}%
35.562 \leavevmode\raise\dp\z@\box\z@}
35.563
35.564 \es@set@shorthand{\~}
35.565 \declare@shorthand{spanish}{\~n}{\~n}
35.566 \declare@shorthand{spanish}{\~N}{\~N}
35.567 \declare@shorthand{spanish}{\~}{\%}
35.568 \leavevmode
35.569 \bgroup
35.570 \let\@sptoken\es@dashes % This assignation changes the
35.571 \@ifnextchar-% \@ifnextchar behaviour
35.572 {\es@dashes}%
35.573 {\hbox{\char\hyphenchar\font}\egroup}}

```



```

35.574 \def\es@dashes-{%
35.575   \@ifnextchar-%
35.576     {\bbl@allowhyphens\hbox{---}\bbl@allowhyphens\egroup\@gobble}%
35.577     {\bbl@allowhyphens\hbox{--}\bbl@allowhyphens\egroup}}
35.578
35.579 \def\deactivatetilden{%
35.580   \expandafter\let\csname spanish@sh@\string~@n@\endcsname\relax
35.581   \expandafter\let\csname spanish@sh@\string~@N@\endcsname\relax}

  The shorthands for quoting.
35.582 \expandafter\ifx\csname XML@catcodes\endcsname\relax
35.583   \addto\es@select{%
35.584     \catcode'\<\active\catcode'\>=\active
35.585     \es@quoting}
35.586
35.587   \es@set@shorthand{<}
35.588   \es@set@shorthand{>}
35.589
35.590   \declare@shorthand{system}{<}{\csname normal@char\string<\endcsname}
35.591   \declare@shorthand{system}{>}{\csname normal@char\string>\endcsname}
35.592
35.593   \addto\shorthandsspanish{%
35.594     \es@activate{<}%
35.595     \es@activate{>}}
35.596
35.596 \ifcsLaTeXe %<<<<<<
35.597   \AtBeginDocument{%
35.598     \es@quoting
35.599     \if@filesw
35.600       \immediate\write\@mainaux{\string\es@quoting}%
35.601       \fi}%
35.602 \fi %<<<<<<
35.603
35.604 \def\activatequoting{%
35.605   \catcode'\>=\active \catcode'\<=\active
35.606   \let\es@quoting\activatequoting}
35.607 \def\deactivatequoting{%
35.608   \catcode'\>=12 \catcode'\<=12
35.609   \let\es@quoting\deactivatequoting}
35.610
35.611 \declare@shorthand{spanish}{<<}{\begin{quoting}}
35.612 \declare@shorthand{spanish}{>>}{\end{quoting}}
35.613 \fi
35.614
35.615 \let\es@quoting\relax
35.616 \let\deactivatequoting\relax
35.617 \let\activatequoting\relax

```

The acute accents are stored in a macro. If `activeacute` was set as an option it's executed. If not is not deleted for a possible later use in the `cfg` file. In non  $\text{\LaTeX 2}_{\epsilon}$  formats is always executed.

```

35.618 \def\es@activeacute{%
35.619   \es@set@shorthand{'}%
35.620   \addto\shorthandsspanish{\es@activate{'}}%
35.621   \addto\es@reviveshorthands{\es@restore{'}}%
35.622   \addto\es@select{\catcode'\>=\active}%

```

```

35.623 \declare@shorthand{spanish}{'a'}{\@tabacckludge'a}%
35.624 \declare@shorthand{spanish}{'A'}{\@tabacckludge'A}%
35.625 \declare@shorthand{spanish}{'e'}{\@tabacckludge'e}%
35.626 \declare@shorthand{spanish}{'E'}{\@tabacckludge'E}%
35.627 \declare@shorthand{spanish}{'i'}{\@tabacckludge'i}%
35.628 \declare@shorthand{spanish}{'I'}{\@tabacckludge'I}%
35.629 \declare@shorthand{spanish}{'o'}{\@tabacckludge'o}%
35.630 \declare@shorthand{spanish}{'O'}{\@tabacckludge'O}%
35.631 \declare@shorthand{spanish}{'u'}{\@tabacckludge'u}%
35.632 \declare@shorthand{spanish}{'U'}{\@tabacckludge'U}%
35.633 \declare@shorthand{spanish}{'n'}{\@tabacckludge'n}%
35.634 \declare@shorthand{spanish}{'N'}{\@tabacckludge'N}%
35.635 \declare@shorthand{spanish}{' '}{\textquotedblright}%
35.636 \let\es@activeacute\relax
35.637
35.638 \if@LaTeXe %<<<<<<
35.639 \ifpackage{babel}{\es@activeacute}{\es@activeacute}{\relax}
35.640 \else %<<<<<<
35.641 \es@activeacute
35.642 \fi %<<<<<<%

```

And the customization. By default these macros only store the values and do nothing.

```

35.643 \def\es@enumerate#1#2#3#4{%
35.644 \def\es@enum{#1}{#2}{#3}{#4}}
35.645
35.646 \def\es@itemize#1#2#3#4{%
35.647 \def\es@item{#1}{#2}{#3}{#4}}

```

The part formerly in the .l1d file comes here. It performs layout adaptation of L<sup>A</sup>T<sub>E</sub>X to “orthodox” Spanish rules.

```

35.648 \if@LaTeXe %<<<<<<
35.649
35.650 \es@enumerate{1.}{a)}{1)}{a$'$}
35.651 \def\spanishdashitems{\es@itemize{---}{---}{---}{---}}
35.652 \def\spanishsybitems{%
35.653 \es@itemize
35.654 {\leavevmode\hbox to 1.2ex
35.655 {\hss\vrule height .9ex width .7ex depth -.2ex\hss}}%
35.656 {\textbullet}%
35.657 {\$m@th\circ$}%
35.658 {\$m@th\diamond$}}
35.659 \def\spanishsignitems{%
35.660 \es@itemize
35.661 {\textbullet}%
35.662 {\$m@th\circ$}%
35.663 {\$m@th\diamond$}%
35.664 {\$m@th\triangleright$}}
35.665 \spanishsybitems
35.666
35.667 \def\es@enumdef#1#2#3\@@{%
35.668 \if#21%
35.669 \@@namedef{theenum#1}{\arabic{enum#1}}%
35.670 \else\if#2a%
35.671 \@@namedef{theenum#1}{\emph{\alph{enum#1}}}%

```

```

35.672 \else\if#2A%
35.673 \@namedef{theenum#1}{\Alph{enum#1}}%
35.674 \else\if#2i%
35.675 \@namedef{theenum#1}{\roman{enum#1}}%
35.676 \else\if#2I%
35.677 \@namedef{theenum#1}{\Roman{enum#1}}%
35.678 \else\if#2o%
35.679 \@namedef{theenum#1}{\arabic{enum#1}\protect\es@sptext{o}}%
35.680 \fi\fi\fi\fi\fi\fi
35.681 \toks@ \expandafter{\csname theenum#1\endcsname}
35.682 \expandafter\edef\csname labelenum#1\endcsname
35.683 {\noexpand\es@listquot\the\toks@#3}}
35.684
35.685 \addto\layoutspanish{%
35.686 \def\es@enumerate##1##2##3##4{%
35.687 \es@enumdef{i}##1\@empty\@empty\@@
35.688 \es@enumdef{ii}##2\@empty\@empty\@@
35.689 \es@enumdef{iii}##3\@empty\@empty\@@
35.690 \es@enumdef{iv}##4\@empty\@empty\@@}%
35.691 \def\es@itemize##1##2##3##4{%
35.692 \def\labelitemi{\es@listquot##1}%
35.693 \def\labelitemii{\es@listquot##2}%
35.694 \def\labelitemiii{\es@listquot##3}%
35.695 \def\labelitemiv{\es@listquot##4}}%
35.696 \def\p@enumii{\theenumi}%
35.697 \def\p@enumiii{\theenumi\theenumii}%
35.698 \def\p@enumiv{\p@enumiii\theenumiii}%
35.699 \expandafter\es@enumerate\es@enum
35.700 \expandafter\es@itemize\es@item
35.701 \DeclareTextCommand{\guillemotleft}{OT1}{%
35.702 \ifmmode\ll
35.703 \else
35.704 \save@sf@q{\penalty\@M
35.705 \leavevmode\hbox{\usefont{U}{lasy}{m}{n}%
35.706 \char40 \kern-0.19em\char40 }}%
35.707 \fi}%
35.708 \DeclareTextCommand{\guillemotright}{OT1}{%
35.709 \ifmmode\gg
35.710 \else
35.711 \save@sf@q{\penalty\@M
35.712 \leavevmode\hbox{\usefont{U}{lasy}{m}{n}%
35.713 \char41 \kern-0.19em\char41 }}%
35.714 \fi}%
35.715 \def\@fnsymbol##1%
35.716 {\ifcase##1\or*\or**\or***\or****\or
35.717 *****\or*****\else\@ctrerr\fi}%
35.718 \def\@alph##1%
35.719 {\ifcase##1\or a\or b\or c\or d\or e\or f\or g\or h\or i\or j\or
35.720 k\or l\or m\or n\or \~n\or o\or p\or q\or r\or s\or t\or u\or v\or
35.721 w\or x\or y\or z\else\@ctrerr\fi}%
35.722 \def\@Alph##1%
35.723 {\ifcase##1\or A\or B\or C\or D\or E\or F\or G\or H\or I\or J\or
35.724 K\or L\or M\or N\or \~N\or O\or P\or Q\or R\or S\or T\or U\or V\or
35.725 W\or X\or Y\or Z\else\@ctrerr\fi}%

```

```

35.726 \let\@afterindentfalse\@afterindenttrue
35.727 \@afterindenttrue
35.728 \def\@seccntformat##1{\csname the##1\endcsname.\quad}%
35.729 \def\@numberline##1{\hb@xt@{\@tempdima{##1}\if&##1&\else.\fi\hfil}}%
35.730 \def\@roman##1{\protect\es@roman{\number##1}}%
35.731 \def\es@roman##1{\protect\es@lsc{\romannumeral##1}}%
35.732 \def\esromanindex##1##2{##1{\protect\es@lsc{##2}}}}

```

We need to execute the following code when babel has been run, in order to see if `spanish` is the main language.

```

35.733 \AtEndOfPackage{%
35.734 \let\es@activeacute\undefined
35.735 \def\bbl@tempa{spanish}%
35.736 \ifx\bbl@main@language\bbl@tempa
35.737 \AtBeginDocument{\layoutspanish}%
35.738 \addto\es@select{%
35.739 \ifstar{\let\layoutspanish\relax}%
35.740 {\layoutspanish\let\layoutspanish\relax}}%
35.741 \fi
35.742 \selectspanish}
35.743
35.744 \fi %<<<<<<

```

After restoring the catcode of `~` and setting the minimal values for hyphenation, the `.ldf` is finished.

```

35.745 \es@savedcatcodes
35.746
35.747 \providehyphenmins{\CurrentOption}{\tw@\tw@}
35.748
35.749 \ifes@LaTeXe %<<<<<<
35.750 \ldf@finish{spanish}
35.751 \else %<<<<<<
35.752 \es@select
35.753 \ldf@finish{spanish}
35.754 \csname activatequoting\endcsname
35.755 \fi %<<<<<<
35.756
35.757 \</code>

```

That's all in the main file. Now the file with custom-bib macros.

```

35.758 (*bblbst)
35.759 \def\bbland{y}
35.760 \def\bbl editors{directores} \def\bbleds{dirs.\@}
35.761 \def\bbl editor{director} \def\bbled{dir.\@}
35.762 \def\bbledby{dirigido por}
35.763 \def\bbledition{edici'on} \def\bbledn{ed.\@}
35.764 \def\bbl etal{y otros}
35.765 \def\bbl volume{vol'umen} \def\bbl vol{vol.\@}
35.766 \def\bbl of{de}
35.767 \def\bbl number{n'umero} \def\bbl no{n\ sptext{o}}
35.768 \def\bbl in{en}
35.769 \def\bbl pages{p'aginas} \def\bbl pp{p'ags.\@}
35.770 \def\bbl page{p'gina} \def\bbl p{p'ag.\@}
35.771 \def\bbl chapter{cap'itulo} \def\bbl chap{cap.\@}
35.772 \def\bbl techreport{informe t'ecnico}
35.773 \def\bbl techrep{inf.\@ t'ec.\@}

```

```

35.774 \def\bblmthesis{proyecto de fin de carrera}
35.775 \def\bblphdthesis{tesis doctoral}
35.776 \def\bblfirst {primera}          \def\bblfirsto {1\sptext{a}}
35.777 \def\bblsecond{segunda}          \def\bblsecondo {2\sptext{a}}
35.778 \def\bblthird {tercera}          \def\bblthirdo {3\sptext{a}}
35.779 \def\bblfourth{cuarta}           \def\bblfourtho {4\sptext{a}}
35.780 \def\bblfifth {quinta}           \def\bblfiftho {5\sptext{a}}
35.781 \def\bblth{\sptext{a}}
35.782 \let\bblst\bblth \let\bblnd\bblth \let\bblrd\bblth
35.783 \def\bbljan{enero} \def\bblfeb{febrero} \def\bblmar{marzo}
35.784 \def\bblapr{abril} \def\bblmay{mayo} \def\bbljun{junio}
35.785 \def\bbljul{julio} \def\bblaug{agosto} \def\bblsep{septiembre}
35.786 \def\bbloct{octubre}\def\bblnov{noviembre}\def\bbldec{diciembre}
35.787 \let\bblbst

```

The spanish option writes a macro in the page field of *MakeIndex* in entries with small caps number, and they are rejected. This program is a preprocessor which moves this macro to the entry field.

```

35.788 (*indexes)
35.789 \makeatletter
35.790
35.791 \newcount\es@converted
35.792 \newcount\es@processed
35.793
35.794 \def\es@encap{'\|}
35.795 \def\es@openrange{'\({}
35.796 \def\es@closerange{'\)}
35.797
35.798 \def\es@split@file#1.#2\@@{#1}
35.799 \def\es@split@ext#1.#2\@@{#2}
35.800
35.801 \typein[\answer]{^^JArchivo que convertir^^J%
35.802   (extension por omision .idx):}
35.803
35.804 \@expandtwoargs\in@{.}{\answer}
35.805 \ifin@
35.806   \edef\es@input@file{\expandafter\es@split@file\answer\@@}
35.807   \edef\es@input@ext{\expandafter\es@split@ext\answer\@@}
35.808 \else
35.809   \edef\es@input@file{\answer}
35.810   \def\es@input@ext{idx}
35.811 \fi
35.812
35.813 \typein[\answer]{^^JArchivo de destino^^J%
35.814   (archivo por omision: \es@input@file.eix,^^J%
35.815   extension por omision .eix):}
35.816 \ifx\answer\@empty
35.817   \edef\es@output{\es@input@file.eix}
35.818 \else
35.819   \@expandtwoargs\in@{.}{\answer}
35.820   \ifin@
35.821     \edef\es@output{\answer}
35.822   \else
35.823     \edef\es@output{\answer.eix}

```

```

35.824 \fi
35.825 \fi
35.826
35.827 \typein[\answer]{%
35.828 ^^J?Se ha usado algun esquema especial de controles^^J%
35.829 de MakeIndex para encap, open_range o close_range?^^J%
35.830 [s/n] (n por omision)}
35.831
35.832 \if s\answer
35.833 \typein[\answer]{^^JCaracter para 'encap'^^J%
35.834 (\string| por omision)}
35.835 \ifx\answer\@empty\else
35.836 \edef\es@encap{%
35.837 '\expandafter\noexpand\csname\expandafter\string\answer\endcsname}
35.838 \fi
35.839 \typein[\answer]{^^JCaracter para 'open_range'^^J%
35.840 (\string( por omision)}
35.841 \ifx\answer\@empty\else
35.842 \edef\es@openrange{%
35.843 '\expandafter\noexpand\csname\expandafter\string\answer\endcsname}
35.844 \fi
35.845 \typein[\answer]{^^JCaracter para 'close_range'^^J%
35.846 (\string) por omision)}
35.847 \ifx\answer\@empty\else
35.848 \edef\es@closerange{%
35.849 '\expandafter\noexpand\csname\expandafter\string\answer\endcsname}
35.850 \fi
35.851 \fi
35.852
35.853 \newwrite\es@indexfile
35.854 \immediate\openout\es@indexfile=\es@output
35.855
35.856 \newif\ifes@encapsulated
35.857
35.858 \def\es@roman#1{\romannumeral#1 }
35.859 \edef\es@slash{\expandafter@gobble\string\}
35.860
35.861 \def\indexentry{%
35.862 \begingroup
35.863 \@sanitize
35.864 \es@indexentry}
35.865
35.866 \begingroup
35.867
35.868 \catcode'\|=12 \lccode'\|=\es@encap\relax
35.869 \catcode'\(=12 \lccode'\(=\es@openrange\relax
35.870 \catcode'\)=12 \lccode'\)=\es@closerange\relax
35.871
35.872 \lowercase{
35.873 \gdef\es@indexentry#1{%
35.874 \endgroup
35.875 \advance\es@processed\@ne
35.876 \es@encapsulatedfalse
35.877 \es@bar@idx#1|\@@

```

```

35.878 \es@idxentry}%
35.879 }
35.880
35.881 \lowercase{
35.882 \gdef\es@idxentry#1{%
35.883 \in@{\es@roman}{#1}%
35.884 \ifin@
35.885 \advance\es@converted\@ne
35.886 \immediate\write\es@indexfile{%
35.887 \string\indexentry{\es@b\ifes@encapsulated\es@p\fi esromanindex%
35.888 {\ifx\es@a\@empty\else\es@slash\es@a\fi}}{#1}}%
35.889 \else
35.890 \immediate\write\es@indexfile{%
35.891 \string\indexentry{\es@b\ifes@encapsulated\es@p\es@a\fi}}{#1}}%
35.892 \fi}
35.893 }
35.894
35.895 \lowercase{
35.896 \gdef\es@bar@idx#1|#2\@{
35.897 \def\es@b{#1}\def\es@a{#2}%
35.898 \ifx\es@a\@empty\else\es@encapsulatedtrue\es@bar@eat#2\fi}
35.899 }
35.900
35.901 \lowercase{
35.902 \gdef\es@bar@eat#1#2|{\def\es@p{#1}\def\es@a{#2}%
35.903 \edef\es@t{()\ifx\es@t\es@p
35.904 \else\edef\es@t{}}\ifx\es@t\es@p
35.905 \else
35.906 \edef\es@a{\es@p\es@a}\let\es@p\@empty%
35.907 \fi\fi}
35.908 }
35.909
35.910 \endgroup
35.911
35.912 \input \es@input@file.\es@input@ext
35.913
35.914 \immediate\closeout\es@indexfile
35.915
35.916 \typeout{*****}
35.917 \typeout{Se ha procesado: \es@input@file.\es@input@ext }
35.918 \typeout{Lineas leidas: \the\es@processed}
35.919 \typeout{Lineas convertidas: \the\es@converted}
35.920 \typeout{Resultado en: \es@output}
35.921 \ifnum\es@converted>\z@
35.922 \typeout{Genere el indice a partir de ese archivo}
35.923 \else
35.924 \typeout{No se ha realizado ningun tipo de conversion}
35.925 \typeout{Se puede generar el archivo directamente^^J%
35.926 de \es@input@file.\es@input@ext}
35.927 \fi
35.928 \typeout{*****}
35.929 \@@end
35.930 \</indexes>

```

## 36 The Catalan language

The file `catalan.dtx`<sup>32</sup> defines all the language-specific macro's for the Catalan language.

For this language only the double quote character (") is made active by default. In table 10 an overview is given of the new macros defined and the new meanings of ". Additionally to that, the user can explicitly activate the acute accent or apostrophe (') and/or the grave accent (`) characters by using the `activeacute` and `activegrave` options. In that case, the definitions shown in table 11 also become available<sup>33</sup>.

<code>\l.l</code>	geminated-l digraph (similar to l·l). <code>\L.L</code> produces the uppercase version.
<code>\lgem</code>	geminated-l digraph (similar to l·l). <code>\Lgem</code> produces the uppercase version.
<code>\up</code>	Macro to help typing raised ordinals, like 1 <sup>er</sup> . Takes one argument.
<code>\-</code>	like the old <code>\-</code> , but allowing hyphenation in the rest of the word.
<code>"i</code>	i with diaeresis, allowing hyphenation in the rest of the word. Valid for the following vowels: i, u (both lowercase and uppercase).
<code>"c</code>	c-cedilla (ç). Valid for both uppercase and lowercase c.
<code>"l</code>	geminated-l digraph (similar to l·l). Valid for both uppercase and lowercase l.
<code>"&lt;</code>	French left double quotes (similar to <<).
<code>"&gt;</code>	French right double quotes (similar to >>).
<code>"-</code>	explicit hyphen sign, allowing hyphenation in the rest of the word.
<code>" </code>	disable ligature at this position.

Table 10: Extra definitions made by file `catalan.ldf` (activated by default)

<code>'e</code>	acute accented a, allowing hyphenation in the rest of the word. Valid for the following vowels: e, i, o, u (both lowercase and uppercase).
<code>'a</code>	grave accented a, allowing hyphenation in the rest of the word. Valid for the following vowels: a, e, o (both lowercase and uppercase).

Table 11: Extra definitions made by file `catalan.ldf` (activated only when using the options `activeacute` and `activegrave`)

These active accents characters behave according to their original definitions

<sup>32</sup>The file described in this section has version number v2.2p and was last revised on 2005/03/29.

<sup>33</sup>Please note that if the acute accent character is active, it is necessary to take special care of coding apostrophes in a way which cannot be confounded with accents. Therefore, it is necessary to type `l'Jestri` instead of `l'estri`.



if not followed by one of the characters indicated in that table.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
36.1 (*code)
36.2 \LdfInit{catalan}\captionscatalan
```

When this file is read as an option, i.e. by the `\usepackage` command, `catalan` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@catalan` to see whether we have to do something here.

```
36.3 \ifx\l@catalan\@undefined
36.4   \@nopatterns{Catalan}
36.5   \adddialect\l@catalan0
36.6 \fi
```

The next step consists of defining commands to switch to (and from) the Catalan language.

`\catalanhyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

```
36.7 \providehyphenmins{catalan}{\tw@\tw@}
```

`\captionscatalan` The macro `\captionscatalan` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
36.8 \addto\captionscatalan{%
36.9   \def\prefacename{Pr\‘oleg}%
36.10  \def\refname{Refer\‘encies}%
36.11  \def\abstractname{Resum}%
36.12  \def\bibname{Bibliografia}%
36.13  \def\chaptername{Cap\‘{i}tol}%
36.14  \def\appendixname{Ap\‘endix}%
36.15  \def\contentsname{\‘Index}%
36.16  \def\listfigurename{\‘Index de figures}%
36.17  \def\listtablename{\‘Index de taules}%
36.18  \def\indexname{\‘Index alfab\‘etic}%
36.19  \def\figurename{Figura}%
36.20  \def\tablename{Taula}%
36.21  \def\partname{Part}%
36.22  \def\enclname{Adjunt}%
36.23  \def\ccname{C\‘opies a}%
36.24  \def\headtoname{A}%
36.25  \def\pagename{P\‘agina}%
36.26  \def\seename{Vegeu}%
36.27  \def\alsoname{Vegeu tamb\‘e}%
36.28  \def\proofname{Demostraci\‘o}%
36.29  \def\glossaryname{Glossari}%
36.30 }
```

`\datecatalan` The macro `\datecatalan` redefines the command `\today` to produce Catalan dates. Months are written in lowercase<sup>34</sup>.

```
36.31 \def\datecatalan{%
```

---

<sup>34</sup>This seems to be the common practice. See for example: E. Coromina, *El 9 Nou: Manual de redacció i estil*, Ed. Eumo, Vic, 1993

```

36.32 \def\today{\number\day~\ifcase\month\or
36.33   de gener\or de febrer\or de mar\c{c}\or d'abril\or de maig\or
36.34   de juny\or de juliol\or d'agost\or de setembre\or d'octubre\or
36.35   de novembre\or de desembre\fi
36.36   \space de~\number\year}}

```

`\extrascatalan` The macro `\extrascatalan` will perform all the extra definitions needed for the Catalan language. The macro `\noextrascatalan` is used to cancel the actions of `\extrascatalan`.

To improve hyphenation we give the grave character (') a non-zero lower case code; when we do that T<sub>E</sub>X will find more breakpoints in words that contain this character in its rôle as apostrophe.

```

36.37 \addto\extrascatalan{%
36.38   \lccode'=''}
36.39 \addto\noextrascatalan{%
36.40   \lccode'=0}

```

For Catalan, some characters are made active or are redefined. In particular, the " character receives a new meaning; this can also happen for the ' character and the ' character when the options `activegrave` and/or `activeacute` are specified.

```

36.41 \addto\extrascatalan{\languageshorthands{catalan}}
36.42 \initiate@active@char{"}
36.43 \addto\extrascatalan{\bbl@activate{"}}

```

Because the grave character is being used in constructs such as `\catcode'='=\active` it needs to have it's original category code" when the auxiliary file is being read. Note that this file is read twice, once at the beginning of the document; then there is no problem; but the second time it is read at the end of the document to check whether any labels changes. It's this second time round that the activated grave character leads to error messages.

```

36.44 \@ifpackagewith{babel}{activegrave}{%
36.45   \AtBeginDocument{%
36.46     \if@files\immediate\write\@auxout{\catcode096=12}\fi
36.47     \initiate@active@char{'}%
36.48   }{}
36.49 \@ifpackagewith{babel}{activegrave}{%
36.50   \addto\extrascatalan{\bbl@activate{'}}%
36.51 }{}
36.52 \@ifpackagewith{babel}{activeacute}{%
36.53   \initiate@active@char{'}%
36.54 }{}
36.55 \@ifpackagewith{babel}{activeacute}{%
36.56   \addto\extrascatalan{\bbl@activate{'}}%
36.57 }{}

```

Now make sure that the characters that have been turned into shorthanfd characters expand to 'normal' characters outside the catalan environment.

```

36.58 \addto\noextrascatalan{\bbl@deactivate{"}}
36.59 \@ifpackagewith{babel}{activegrave}{%
36.60   \addto\noextrascatalan{\bbl@deactivate{'}}{}
36.61 \@ifpackagewith{babel}{activeacute}{%
36.62   \addto\noextrascatalan{\bbl@deactivate{'}}{}

```

Apart from the active characters some other macros get a new definition. Therefore we store the current ones to be able to restore them later. When their current meanings are saved, we can safely redefine them.

We provide new definitions for the accent macros when one or both of the options `activegrave` or `activeacute` were specified.

```

36.63 \addto\extrascatalan{%
36.64   \babel@save\%"
36.65   \def\{"{\protect\@umlaut}}%
36.66 \@ifpackagewith{babel}{activegrave}{%
36.67   \babel@save\'%
36.68   \addto\extrascatalan{\def\{'{\protect\@grave}}
36.69 }{}
36.70 \@ifpackagewith{babel}{activeacute}{%
36.71   \babel@save\'%
36.72   \addto\extrascatalan{\def\{'{\protect\@acute}}
36.73 }{}

```

All the code above is necessary because we need a few extra active characters. These characters are then used as indicated in tables 10 and 11.

<code>\dieresis</code> <code>\textacute</code> <code>\textgrave</code>	The original definition of <code>\"</code> is stored as <code>\dieresis</code> , because the definition of <code>\"</code> might not be the default plain $\TeX$ one. If the user uses POSTSCRIPT fonts with the Adobe font encoding the <code>"</code> character is not in the same position as in Knuth's font encoding. In this case <code>\"</code> will not be defined as <code>\accent"7F 1</code> , but as <code>\accent'310 #1</code> . Something similar happens when using fonts that follow the Cork encoding. For this reason we save the definition of <code>\"</code> and use that in the definition of other macros. We do likewise for <code>\'</code> , and <code>\'</code> .
--	--

```

36.74 \let\dieresis\"
36.75 \@ifpackagewith{babel}{activegrave}{\let\textgrave\'}{}
36.76 \@ifpackagewith{babel}{activeacute}{\let\textacute\'}{}

```

<code>\@umlaut</code> <code>\@acute</code> <code>\@grave</code>	We check the encoding and if not using T1, we make the accents expand but enabling hyphenation beyond the accent. If this is the case, not all break positions will be found in words that contain accents, but this is a limitation in $\TeX$ . An unsolved problem here is that the encoding can change at any time. The definitions below are made in such a way that a change between two 256-char encodings are supported, but changes between a 128-char and a 256-char encoding are not properly supported. We check if T1 is in use. If not, we will give a warning and proceed redefining the accent macros so that $\TeX$ at least finds the breaks that are not too close to the accent. The warning will only be printed to the log file.
---	---

```

36.77 \ifx\DeclareFontShape\undefined
36.78   \wlog{Warning: You are using an old LaTeX}
36.79   \wlog{Some word breaks will not be found.}
36.80   \def\@umlaut#1{\allowhyphens\dieresis{#1}\allowhyphens}
36.81   \@ifpackagewith{babel}{activeacute}{%
36.82     \def\@acute#1{\allowhyphens\textacute{#1}\allowhyphens}}{}
36.83   \@ifpackagewith{babel}{activegrave}{%
36.84     \def\@grave#1{\allowhyphens\textgrave{#1}\allowhyphens}}{}
36.85 \else
36.86   \ifx\f@encoding\bbl@t@one
36.87     \let\@umlaut\dieresis
36.88     \@ifpackagewith{babel}{activeacute}{%

```

```

36.89 \let\@acute\textacute{}\}
36.90 \@ifpackagewith{babel}{activegrave}{%
36.91 \let\@grave\textgrave{}\}
36.92 \else
36.93 \wlog{Warning: You are using encoding \f@encoding\space
36.94 instead of T1.}
36.95 \wlog{Some word breaks will not be found.}
36.96 \def\@umlaut#1{\allowhyphens\dieresis{#1}\allowhyphens}
36.97 \@ifpackagewith{babel}{activeacute}{%
36.98 \def\@acute#1{\allowhyphens\textacute{#1}\allowhyphens}}\}
36.99 \@ifpackagewith{babel}{activegrave}{%
36.100 \def\@grave#1{\allowhyphens\textgrave{#1}\allowhyphens}}\}
36.101 \fi
36.102 \fi

```

If the user setup has extended fonts, the Ferguson macros are required to be defined. We check for their existence and, if defined, expand to whatever they are defined to. For instance, `\'a` would check for the existence of a `\@ac@a` macro. It is assumed to expand to the code of the accented letter. If it is not defined, we assume that no extended codes are available and expand to the original definition but enabling hyphenation beyond the accent. This is as best as we can do. It is better if you have extended fonts or ML- $\TeX$  because the hyphenation algorithm can work on the whole word. The following macros are directly derived from ML- $\TeX$ .<sup>35</sup>

Now we can define our shorthands: the diaeresis and “*ela geminada*” support,

```

36.103 \declare@shorthand{catalan}{\i}{\textormath{\@umlaut\i}{\ddot\imath}}
36.104 \declare@shorthand{catalan}{\l}{\lgem{}}
36.105 \declare@shorthand{catalan}{\u}{\textormath{\@umlaut u}{\ddot u}}
36.106 \declare@shorthand{catalan}{\I}{\textormath{\@umlaut I}{\ddot I}}
36.107 \declare@shorthand{catalan}{\L}{\Lgem{}}
36.108 \declare@shorthand{catalan}{\U}{\textormath{\@umlaut U}{\ddot U}}

```

cedille,

```

36.109 \declare@shorthand{catalan}{\c}{\textormath{\c c}{\prime c}}
36.110 \declare@shorthand{catalan}{\C}{\textormath{\c C}{\prime C}}

```

‘french’ quote characters,

```

36.111 \declare@shorthand{catalan}{\<}{%
36.112 \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
36.113 \declare@shorthand{catalan}{\>}{%
36.114 \textormath{\guillemotright}{\mbox{\guillemotright}}}

```

grave accents,

```

36.115 \@ifpackagewith{babel}{activegrave}{%
36.116 \declare@shorthand{catalan}{\`a}{\textormath{\@grave a}{\grave a}}
36.117 \declare@shorthand{catalan}{\`e}{\textormath{\@grave e}{\grave e}}
36.118 \declare@shorthand{catalan}{\`o}{\textormath{\@grave o}{\grave o}}

```

<sup>35</sup>A problem is perceived here with these macros when used in a multilingual environment where extended hyphenation patterns are available for some but not all languages. Assume that no extended patterns exist at some site for French and that `french.sty` would adopt this scheme too. In that case, `\'e` in French would produce the combined accented letter, but hyphenation around it would be suppressed. Both language options would need an independent method to know whether they have extended patterns available. The precise impact of this problem and the possible solutions are under study.

```

36.119 \declare@shorthand{catalan}{‘A’{\textormath{\@grave A}{\grave A}}}
36.120 \declare@shorthand{catalan}{‘E’{\textormath{\@grave E}{\grave E}}}
36.121 \declare@shorthand{catalan}{‘O’{\textormath{\@grave O}{\grave O}}}
36.122 \declare@shorthand{catalan}{‘’}{\textquotedblleft}%’
36.123 }{}

acute accents,

36.124 \ifpackagewith{babel}{activeacute}{%
36.125 \declare@shorthand{catalan}{‘a’{\textormath{\@acute a}{~{\prime} a}}}
36.126 \declare@shorthand{catalan}{‘e’{\textormath{\@acute e}{~{\prime} e}}}
36.127 \declare@shorthand{catalan}{‘i’{\textormath{\@acute i}{~{\prime} i}}}
36.128 \declare@shorthand{catalan}{‘o’{\textormath{\@acute o}{~{\prime} o}}}
36.129 \declare@shorthand{catalan}{‘u’{\textormath{\@acute u}{~{\prime} u}}}
36.130 \declare@shorthand{catalan}{‘A’{\textormath{\@acute A}{~{\prime} A}}}
36.131 \declare@shorthand{catalan}{‘E’{\textormath{\@acute E}{~{\prime} E}}}
36.132 \declare@shorthand{catalan}{‘I’{\textormath{\@acute I}{~{\prime} I}}}
36.133 \declare@shorthand{catalan}{‘O’{\textormath{\@acute O}{~{\prime} O}}}
36.134 \declare@shorthand{catalan}{‘U’{\textormath{\@acute U}{~{\prime} U}}}
36.135 \declare@shorthand{catalan}{‘|’}{%
36.136 \textormath{\csname normal@char\string\endcsname}{~{\prime}}}}

the acute accent,

36.137 \declare@shorthand{catalan}{‘’}{%
36.138 \textormath{\textquotedblright}{\sp\bgroup\prim@s’}}
36.139 }{}

and finally, some support definitions

36.140 \declare@shorthand{catalan}{“-}{\nobreak-\bbl@allowhyphens}
36.141 \declare@shorthand{catalan}{“|”}{%
36.142 \textormath{\nobreak\discretionary{-}{-}{\kern.03em}%
36.143 \allowhyphens}{}}

```

\- All that is left now is the redefinition of \-. The new version of \- should indicate an extra hyphenation position, while allowing other hyphenation positions to be generated automatically. The standard behaviour of T<sub>E</sub>X in this respect is unfortunate for Catalan but not as much as for Dutch or German, where long compound words are quite normal and all one needs is a means to indicate an extra hyphenation position on top of the ones that T<sub>E</sub>X can generate from the hyphenation patterns. However, the average length of words in Catalan makes this desirable and so it is kept here.

```

36.144 \addto\extrascatalan{%
36.145 \babel@save{\-}%
36.146 \def\-\{\bbl@allowhyphens\discretionary{-}{-}{\bbl@allowhyphens}}

```

**\lgem** Here we define a macro for typing the catalan “ela geminada” (geminated l). The **\Lgem** macros **\lgem** and **\Lgem** have been chosen for its lowercase and uppercase representation, respectively<sup>36</sup>.

The code used in the actual macro used is a combination of the one proposed by Feruglio and Fuster<sup>37</sup> and the proposal<sup>38</sup> from Valiente presented at the T<sub>E</sub>X Users

<sup>36</sup>The macro names \ll and \LL were not taken because of the fact that \ll is already used in mathematical mode.

<sup>37</sup>G. Valiente and R. Fuster, Typesetting Catalan Texts with T<sub>E</sub>X, *TUGboat* **14**(3), 1993.

<sup>38</sup>G. Valiente, Modern Catalan Typographical Conventions, *TUGboat* **16**(3), 1995.

Group Annual Meeting in 1995. This last proposal has not been fully implemented due to its limitation to CM fonts.

```

36.147 \newdimen\leftllkern \newdimen\rightllkern \newdimen\raiselldim
36.148 \def\lgem{%
36.149 \ifmmode
36.150 \csname normal@char\string\endcsname 1%
36.151 \else
36.152 \leftllkern=0pt\rightllkern=0pt\raiselldim=0pt%
36.153 \setbox0\hbox{1}\setbox1\hbox{1/}\setbox2\hbox{.}%
36.154 \advance\raiselldim by \the\fontdimen5\the\font
36.155 \advance\raiselldim by -.ht2%
36.156 \leftllkern=-.25\wd0%
36.157 \advance\leftllkern by \wd1%
36.158 \advance\leftllkern by -\wd0%
36.159 \rightllkern=-.25\wd0%
36.160 \advance\rightllkern by -\wd1%
36.161 \advance\rightllkern by \wd0%
36.162 \allowhyphens\discretionary{1-}{1}%
36.163 {\hbox{1}\kern\leftllkern\raise\raiselldim\hbox{.}%
36.164 \kern\rightllkern\hbox{1}}\allowhyphens
36.165 \fi
36.166 }
36.167 \def\Lgem{%
36.168 \ifmmode
36.169 \csname normal@char\string\endcsname L%
36.170 \else
36.171 \leftllkern=0pt\rightllkern=0pt\raiselldim=0pt%
36.172 \setbox0\hbox{L}\setbox1\hbox{L/}\setbox2\hbox{.}%
36.173 \advance\raiselldim by .5\ht0%
36.174 \advance\raiselldim by -.5\ht2%
36.175 \leftllkern=-.125\wd0%
36.176 \advance\leftllkern by \wd1%
36.177 \advance\leftllkern by -\wd0%
36.178 \rightllkern=-\wd0%
36.179 \divide\rightllkern by 6%
36.180 \advance\rightllkern by -\wd1%
36.181 \advance\rightllkern by \wd0%
36.182 \allowhyphens\discretionary{L-}{L}%
36.183 {\hbox{L}\kern\leftllkern\raise\raiselldim\hbox{.}%
36.184 \kern\rightllkern\hbox{L}}\allowhyphens
36.185 \fi
36.186 }

```

\1.1 It seems to be the most natural way of entering the “ela geminda” to use the \L.L sequences \1.1 and \L.L. These are not really macro’s by themselves but the macros \1 and \L with delimited arguments. Therefor we define two macros that check if the next character is a period. If not the “polish l” will be typeset, otherwise a “ela geminada” will be typeset and the next two tokens will be ‘eaten’.

```

36.187 \AtBeginDocument{%
36.188 \let\lslash\l
36.189 \let\Lslash\L
36.190 \DeclareRobustCommand\l{\ifnextchar.\bbl@l\lslash}

```

```

36.191 \DeclareRobustCommand\L{\@ifnextchar.\bbl@L\Lslash}}
36.192 \def\bbl@l#1#2{\lgem}
36.193 \def\bbl@L#1#2{\Lgem}

```

`\up` A macro for typesetting things like 1<sup>er</sup> as proposed by Raymon Seroul<sup>39</sup>.

```

36.194 \DeclareRobustCommand*\up}[1]{\textsuperscript{#1}}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

36.195 \ldf@finish{catalan}
36.196 \code

```

---

<sup>39</sup>This macro has been borrowed from `francais.dtx`

## 37 The Galician language

The file `galician.dtx`<sup>40</sup> defines all the language definition macros for the Galician language.

For this language the characters `'`, `~` and `"` are made active. In table 12 an overview is given of their purpose. These active accents character behave according

<code>" </code>	disable ligature at this position.
<code>"-</code>	an explicit hyphen sign, allowing hyphenation in the rest of the word.
<code>\-</code>	like the old <code>\-</code> , but allowing hyphenation in the rest of the word.
<code>'a</code>	an accent that allows hyphenation. Valid for all vowels uppercase and lowercase.
<code>'n</code>	a n with a tilde. This is included to improve compatibility with FTC. Works for uppercase too.
<code>"u</code>	a u with dieresis allowing hyphenation.
<code>"a</code>	feminine ordinal as in 1 <sup>a</sup> .
<code>"o</code>	masculine ordinal as in 1 <sup>o</sup> .
<code>~n</code>	a n with tilde. Works for uppercase too.

Table 12: The extra definitions made by `galician.ldf`

to their original definitions if not followed by one of the characters indicated in that table.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
37.1 (*code)
37.2 \LdfInit{galician}\captionsgalician
```

When this file is read as an option, i.e. by the `\usepackage` command, `galician` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@galician` to see whether we have to do something here.

```
37.3 \ifx\l@galician\@undefined
37.4 \@nopatterns{Galician}
37.5 \adddialect\l@galician0\fi
```

The next step consists of defining commands to switch to (and from) the Galician language.

`\captionsgalician` The macro `\captionsgalician` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
37.6 \addto\captionsgalician{%
37.7 \def\prefacename{Prefacio}%
37.8 \def\refname{Referencias}%
37.9 \def\abstractname{Resumo}%
37.10 \def\bibname{Bibliograf\'}{\i}a}%
37.11 \def\chaptername{Cap\'}{\i}tulo}%
37.12 \def\appendixname{Ap\'}endice}%
37.13 \def\contentsname{\'}Indice Xeral}%
```

<sup>40</sup>The file described in this section has version number v1.2l and was last revised on 2005/03/30.



```

37.14 \def\listfigurename{'Indice de Figuras}%
37.15 \def\listtablename{'Indice de T\aboas}%
37.16 \def\indexname{'Indice de Materias}%
37.17 \def\figurename{Figura}%
37.18 \def\tablename{T\aboas}%
37.19 \def\partname{Parte}%
37.20 \def\enclname{Adxunto}%
37.21 \def\ccname{Copia a}%
37.22 \def\headtoname{A}%
37.23 \def\pagename{P\axina}%
37.24 \def\seenname{v\exase}%
37.25 \def\alsoname{v\exase tam'en}%
37.26 \def\proofname{Demostraci'on}%
37.27 \def\glossaryname{Glosario}%
37.28 }

```

`\dategalician` The macro `\dategalician` redefines the command `\today` to produce Galician dates.

```

37.29 \def\dategalician{%
37.30 \def\today{\number\day~de\space\ifcase\month\or
37.31 xaneiro\or febreiro\or marzo\or abril\or maio\or xu~no\or
37.32 xullo\or agosto\or setembro\or outubro\or novembro\or decembro\fi
37.33 \space de~\number\year}}

```

`\extragalician` The macro `\extragalician` will perform all the extra definitions needed for the Galician language. The macro `\noextragalician` is used to cancel the actions of `\extragalician`.

For Galician, some characters are made active or are redefined. In particular, the " character and the ~ character receive new meanings this can also happen for the ' character when the option `activeacute` is specified.

```

37.34 \addto\extragalician{\languageshorthands{galician}}
37.35 \initiate@active@char{"}
37.36 \initiate@active@char{~}
37.37 \addto\extragalician{%
37.38 \bbl@activate{"}\bbl@activate{~}}
37.39 \@ifpackagewith{babel}{activeacute}{%
37.40 \initiate@active@char{'}}{}
37.41 \@ifpackagewith{babel}{activeacute}{%
37.42 \addto\extragalician{\bbl@activate{'}}{}

```

Now make sure that the characters that have been turned into shorthanfd characters expand to 'normal' characters outside the catalan environment.

```

37.43 \addto\noextragalician{%
37.44 \bbl@deactivate{"}\bbl@deactivate{~}}
37.45 \@ifpackagewith{babel}{activeacute}{%
37.46 \addto\noextracatalan{\bbl@deactivate{'}}{}

```

Apart from the active characters some other macros get a new definition. Therefore we store the current one to be able to restore them later.

```

37.47 \addto\extragalician{%
37.48 \babel@save"\babel@save~%
37.49 \def"\{\protect\@umlaut}%
37.50 \def~{\protect\@tilde}}

```

```

37.51 \ifpackagewith{babel}{activeacute}{%
37.52   \babel@save\'%
37.53   \addto\extrasgalician{\def\'{\protect\@acute}}
37.54 }{}

```

All the code above is necessary because we need a few extra active characters. These characters are then used as indicated in table 12.

This option includes some support for working with extended, 8-bit fonts, if available. This assumes that the user has some macros predefined. For instance, if the user has a `\@ac@a` macro defined, the sequence `\'a` or `'a` will both expand to whatever `\@ac@a` is defined to expand, presumably `á`. The names of these macros are the same as those in Ferguson's ML- $\TeX$  compatibility package on purpose. Using this method, and provided that adequate hyphenation patterns exist, it is possible to get better hyphenation for Galician than before. If the user has a terminal able to produce these codes directly, it is possible to do so. If the need arises to send the document to someone who does not have such support, it is possible to mechanically translate the document so that the receiver can make use of it.

To be able to define the function of the new accents, we first define a couple of 'support' macros.

```

\dieresis The original definition of \" is stored as \dieresis, because the definition of
\textacute \" might not be the default plain  $\TeX$  one. If the user uses POSTSCRIPT fonts
\texttilde with the Adobe font encoding the " character is not in the same position as in
Knuth's font encoding. In this case \" will not be defined as \accent"7F #1, but
as \accent'310 #1. Something similar happens when using fonts that follow the
Cork encoding. For this reason we save the definition of \" and use that in the
definition of other macros. We do likewise for \' and \~.

```

```

37.55 \let\dieresis\"
37.56 \let\texttilde\~
37.57 \ifpackagewith{babel}{activeacute}{\let\textacute\'}{\let\texttilde\~}

```

```

\@umlaut If the user setup has extended fonts, the Ferguson macros are required to be
\@acute defined. We check for their existence and, if defined, expand to whatever they are
\@tilde defined to. For instance, \'a would check for the existence of a \@ac@a macro. It
is assumed to expand to the code of the accented letter. If it is not defined, we
assume that no extended codes are available and expand to the original definition
but enabling hyphenation beyond the accent. This is as best as we can do. It is
better if you have extended fonts or ML- $\TeX$  because the hyphenation algorithm
can work on the whole word. The following macros are directly derived from
ML- $\TeX$ .41

```

```

37.58 \def\@umlaut#1{\allowhyphens\dieresis{#1}\allowhyphens}
37.59 \def\@tilde#1{\allowhyphens\texttilde{#1}\allowhyphens}
37.60 \ifpackagewith{babel}{activeacute}{%
37.61   \def\@acute#1{\allowhyphens\textacute{#1}\allowhyphens}}{}

```

<sup>41</sup>A problem is perceived here with these macros when used in a multilingual environment where extended hyphenation patterns are available for some but not all languages. Assume that no extended patterns exist at some site for French and that `french.sty` would adopt this scheme too. In that case, `'e` in French would produce the combined accented letter, but hyphenation around it would be suppressed. Both language options would need an independent method to know whether they have extended patterns available. The precise impact of this problem and the possible solutions are under study.

Now we can define our shorthands: the umlauts,

```

37.62 \declare@shorthand{galician}{"-}{\nobreak-\bbl@allowhyphens}
37.63 \declare@shorthand{galician}{"}{\discretionary{-}{\kern.03em}}
37.64 \declare@shorthand{galician}{"u}{\@umlaut{u}}
37.65 \declare@shorthand{galician}{"U}{\@umlaut{U}}
ordinals42,
37.66 \declare@shorthand{galician}{"o}{%
37.67   \leavevmode\raise1ex\hbox{\underbar{\scriptsize o}}}
37.68 \declare@shorthand{galician}{"a}{%
37.69   \leavevmode\raise1ex\hbox{\underbar{\scriptsize a}}}
acute accents,
37.70 \@ifpackagewith{babel}{activeacute}{%
37.71   \declare@shorthand{galician}{'a}{\textormath{\@acute a}{\prime a}}
37.72   \declare@shorthand{galician}{'e}{\textormath{\@acute e}{\prime e}}
37.73   \declare@shorthand{galician}{'i}{\textormath{\@acute i}{\prime i}}
37.74   \declare@shorthand{galician}{'o}{\textormath{\@acute o}{\prime o}}
37.75   \declare@shorthand{galician}{'u}{\textormath{\@acute u}{\prime u}}
37.76   \declare@shorthand{galician}{'A}{\textormath{\@acute A}{\prime A}}
37.77   \declare@shorthand{galician}{'E}{\textormath{\@acute E}{\prime E}}
37.78   \declare@shorthand{galician}{'I}{\textormath{\@acute I}{\prime I}}
37.79   \declare@shorthand{galician}{'O}{\textormath{\@acute O}{\prime O}}
37.80   \declare@shorthand{galician}{'U}{\textormath{\@acute U}{\prime U}}
tildes,
37.81   \declare@shorthand{galician}{'n}{\textormath{\~n}{\prime n}}
37.82   \declare@shorthand{galician}{'N}{\textormath{\~N}{\prime N}}
the acute accent,
37.83   \declare@shorthand{galician}{''}{%
37.84     \textormath{\textquotedblright}{\sp\bgroup\prim@s'}}
37.85   }{}
37.86 \declare@shorthand{galician}{~n}{\textormath{\~n}{\@tilde n}}
37.87 \declare@shorthand{galician}{~N}{\textormath{\~N}{\@tilde N}}

```

- \- All that is left now is the redefinition of \-. The new version of \- should indicate an extra hyphenation position, while allowing other hyphenation positions to be generated automatically. The standard behaviour of T<sub>E</sub>X in this respect is unfortunate for Galician but not as much as for Dutch or German, where long compound words are quite normal and all one needs is a means to indicate an extra hyphenation position on top of the ones that T<sub>E</sub>X can generate from the hyphenation patterns. However, the average length of words in Galician makes this desirable and so it is kept here.

```

37.88 \addto\extrasgalician{%
37.89   \babel@save{\-}%
37.90   \def\-\{\bbl@allowhyphens\discretionary{-}{\kern.03em}\bbl@allowhyphens}}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

37.91 \ldf@finish{galician}
37.92 \code

```

---

<sup>42</sup>The code for the ordinals was taken from the answer provided by Raymond Chen (raymond@math.berkeley.edu) to a question by Joseph Gil (yogi@cs.ubc.ca) in `comp.text.tex`.

## 38 The Basque language

The file `basque.dtx`<sup>43</sup> defines all the language definition macro's for the Basque language.

For this language the characters `~` and `"` are made active. In table 13 an overview is given of their purpose. These active accent characters behave according

<code>" </code>	disable ligature at this position.
<code>"-</code>	an explicit hyphen sign, allowing hyphenation in the rest of the word.
<code>\-</code>	like the old <code>\-</code> , but allowing hyphenation in the rest of the word.
<code>"&lt;</code>	for French left double quotes (similar to <code>&lt;&lt;</code> ).
<code>"&gt;</code>	for French right double quotes (similar to <code>&gt;&gt;</code> ).
<code>~n</code>	a n with tilde. Works for uppercase too.

Table 13: The extra definitions made by `basque.ldf`

to their original definitions if not followed by one of the characters indicated in that table.

This option includes support for working with extended, 8-bit fonts, if available. Support is based on providing an appropriate definition for the accent macros on entry to the Basque language. This is automatically done by  $\LaTeX 2_{\epsilon}$  or NFSS2. If T1 encoding is chosen, and provided that adequate hyphenation patterns<sup>44</sup> are available. The easiest way to use the new encoding with  $\LaTeX 2_{\epsilon}$  is to load the package `tlenc` with `\usepackage`. This must be done before loading `babel`.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```

38.1 (*code)
38.2 \LdfInit{basque}\captionsbasque

    When this file is read as an option, i.e. by the \usepackage command, basque
    could be an 'unknown' language in which case we have to make it known. So we
    check for the existence of \l@basque to see whether we have to do something here.

38.3 \ifx\l@basque\@undefined
38.4   \nopatterns{Basque}
38.5   \addialect\l@basque0
38.6 \fi
```

The next step consists of defining commands to switch to (and from) the Basque language.

`\captionsbasque` The macro `\captionsbasque` defines all strings used in the four standard documentclasses provided with  $\LaTeX$ .

```

38.7 \addto\captionsbasque{%
38.8   \def\prefacename{Hitzaurrea}%
38.9   \def\refname{Erreferentziak}%
```

<sup>43</sup>The file described in this section has version number v1.0f and was last revised on 2005/03/29. The original author is Juan M. Aguirregabiria, ([wtpagagj@lg.ehu.es](mailto:wtpagagj@lg.ehu.es)) and is based on the Spanish file by Julio Sánchez, ([jsanchez@gmv.es](mailto:jsanchez@gmv.es)).

<sup>44</sup>One source for such patterns is the archive at [tp.lc.ehu.es](http://tp.lc.ehu.es) that can be accessed by anonymous FTP or in <http://tp.lc.ehu.es/jma/basque.html>

```

38.10 \def\abstractname{Laburpena}%
38.11 \def\bibname{Bibliografia}%
38.12 \def\chaptername{Kapitulua}%
38.13 \def\appendixname{Eranskina}%
38.14 \def\contentsname{Gaien Aurkibidea}%
38.15 \def\listfigurename{Irudien Zerrenda}%
38.16 \def\listtablename{Taulen Zerrenda}%
38.17 \def\indexname{Kontzeptuen Aurkibidea}%
38.18 \def\figurename{Irudia}%
38.19 \def\tablename{Taula}%
38.20 \def\partname{Atala}%
38.21 \def\enclname{Erantsia}%
38.22 \def\ccname{Kopia}%
38.23 \def\headtoname{Nori}%
38.24 \def\pagename{Orria}%
38.25 \def\seenname{Ikusi}%
38.26 \def\alsoname{Ikusi, halaber}%
38.27 \def\proofname{Frogapena}%
38.28 \def\glossaryname{Glosarioa}%
38.29 }%

```

`\datebasque` The macro `\datebasque` redefines the command `\today` to produce Basque

```

38.30 \def\datebasque{%
38.31 \def\today{\number\year.eko\space\ifcase\month\or
38.32 urtarrilaren\or otsailaren\or martxoaren\or apirilaren\or
38.33 maiatzaren\or ekainaren\or uztailaren\or abuztuaren\or
38.34 irailaren\or urriaren\or azaroaren\or
38.35 abenduaren\fi~\number\day}}

```

`\extrasbasque` The macro `\extrasbasque` will perform all the extra definitions needed for the  
`\noextrasbasque` Basque language. The macro `\noextrasbasque` is used to cancel the actions of  
`\extrasbasque`. For Basque, some characters are made active or are redefined. In  
particular, the " character and the ~ character receive new meanings. Therefore  
these characters have to be treated as ‘special’ characters.

```

38.36 \addto\extrasbasque{\languageshorthands{basque}}
38.37 \initiate@active@char{"}
38.38 \initiate@active@char{~}
38.39 \addto\extrasbasque{%
38.40 \bbl@activate{"}%
38.41 \bbl@activate{~}}

```

Don’t forget to turn the shorthands off again.

```

38.42 \addto\noextrasbasque{
38.43 \bbl@deactivate{"}\bbl@deactivate{~}}

```

Apart from the active characters some other macros get a new definition.  
Therefore we store the current one to be able to restore them later.

```

38.44 \addto\extrasbasque{%
38.45 \babel@save\}%
38.46 \babel@save\~%
38.47 \def\{"{\protect\@umlaut}%
38.48 \def\~{\protect\@tilde}}

```

`\basquehyphenmins` Basque hyphenation uses `\lefthyphenmin` and `\righthyphenmin` both set to 2.

```

38.49 \providehyphenmins{\CurrentOption}{\tw@\tw@}

```

`\dieresia` The original definition of `\"` is stored as `\dieresia`, because the we do not know what is its definition, since it depends on the encoding we are using or on special macros that the user might have loaded. The expansion of the macro might use the  $\TeX$  `\accent` primitive using some particular accent that the font provides or might check if a combined accent exists in the font. These two cases happen with respectively OT1 and T1 encodings. For this reason we save the definition of `\"` and use that in the definition of other macros. We do likewise for `\'` and `\~`. The present coding of this option file is incorrect in that it can break when the encoding changes. We do not use `\tilde` as the macro name because it is already defined as `\mathaccent`.

```
38.50 \let\dieresia\"
```

```
38.51 \let\texttilde\~
```

`\@umlaut` We check the encoding and if not using T1, we make the accents expand but enabling hyphenation beyond the accent. If this is the case, not all break positions will be found in words that contain accents, but this is a limitation in  $\TeX$ . An unsolved problem here is that the encoding can change at any time. The definitions below are made in such a way that a change between two 256-char encodings are supported, but changes between a 128-char and a 256-char encoding are not properly supported. We check if T1 is in use. If not, we will give a warning and proceed redefining the accent macros so that  $\TeX$  at least finds the breaks that are not too close to the accent. The warning will only be printed to the log file.

```
38.52 \ifx\DeclareFontShape\@undefined
```

```
38.53   \wlog{Warning: You are using an old LaTeX}
```

```
38.54   \wlog{Some word breaks will not be found.}
```

```
38.55   \def\@umlaut#1{\allowhyphens\dieresia{#1}\allowhyphens}
```

```
38.56   \def\@tilde#1{\allowhyphens\texttilde{#1}\allowhyphens}
```

```
38.57 \else
```

```
38.58   \edef\bbl@next{T1}
```

```
38.59   \ifx\f@encoding\bbl@next
```

```
38.60     \let\@umlaut\dieresia
```

```
38.61     \let\@tilde\texttilde
```

```
38.62   \else
```

```
38.63     \wlog{Warning: You are using encoding \f@encoding\space
38.64       instead of T1.}
```

```
38.65     \wlog{Some word breaks will not be found.}
```

```
38.66     \def\@umlaut#1{\allowhyphens\dieresia{#1}\allowhyphens}
```

```
38.67     \def\@tilde#1{\allowhyphens\texttilde{#1}\allowhyphens}
```

```
38.68   \fi
```

```
38.69 \fi
```

Now we can define our shorthands: the french quotes,

```
38.70 \declare@shorthand{basque}{"<"}{%
```

```
38.71   \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
```

```
38.72 \declare@shorthand{basque}{">"}{%
```

```
38.73   \textormath{\guillemotright}{\mbox{\guillemotright}}}
```

ordinals<sup>45</sup>,

```
38.74 \declare@shorthand{basque}{'''}{%
```

```
38.75   \textormath{\textquotedblright}{\sp\bgroup\prim@s'}}
```

---

<sup>45</sup>The code for the ordinals was taken from the answer provided by Raymond Chen (raymond@math.berkeley.edu) to a question by Joseph Gil (yogi@cs.ubc.ca) in `comp.text.tex`.

tildes,

```
38.76 \declare@shorthand{basque}{~n}{\textormath{~n}{\@tilde n}}
```

```
38.77 \declare@shorthand{basque}{~N}{\textormath{~N}{\@tilde N}}
```

and some additional commands.

The shorthand "- should be used in places where a word contains an explicitit hyphenation character. According to the Academy of the Basque language, when a word break occurs at an explicit hyphen it must appear *both* at the end of the first line *and* at the beginning of the second line.

```
38.78 \declare@shorthand{basque}{-}{\%
```

```
38.79 \nobreak\discretionary{-}{-}{-}\bbl@allowhyphens}
```

```
38.80 \declare@shorthand{basque}{"}{\%
```

```
38.81 \textormath{\nobreak\discretionary{-}{}{\kern.03em}%
```

```
38.82 \allowhyphens}{}}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
38.83 \ldf@finish{basque}
```

```
38.84 \code}
```

## 39 The Romanian language

The file `romanian.dtx`<sup>46</sup> defines all the language-specific macros for the Romanian language.

For this language currently no special definitions are needed or available.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
39.1 (*code)
39.2 \LdfInit{romanian}\captionsromanian
```

When this file is read as an option, i.e. by the `\usepackage` command, `romanian` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@romanian` to see whether we have to do something here.

```
39.3 \ifx\l@romanian\@undefined
39.4     \@nopatterns{Romanian}
39.5     \adddialect\l@romanian0\fi
```

The next step consists of defining commands to switch to (and from) the Romanian language.

`\captionsromanian` The macro `\captionsromanian` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
39.6 ls
39.7 \addto\captionsromanian{%
39.8     \def\prefacename{Prefa\c{t}\u{a}}%
39.9     \def\refname{Bibliografie}%
39.10    \def\abstractname{Rezumat}%
39.11    \def\bibName{Bibliografie}%
39.12    \def\chaptername{Capitolul}%
39.13    \def\appendixname{Anexa}%
39.14    \def\contentsname{Cuprins}%
39.15    \def\listfigurename{List\u{a} de figuri}%
39.16    \def\listtablename{List\u{a} de tabele}%
39.17    \def\indexname{Glosar}%
39.18    \def\figurename{Figura}%      % sau Plan\c{s}a
39.19    \def\tablename{Tabela}%
39.20    \def\partname{Partea}%
39.21    \def\enclname{Anex\u{a}}%    % sau Anexe
39.22    \def\ccname{Copie}%
39.23    \def\headtoname{Pentru}%
39.24    \def\pagename{Pagina}%
39.25    \def\seename{Vezi}%
39.26    \def\alsoname{Vezi de asemenea}%
39.27    \def\proofname{Demonstra\c{t}ie} %
39.28    \def\glossaryname{Glosar}%
39.29 }%
```

`\dateromanian` The macro `\dateromanian` redefines the command `\today` to produce Romanian dates.

```
39.30 \def\dateromanian{%
```

---

<sup>46</sup>The file described in this section has version number v1.2l and was last revised on 2005/03/31. A contribution was made by Umstatter Horst (`hhu@cernvm.cern.ch`).



```

39.31 \def\today{\number\day~\ifcase\month\or
39.32   ianuarie\or februarie\or martie\or aprilie\or mai\or
39.33   iunie\or iulie\or august\or septembrie\or octombrie\or
39.34   noiembrie\or decembrie\fi
39.35   \space \number\year}}

```

`\extrasromanian` The macro `\extrasromanian` will perform all the extra definitions needed for the Romanian language. The macro `\noextrasromanian` is used to cancel the actions of `\extrasromanian`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```

39.36 \addto\extrasromanian{}
39.37 \addto\noextrasromanian{}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

39.38 \ldf@finish{romanian}
39.39 \code

```

## 40 The Danish language

The file `danish.dtx`<sup>47</sup> defines all the language definition macros for the Danish language.

For this language the character " is made active. In table 14 an overview is given of its purpose.

"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
""	like "-", but producing no hyphen sign (for words that should break at some sign such as "entrada/salida.")
"‘	lowered double left quotes (looks like „)
"’	normal double right quotes
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).

Table 14: The extra definitions made by `danish.ldf`

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

40.1 `(*code)`

40.2 `\LdfInit{danish}\captionsdanish`

When this file is read as an option, i.e. by the `\usepackage` command, `danish` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@danish` to see whether we have to do something here.

40.3 `\ifx\l@danish\@undefined`

40.4 `\@nopatterns{Danish}`

40.5 `\adddialect\l@danish0\fi`

`\englishhyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

40.6 `\providehyphenmins{\CurrentOption}{\@ne\tw@}`

The next step consists of defining commands to switch to (and from) the Danish language.

`\captionsdanish` The macro `\captionsdanish` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

40.7 `\addto\captionsdanish{%`

40.8 `\def\prefacename{Forord}%`

40.9 `\def\refname{Litteratur}%`

40.10 `\def\abstractname{Resum'e}%`

40.11 `\def\bibname{Litteratur}%`

40.12 `\def\chaptername{Kapitel}%`

40.13 `\def\appendixname{Bilag}%`

40.14 `\def\contentsname{Indhold}%`

40.15 `\def\listfigurename{Figurer}%`

40.16 `\def\listtablename{Tabeller}%`

<sup>47</sup>The file described in this section has version number v1.3p and was last revised on 2005/03/30. A contribution was made by Henning Larsen ([larsen@cernvm.cern.ch](mailto:larsen@cernvm.cern.ch))

```

40.17 \def\indexname{Indeks}%
40.18 \def\figurename{Figur}%
40.19 \def\tablename{Tabel}%
40.20 \def\partname{Del}%
40.21 \def\enclname{Vedlagt}%
40.22 \def\ccname{Kopi til}% or Kopi sendt til
40.23 \def\headtoname{Til}% in letter
40.24 \def\pagename{Side}%
40.25 \def\seename{Se}%
40.26 \def\alsoname{Se ogs{\aa}}%
40.27 \def\proofname{Bevis}%
40.28 \def\glossaryname{Gloseliste}%
40.29 }%

```

`\datedanish` The macro `\datedanish` redefines the command `\today` to produce Danish dates.

```

40.30 \def\datedanish{%
40.31 \def\today{\number\day.\~\ifcase\month\or
40.32 januar\or februar\or marts\or april\or maj\or juni\or
40.33 juli\or august\or september\or oktober\or november\or december\fi
40.34 \space\number\year}}

```

`\extrasdanish` The macro `\extrasdanish` will perform all the extra definitions needed for the Danish language. The macro `\noextrasdanish` is used to cancel the actions of `\extrasdanish`.

Danish typesetting requires `\frenchspacing` to be in effect.

```

40.35 \addto\extrasdanish{\bbl@frenchspacing}
40.36 \addto\noextrasdanish{\bbl@nonfrenchspacing}

```

For Danish the " character is made active. This is done once, later on its definition may vary. Other languages in the same document may also use the " character for shorthands; we specify that the danish group of shorthands should be used.

```

40.37 \initiate@active@char{"}
40.38 \addto\extrasdanish{\languageshorthands{danish}}
40.39 \addto\extrasdanish{\bbl@activate{"}}

```

Don't forget to turn the shorthands off again.

```

40.40 \addto\noextrasdanish{\bbl@deactivate{"}}

```

First we define access to the low opening double quote and guillemets for quotations,

```

40.41 \declare@shorthand{danish}{"'}{%
40.42 \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
40.43 \declare@shorthand{danish}{"'}{%
40.44 \textormath{\textquotedblleft}{\mbox{\textquotedblleft}}}
40.45 \declare@shorthand{danish}{"<}{%
40.46 \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
40.47 \declare@shorthand{danish}{">}{%
40.48 \textormath{\guillemotright}{\mbox{\guillemotright}}}

```

then we define to be able to specify hyphenation breakpoints that behave a little different from \-.

```

40.49 \declare@shorthand{danish}{"-}{\nobreak-\bbl@allowhyphens}

```

```

40.50 \declare@shorthand{danish}{""}{\hskip\z@skip}
40.51 \declare@shorthand{danish}{""}{\textormath{\leavevmode\hbox{-}}{-}}
40.52 \declare@shorthand{danish}{"}{\nobreak-\hskip\z@skip}

```

And we want to have a shorthand for disabling a ligature.

```

40.53 \declare@shorthand{danish}{"}{\%
40.54 \textormath{\discretionary{-}{-}{\kern.03em}}{-}}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

40.55 \ldf@finish{danish}
40.56 \code

```

## 41 The Icelandic language

### 41.1 Overview

The file `iceland.dtx`<sup>48</sup> defines all the language definition macros for the Icelandic language

Customization for the Icelandic language was made following several official and semiofficial publications [2, 3, 1, 6, 5]. These publications do not always agree and we indicate those instances.

For this language the character " is made active. In table 15 an overview is given of its purpose. The shorthands in table 15 can also be typeset by using the

"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
""	like "-", but producing no hyphen sign (for compound words with hyphen, e.g. x-"y).
"~	for a compound word mark without a breakpoint.
"=	for a compound word mark with a breakpoint, allowing hyphenation in the composing words.
"‘	for Icelandic left double quotes (looks like „).
"’	for Icelandic right double quotes.
">	for Icelandic ‘french’ left double quotes (similar to >>).
"<	for Icelandic ‘french’ right double quotes (similar to <<).
"o	for old Icelandic o
"O	for old Icelandic O
"ó	for old Icelandic ó
"Ó	for old Icelandic Ó
"e	for old Icelandic e
"E	for old Icelandic E
"é	for old Icelandic é
"É	for old Icelandic É
\tala	for typesetting numbers
\grada	for the ‘degree’ symbol
\gradur	for ‘degrees’, e.g. 5 °C
\upp	for textsuperscript

Table 15: The shorthands and extra definitions made by `icelandic.ldf`

commands in table 16.

## References

- [1] Alþingi. *Reglur um frágang þingskjala og prentun umræðna*, 1988.
- [2] Auglýsing um greinarmerkjasetningu. Stj.tíð B, nr. 133/1974, 1974.

---

<sup>48</sup>The file described in this section has version number ? and was last revised on ?.

<code>\ilqq</code>	for Icelandic left double quotes (looks like „).
<code>\irqq</code>	for Icelandic right double quotes (looks like “).
<code>\ilq</code>	for Icelandic left single quotes (looks like ,).
<code>\irq</code>	for Icelandic right single quotes (looks like ‘).
<code>\iflqq</code>	for Icelandic ‘french’ left double quotes (similar to >>).
<code>\ifrqq</code>	for Icelandic ‘french’ right double quotes (similar to <<).
<code>\ifrlq</code>	for Icelandic ‘french’ left single quotes (similar to >).
<code>\ifrlq</code>	for Icelandic ‘french’ right single quotes (similar to <).
<code>\iflq</code>	for Icelandic ‘french’ left single quotes (similar to >).
<code>\dq</code>	the original quotes character (").
<code>\oob</code>	for old Icelandic o
<code>\Oob</code>	for old Icelandic O
<code>\ooob</code>	for old Icelandic ó
<code>\OOob</code>	for old Icelandic Ó
<code>\eob</code>	for old Icelandic e
<code>\Eob</code>	for old Icelandic E
<code>\eeob</code>	for old Icelandic é
<code>\EEob</code>	for old Icelandic Ê

Table 16: Commands which produce quotes and old Icelandic diacritics, defined by `icelandic.ldf`

- [3] Auglýsing um breyting auglýsingu nr. 132/1974 um íslenska stafsetningu. Stj.tíð B, nr. 261/1977, 1977.
- [4] Einar Haugen, editor. *First Grammatical Treatise*. Longman, London, 2 edition, 1972.
- [5] Staðlaráð Íslands og Fagráð í upplýsingatækni, Reykjavík. *Forstaðall FS 130:1997*, 1997.
- [6] STRÍ Staðlaráð Íslands. *SI - kerfið*, 2 edition, 1994.

## 41.2 T<sub>E</sub>Xnical details

When this file was read through the option `icelandic` we make it behave as if `icelandic` was specified.

```

41.1 \def\bbl@tempa{icelandic}
41.2 \ifx\CurrentOption\bbl@tempa
41.3   \def\CurrentOption{icelandic}
41.4 \fi

```

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```

41.5 (*code)
41.6 \LdfInit\CurrentOption{captions\CurrentOption}

```

When this file is read as an option, i.e., by the `\usepackage` command, `icelandic` will be an ‘unknown’ language, so we have to make it known. So we

check for the existence of `\l@icelandic` to see whether we have to do something here.

```
41.7 \ifx\l@icelandic\@undefined
41.8   \nopatterns{Icelandic}
41.9   \adddialect\l@icelandic0
41.10 \fi
```

`\if@Two@E` We will need a new ‘if’: `\if@Two@E` is true if and only if  $\text{\LaTeX} 2_{\epsilon}$  is running *not* in compatibility mode. It is used in the definitions of the command `\tala` and `\upp`. The definition is somewhat complicated, due to the fact that `\ifcompatibility` is not recognized as a `\if` in  $\text{\LaTeX}$ -2.09 based formats.

```
41.11 \newif\if@Two@E \@Two@Etrue
41.12 \def\@FI@{\fi}
41.13 \ifx\@compatibilitytrue\@undefined
41.14   \@Two@Efalse \def\@FI@{\relax}
41.15 \else
41.16   \ifcompatibility \@Two@Efalse \fi
41.17 \@FI@
```

`\extrasicelandic` The macro `\extrasicelandic` will perform all the extra definitions needed for the Icelandic language. The macro `\noextrasicelandic` is used to cancel the actions of `\extrasicelandic`.

For Icelandic the " character is made active. This is done once, later on its definition may vary.

```
41.18 \initiate@active@char{"}
41.19 \@namedef{extras\CurrentOption}{%
41.20   \languageshorthands{icelandic}}
41.21 \expandafter\addto\csname extras\CurrentOption\endcsname{%
41.22   \bbl@activate{"}}
```

Don’t forget to turn the shorthands off again.

```
41.23 \addto\noextrasicelandic{\bbl@deactivate{"}}
```

The icelandic hyphenation patterns can be used with `\lefthyphenmin` and `\righthyphenmin` set to 2.

```
41.24 \providehyphenmins{\CurrentOption}{\tw@\tw@}
```

The code above is necessary because we need an extra active character. This character is then used as indicated in table 16.

To be able to define the function of " , we first define a couple of ‘support’ macros.

### 41.3 Captionnames and date

The next step consists of defining the Icelandic equivalents for the  $\text{\LaTeX}$  captionnames.

`\captionsicelandic` The macro `\captionsicelandic` will define all strings used in the four standard document classes provided with  $\text{\LaTeX}$ .

```
41.25 \@namedef{captions\CurrentOption}{%
41.26   \def\prefacename{Form\’{a}li}%
41.27   \def\refname{Heimildir}%
41.28   \def\abstractname{\’{U}tdr\’{a}ttur}%
```

```

41.29 \def\bibname{Heimildir}%
41.30 \def\chaptername{Kafli}%
41.31 \def\appendixname{Vi{\dh}auki}%
41.32 \def\contentsname{Efnisyfirlit}%
41.33 \def\listfigurename{Myndaskr\'{a}}%
41.34 \def\listtablename{T\"{o}fluskr\'{a}}%
41.35 \def\indexname{Atri{\dh}isor{\dh}askr\'{a}}%
41.36 \def\figurename{Mynd}%
41.37 \def\tablename{Tafla}%
41.38 \def\partname{Hluti}%
41.39 \def\enclname{Hj\'{a}lagt}%
41.40 \def\ccname{Samrit}%
41.41 \def\headtoname{Til:}% in letter
41.42 \def\pagename{Bla{\dh}s\'{i}{\dh}a}%
41.43 \def\seename{Sj\'{a}}%
41.44 \def\alsoname{Sj\'{a} einnig}%
41.45 \def\proofname{S\"{o}nnun}%
41.46 \def\glossaryname{Or{\dh}alisti}%
41.47 }

```

`\dateicelandic` The macro `\dateicelandic` redefines the command `\today` to produce Icelandic dates.

```

41.48 \def\dateicelandic{%
41.49   \def\today{\number\day.\~\ifcase\month\or
41.50     jan\'{u}ar\or febr\'{u}ar\or mars\or apr\'{i}l\or ma\'{i}\or
41.51     j\'{u}n\'{i}\or j\'{u}l\'{i}\or \'{a}g\'{u}st\or september\or
41.52     okt\'{o}ber\or n\'{o}vember\or desember\fi
41.53     \space\number\year}}

```

## 41.4 Icelandic quotation marks

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\"` can now be typed as `"`.

```

41.54 \begingroup \catcode'\''12
41.55 \def\x{\endgroup
41.56   \def\@SS{\mathchar"7019 }
41.57   \def\dq{"}}
41.58 \x

```

Now we can define the icelandic and icelandic ‘french’ quotes. The icelandic ‘french’ guillemets are the reverse of french guillemets. We define single icelandic ‘french’ quotes for compatibility. Shorthands are provided for a number of different quotation marks, which make them useable both outside and inside mathmode.

```

41.59 \let\ilq\grq
41.60 \let\irq\grq
41.61 \let\iflq\frq
41.62 \let\ifrq\flq
41.63 \let\ilqq\glqq
41.64 \let\irqq\grqq
41.65 \let\iflqq\frqq
41.66 \let\ifrqq\flqq
41.67 \declare@shorthand{icelandic}{\'{\'}}{\glqq}

```



```

41.68 \declare@shorthand{icelandic}{"'}{\grqq}
41.69 \declare@shorthand{icelandic}{">"}{\frqq}
41.70 \declare@shorthand{icelandic}{"<"}{\flqq}

and some additional commands:

41.71 \declare@shorthand{icelandic}{"-"}{\nobreak-\bbl@allowhyphens}
41.72 \declare@shorthand{icelandic}{"}{\}%
41.73 \textormath{\nobreak\discretionary{-}{\kern.03em}%
41.74 \bbl@allowhyphens}{}}
41.75 \declare@shorthand{icelandic}{""}{\hskip\z@skip}
41.76 \declare@shorthand{icelandic}{"}{\textormath{\leavevmode\hbox{-}{-}}{}}
41.77 \declare@shorthand{icelandic}{"}{\nobreak-\hskip\z@skip}

```

## 41.5 Old Icelandic

In old Icelandic some letters have special diacritical marks, described for example in *First Grammatical Treatise* [4, 5]. We provide these in the T1 encoding with the ‘ogonek’. The ogonek is placed with the letters ‘o’, and ‘O’, ‘ó’ and ‘Ó’, ‘e’ and ‘E’, and ‘é’ and ‘É’. Shorthands are provided for these as well.

The following code by Leszek Holenderski lifted from `polish.dtx` is designed to position the diacritics correctly for every font in every size. These macros need a few extra dimension variables.

```

41.78 \newdimen\pl@left
41.79 \newdimen\pl@down
41.80 \newdimen\pl@right
41.81 \newdimen\pl@temp

\sob The macro \sob is used to put the ‘ogonek’ in the right place.

41.82 \def\sob#1#2#3#4#5{%parameters: letter and fractions hl,ho,vl,vo
41.83 \setbox0\hbox{#1}\setbox1\hbox{\k{}}\setbox2\hbox{p}%
41.84 \pl@right=#2\wd0 \advance\pl@right by-#3\wd1
41.85 \pl@down=#5\ht1 \advance\pl@down by-#4\ht0
41.86 \pl@left=\pl@right \advance\pl@left by\wd1
41.87 \pl@temp=-\pl@down \advance\pl@temp by\dp2 \dp1=\pl@temp
41.88 \leavevmode
41.89 \kern\pl@right\lower\pl@down\box1\kern-\pl@left #1}

\oob
\Oob41.90 \DeclareTextCommand{\oob}{T1}{\sob {o}{.85}{0}{.04}{0}}
\ooob41.91 \DeclareTextCommand{\Oob}{T1}{\sob {O}{.7}{0}{0}{0}}
\OOob41.92 \DeclareTextCommand{\ooob}{T1}{\sob {ó}{.85}{0}{.04}{0}}
\OOb41.93 \DeclareTextCommand{\OOob}{T1}{\sob {Ó}{.7}{0}{0}{0}}
\Eob41.94 \DeclareTextCommand{\Eob}{T1}{\sob {e}{1}{0}{.04}{0}}
\eeob41.95 \DeclareTextCommand{\Eob}{T1}{\sob {E}{1}{0}{.04}{0}}
\EEob41.96 \DeclareTextCommand{\eeob}{T1}{\sob {é}{1}{0}{.04}{0}}
41.97 \DeclareTextCommand{\EEob}{T1}{\sob {É}{1}{0}{.04}{0}}

41.98 \declare@shorthand{icelandic}{"o"}{\oob}
41.99 \declare@shorthand{icelandic}{"O"}{\Oob}
41.100 \declare@shorthand{icelandic}{"ó"}{\ooob}
41.101 \declare@shorthand{icelandic}{"Ó"}{\OOob}
41.102 \declare@shorthand{icelandic}{"e"}{\Eob}
41.103 \declare@shorthand{icelandic}{"E"}{\Eob}

```

```

41.104 \declare@shorthand{icelandic}{"é}{\eeob}
41.105 \declare@shorthand{icelandic}{"Ë}{\EEob}

```

## 41.6 Formatting numbers

This section is lifted from `frenchb.dtx` by D. Flipo. In English the decimal part starts with a point and thousands should be separated by a comma: an approximation of  $1000\pi$  should be inputted as `$3{,}141.592{,}653$` in math-mode and as `3,141.592,653` in text.

In Icelandic the decimal part starts with a comma and thousands should be separated by a space [1] or by a period [5]; we have the space. The above approximation of  $1000\pi$  should be inputted as `$3\;141{,}592\;653$` in math-mode and as something like `3~141,592~653` in text. Braces are mandatory around the comma in math-mode, the reason is mentioned in the *T<sub>E</sub>Xbook* p. 134: the comma is of type `\mathpunct` (thus normally followed by a space) while the point is of type `\mathord` (no space added).

Thierry Bouche suggested that a second type of comma, of type `\mathord` would be useful in math-mode, and proposed to introduce a command (named `\decimalsep` in this package), the expansion of which would depend on the current language.

Vincent Jalby suggested a command `\nombre` to conveniently typeset numbers: inputting `\nombre{3141,592653}` either in text or in math-mode will format this number properly according to the current language (Icelandic or non-Icelandic). We use `\nombre` to define command `\tala` in Icelandic.

`\tala` accepts an optional argument which happens to be useful with the extension ‘`dcolumn`’, it specifies the decimal separator used in the *source code*: `\newcolumnntype{d}{D{,}{\decimalsep}}{-1}`

```

\begin{tabular}{d}\hline
3,14 \\\
\tala[,]{123,4567} \\\
\tala[,]{9876,543}\\\hline
\end{tabular}

```

will print a column of numbers aligned on the decimal point (comma or point depending on the current language), each slice of 3 digits being separated by a space or a comma according to the current language.

`\decimalsep` We need a internal definition, valid in both text and math-mode, for the comma  
`\thousandsep` (`\@comma@`) and another one for the unbreakable fixed length space (no glue) used in Icelandic (`\f@thousandsep`).

The commands `\decimalsep` and `\thousandsep` get default definitions (for the English language) when `icelandic` is loaded; these definitions will be updated when the current language is switched to or from Icelandic.

```

41.106 \mathchardef\m@comma="013B \def\@comma@{\ifmmode\m@comma\else,\fi}
41.107 \def\f@thousandsep{\ifmmode\mskip5.5mu\else\penalty\@M\kern.3em\fi}
41.108 \newcommand{\decimalsep}{.} \newcommand{\thousandsep}{\@comma@}
41.109 \expandafter\addto\csname extras\CurrentOption\endcsname{%
41.110 \def\decimalsep{\@comma@}%
41.111 \def\thousandsep{\f@thousandsep}}
41.112 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
41.113 \def\decimalsep{.}%
41.114 \def\thousandsep{\@comma@}}

```

`\tala` The decimal separator used when *inputing* a number with `\tala` has to be a comma. `\tala` splits the inputed number into two parts: what comes before the first comma will be formatted by `\@integerpart` while the rest (if not empty) will be formatted by `\@decimalpart`. Both parts, once formatted separately will be merged together with between them, either the decimal separator `\decimalsep` or (in L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> only) the optional argument of `\tala`.

```

41.115 \if@Two@E
41.116 \newcommand{\tala}[2][\decimalsep]{%
41.117     \def\@decimalsep{#1}\@tala#2\@empty,\@empty,\@nil}
41.118 \else
41.119 \newcommand{\tala}[1]{%
41.120     \def\@decimalsep{\decimalsep}\@tala#1\@empty,\@empty,\@nil}
41.121 \fi
41.122 \def\@tala#1,#2,#3\@nil{%
41.123     \ifx\@empty#2%
41.124         \@integerpart{#1}%
41.125     \else
41.126         \@integerpart{#1}\@decimalsep\@decimalpart{#2}%
41.127     \fi}

```

The easiest bit is the decimal part: We attempt to read the first four digits of the decimal part, if it has less than 4 digits, we just have to print them, otherwise `\thousandsep` has to be appended after the third digit, and the algorithm is applied recursively to the rest of the decimal part.

```

41.128 \def\@decimalpart#1{\@@decimalpart#1\@empty\@empty\@empty}
41.129 \def\@@decimalpart#1#2#3#4{#1#2#3%
41.130     \ifx\@empty#4%
41.131     \else
41.132         \thousandsep\expandafter\@@decimalpart\expandafter#4%
41.133     \fi}

```

Formatting the integer part is more difficult because the slices of 3 digits start from the *bottom* while the number is read from the top! This (tricky) code is borrowed from David Carlisle's comma.sty.

```

41.134 \def\@integerpart#1{\@integerpart{#1}\@empty\@empty\@empty}
41.135 \def\@@integerpart#1#2#3#4{%
41.136     \ifx\@empty#2%
41.137         \@addthousandsep#1\relax
41.138     \else
41.139         \ifx\@empty#3%
41.140             \@addthousandsep\@empty\@empty#1#2\relax
41.141         \else
41.142             \ifx\@empty#4%
41.143                 \@addthousandsep\@empty#1#2#3\relax
41.144             \else
41.145                 \@integerpartafterfi{#1#2#3#4}%
41.146             \fi
41.147         \fi
41.148     \fi}
41.149 \def\@integerpartafterfi#1\fi\fi\fi{\fi\fi\fi\@integerpart{#1}}
41.150 \def\@addthousandsep#1#2#3#4{#1#2#3%
41.151     \if#4\relax
41.152     \else

```

```

41.153 \thousandsep\expandafter\@addthousandsep\expandafter#4%
41.154 \fi}

```

## 41.7 Extra utilities

We now provide the Icelandic user with some extra utilities.

`\upp` `\upp` is for typesetting superscripts. `\upp` relies on `\upp@size`. The internal macro `\upp@size` holds the size at which the superscript will be typeset. The reason for this is that we have to specify it differently for different formats.

```

41.155 \ifx\sevenrm\@undefined
41.156 \ifx\@ptsize\@undefined
41.157 \let\upp@size\small
41.158 \else
41.159 \ifx\selectfont\@undefined

```

In this case the format is the original L<sup>A</sup>T<sub>E</sub>X-2.09:

```

41.160 \ifcase\@ptsize
41.161 \let\upp@size\ixpt\or
41.162 \let\upp@size\xpt\or
41.163 \let\upp@size\xipt
41.164 \fi

```

When `\selectfont` is defined we probably have NFSS available:

```

41.165 \else
41.166 \ifcase\@ptsize
41.167 \def\upp@size{\fontsize\@ixpt{10pt}\selectfont}\or
41.168 \def\upp@size{\fontsize\@xpt{11pt}\selectfont}\or
41.169 \def\upp@size{\fontsize\@xipt{12pt}\selectfont}
41.170 \fi
41.171 \fi
41.172 \fi
41.173 \else

```

If we end up here it must be a plain based T<sub>E</sub>X format, so:

```

41.174 \let\upp@size\sevenrm
41.175 \fi

```

Now we can define `\upp`. When L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> runs in compatibility mode (L<sup>A</sup>T<sub>E</sub>X-2.09 emulation), `\textsuperscript` is also defined, but does no good job, so we give two different definitions for `\upp` using `\if@Two@E`.

```

41.176 \if@Two@E
41.177 \DeclareRobustCommand*\upp}[1]{\textsuperscript{#1}}
41.178 \else
41.179 \DeclareRobustCommand*\upp}[1]{%
41.180 \leavevmode\raise1ex\hbox{\upp@size#1}}
41.181 \fi

```

Some definitions for special characters. `\grada` needs a special treatment: it is `\char6` in T1-encoding and `\char23` in OT1-encoding.

```

41.182 \ifx\fmtname\LaTeXeFmtName
41.183 \DeclareTextSymbol{\grada}{T1}{6}
41.184 \DeclareTextSymbol{\grada}{OT1}{23}

```

```

41.185 \else
41.186   \def\T@one{T1}
41.187   \ifx\fontencoding\T@one
41.188     \newcommand{\grada}{\char6}
41.189   \else
41.190     \newcommand{\grada}{\char23}
41.191   \fi
41.192 \fi

```

**\gratur** Macro for typesetting the abbreviation for ‘degrees’ (as in ‘degrees Celsius’). As the bounding box of the character ‘degree’ has *very* different widths in CMR/DC and PostScript fonts, we fix the width of the bounding box of **\gratur** to 0.3em, this lets the symbol ‘degree’ stick to the preceding (e.g., 45**\gratur**) or following character (e.g., 20~**\gratur** C).

```

41.193 \DeclareRobustCommand*{\gratur}{%
41.194   \leavevmode\hbox to 0.3em{\hss\grada\hss}}

```

The macro **\ldf@finish** takes care of looking for a configuration file, setting the main language to be switched on at **\begin{document}** and resetting the category code of **@** to its original value.

```

41.195 \ldf@finish\CurrentOption
41.196 \code

```

## 42 The Norwegian language

The file `norsk.dtx`<sup>49</sup> defines all the language definition macros for the Norwegian language as well as for an alternative variant ‘nynorsk’ of this language.

For this language the character " is made active. In table 17 an overview is given of its purpose.

"ff	for ff to be hyphenated as ff-f, this is also implemented for b, d, f, g, l, m, n, p, r, s, and t. ( <code>o"ppussing</code> )
"ee	Hyphenate "ee as \’e-e. ( <code>komit"een</code> )
"-	an explicit hyphen sign, allowing hyphenation in the composing words. Use this for compound words when the hyphenation patterns fail to hyphenate properly. ( <code>alpin"-anlegg</code> )
"	Like "-", but inserts 0.03em space. Use it if the compound point is spanned by a ligature. ( <code>hoff" intriger</code> )
""	Like "-", but producing no hyphen sign. ( <code>i""g\aa{}r</code> )
"~	Like -, but allows no hyphenation at all. ( <code>E"~cup</code> )
"=	Like -, but allowing hyphenation in the composing words. ( <code>marksistisk"=leninistisk</code> )
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).

Table 17: The extra definitions made by `norsk.sty`

Rune Kleveland distributes a Norwegian dictionary for `ispell` (570000 words). It can be found at <http://www.uio.no/~runekl/dictionary.html>.

This dictionary supports the spellings `spi"sslede` for ‘spisslede’ (hyphenated `spiss-slede`) and other such words, and also suggest the spelling `spi"sslede` for ‘spisslede’ and ‘spisslede’.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

42.1 `(*code)`

42.2 `\LdfInit\CurrentOption{captions\CurrentOption}`

When this file is read as an option, i.e. by the `\usepackage` command, `norsk` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@norsk` to see whether we have to do something here.

42.3 `\ifx\l@norsk\undefined`

42.4 `\@nopatterns{Norsk}`

42.5 `\adddialect\l@norsk0\fi`

`\norskhyphenmins` Some sets of Norwegian hyphenation patterns can be used with `\lefthyphenmin` set to 1 and `\righthyphenmin` set to 2, but the most common set `nohyph.tex` can’t. So we use `\lefthyphenmin=2` by default.

42.6 `\providehyphenmins{\CurrentOption}{\tw@\tw@}`

<sup>49</sup>The file described in this section has version number v2.0h and was last revised on 2005/03/30. Contributions were made by Haavard Helstrup (`HAAVARD@CERNVM`) and Alv Kjetil Holme (`HOLMEA@CERNVM`); the ‘nynorsk’ variant has been supplied by Per Steinar Iversen (`iversen@vxcern.cern.ch`) and Terje Engeset Petterst (`TERJEEP@VSFYS1.FI.UIB.NO`); the short-hand definitions were provided by Rune Kleveland (`runekl@math.uio.no`).

Now we have to decide which version of the captions should be made available. This can be done by checking the contents of `\CurrentOption`.

```
42.7 \def\bbl@tempa{norsk}
42.8 \ifx\CurrentOption\bbl@tempa
```

The next step consists of defining commands to switch to (and from) the Norwegian language.

`\captionsnorsk` The macro `\captionsnorsk` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
42.9 \def\captionsnorsk{%
42.10 \def\prefacename{Forord}%
42.11 \def\refname{Referanser}%
42.12 \def\abstractname{Sammendrag}%
42.13 \def\bibname{Bibliografi}% or Litteraturoversikt
42.14 % or Litteratur or Referanser
42.15 \def\chaptername{Kapittel}%
42.16 \def\appendixname{Tillegg}% or Appendiks
42.17 \def\contentsname{Innhold}%
42.18 \def\listfigurename{Figurer}% or Figurliste
42.19 \def\listtablename{Tabeller}% or Tabelliste
42.20 \def\indexname{Register}%
42.21 \def\figurename{Figur}%
42.22 \def\tablename{Tabell}%
42.23 \def\partname{Del}%
42.24 \def\enclname{Vedlegg}%
42.25 \def\ccname{Kopi sendt}%
42.26 \def\headtoname{Til}% in letter
42.27 \def\pagename{Side}%
42.28 \def\seename{Se}%
42.29 \def\alsoname{Se ogs\aa}%
42.30 \def\proofname{Bevis}%
42.31 \def\glossaryname{Ordliste}%
42.32 }
42.33 \else
```

For the ‘nynorsk’ version of these definitions we just add a “dialect”.

```
42.34 \adddialect\l@nynorsk\l@norsk
```

`\captionsnynorsk` The macro `\captionsnynorsk` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X, but using a different spelling than in the command `\captionsnorsk`.

```
42.35 \def\captionsnynorsk{%
42.36 \def\prefacename{Forord}%
42.37 \def\refname{Referansar}%
42.38 \def\abstractname{Samandrag}%
42.39 \def\bibname{Litteratur}% or Litteraturoversyn
42.40 % or Referansar
42.41 \def\chaptername{Kapittel}%
42.42 \def\appendixname{Tillegg}% or Appendiks
42.43 \def\contentsname{Innhald}%
42.44 \def\listfigurename{Figurar}% or Figurliste
42.45 \def\listtablename{Tabellar}% or Tabelliste
42.46 \def\indexname{Register}%
```

```

42.47 \def\figurename{Figur}%
42.48 \def\tablename{Tabell}%
42.49 \def\partname{Del}%
42.50 \def\enclname{Vedlegg}%
42.51 \def\ccname{Kopi til}%
42.52 \def\headtoname{Til}% in letter
42.53 \def\pagename{Side}%
42.54 \def\seename{Sj\aa{}}%
42.55 \def\alsoname{Sj\aa{} \‘{o}g}%
42.56 \def\proofname{Bevis}%
42.57 \def\glossaryname{Ordliste}%
42.58 }
42.59 \fi

```

`\datenorsk` The macro `\datenorsk` redefines the command `\today` to produce Norwegian dates.

```

42.60 \@namedef{date\CurrentOption}{%
42.61 \def\today{\number\day.\~\ifcase\month\or
42.62 januar\or februar\or mars\or april\or mai\or juni\or
42.63 juli\or august\or september\or oktober\or november\or desember
42.64 \fi
42.65 \space\number\year}}

```

`\extrasnorsk` The macro `\extrasnorsk` will perform all the extra definitions needed for the Norwegian language. The macro `\noextrasnorsk` is used to cancel the actions of `\extrasnorsk`.

Norwegian typesetting requires `\frenchspacing` to be in effect.

```

42.66 \@namedef{extras\CurrentOption}{\bbl@frenchspacing}
42.67 \@namedef{noextras\CurrentOption}{\bbl@nonfrenchspacing}

```

For Norsk the " character is made active. This is done once, later on its definition may vary.

```

42.68 \initiate@active@char{"}
42.69 \expandafter\addto\csname extras\CurrentOption\endcsname{%
42.70 \languageshorthands{norsk}}
42.71 \expandafter\addto\csname extras\CurrentOption\endcsname{%
42.72 \bbl@activate{"}}

```

Don't forget to turn the shorthands off again.

```

42.73 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
42.74 \bbl@deactivate{"}}

```

The code above is necessary because we need to define a number of shorthand commands. These shorthand commands are then used as indicated in table 17.

To be able to define the function of ", we first define a couple of 'support' macros.

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\"` can now be typed as `\dq`.

```

42.75 \begingroup \catcode'\12
42.76 \def\x{\endgroup
42.77 \def\@SS{\mathchar"7019 }
42.78 \def\dq{"}}
42.79 \x

```



Now we can define the discretionary shorthand commands. The number of words where such hyphenation is required is for each character

b	d	f	g	k	l	n	p	r	s	t
4	4	15	3	43	30	8	12	1	33	35

taken from a list of 83000 ispell-roots.

```

42.80 \declare@shorthand{norsk}{b}{\textormath{\bbl@disc b{bb}}{b}}
42.81 \declare@shorthand{norsk}{B}{\textormath{\bbl@disc B{BB}}{B}}
42.82 \declare@shorthand{norsk}{d}{\textormath{\bbl@disc d{dd}}{d}}
42.83 \declare@shorthand{norsk}{D}{\textormath{\bbl@disc D{DD}}{D}}
42.84 \declare@shorthand{norsk}{e}{\textormath{\bbl@disc e{'e}}{e}}
42.85 \declare@shorthand{norsk}{E}{\textormath{\bbl@disc E{'E}}{E}}
42.86 \declare@shorthand{norsk}{F}{\textormath{\bbl@disc F{FF}}{F}}
42.87 \declare@shorthand{norsk}{g}{\textormath{\bbl@disc g{gg}}{g}}
42.88 \declare@shorthand{norsk}{G}{\textormath{\bbl@disc G{GG}}{G}}
42.89 \declare@shorthand{norsk}{k}{\textormath{\bbl@disc k{kk}}{k}}
42.90 \declare@shorthand{norsk}{K}{\textormath{\bbl@disc K{KK}}{K}}
42.91 \declare@shorthand{norsk}{l}{\textormath{\bbl@disc l{ll}}{l}}
42.92 \declare@shorthand{norsk}{L}{\textormath{\bbl@disc L{LL}}{L}}
42.93 \declare@shorthand{norsk}{n}{\textormath{\bbl@disc n{nn}}{n}}
42.94 \declare@shorthand{norsk}{N}{\textormath{\bbl@disc N{NN}}{N}}
42.95 \declare@shorthand{norsk}{p}{\textormath{\bbl@disc p{pp}}{p}}
42.96 \declare@shorthand{norsk}{P}{\textormath{\bbl@disc P{PP}}{P}}
42.97 \declare@shorthand{norsk}{r}{\textormath{\bbl@disc r{rr}}{r}}
42.98 \declare@shorthand{norsk}{R}{\textormath{\bbl@disc R{RR}}{R}}
42.99 \declare@shorthand{norsk}{s}{\textormath{\bbl@disc s{ss}}{s}}
42.100 \declare@shorthand{norsk}{S}{\textormath{\bbl@disc S{SS}}{S}}
42.101 \declare@shorthand{norsk}{t}{\textormath{\bbl@disc t{tt}}{t}}
42.102 \declare@shorthand{norsk}{T}{\textormath{\bbl@disc T{TT}}{T}}

```

We need to treat "f a bit differently in order to preserve the ff-ligature.

```

42.103 \declare@shorthand{norsk}{f}{\textormath{\bbl@discff}{f}}
42.104 \def\bbl@discff{\penalty\@M
42.105 \afterassignment\bbl@insertff \let\bbl@nextff= }
42.106 \def\bbl@insertff{%
42.107 \if f\bbl@nextff
42.108 \expandafter\@firstoftwo\else\expandafter\@secondoftwo\fi
42.109 {\relax\discretionary{ff-}{f}{ff}\allowhyphens}{f\bbl@nextff}}
42.110 \let\bbl@nextff=f

```

We now define the French double quotes and some commands concerning hyphenation:

```

42.111 \declare@shorthand{norsk}{"<"}{\flqq}
42.112 \declare@shorthand{norsk}{">"}{\frqq}
42.113 \declare@shorthand{norsk}{"-"}{\penalty\@M-\bbl@allowhyphens}
42.114 \declare@shorthand{norsk}{"|"}{%
42.115 \textormath{\penalty\@M\discretionary{-}{-}{\kern.03em}%
42.116 \allowhyphens}}
42.117 \declare@shorthand{norsk}{""}{\hskip\z@skip}
42.118 \declare@shorthand{norsk}{ "~"}{\textormath{\leavevmode\hbox{-}}{-}}
42.119 \declare@shorthand{norsk}{ "="}{\penalty\@M-\hskip\z@skip}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
42.120 \ldf@finish\CurrentOption
42.121 \code
```

## 43 The Swedish language

The file `swedish.dtx`<sup>50</sup> defines all the language-specific macros for the Swedish language. This file has borrowed heavily from `finnish.dtx` and `germanb.dtx`.

For this language the character " is made active. In table 18 an overview is given of its purpose. The vertical placement of the "umlaut" in some letters can be controlled this way.

"a	Gives ä, also implemented for "A, "o and "O.
"w, "W	gives å and Å.
"ff	for ff to be hyphenated as ff-f. Used for compound words, such as <code>stra"ffånge</code> , which should be hyphenated as <code>straff-fånge</code> . This is also implemented for b, d, f, g, l, m, n, p, r, s, and t.
"	disable ligature at this position. This should be used for compound words, such as <code>"stra"ffinrättning</code> , which should not have the ligature "ffi".
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word, such as e. g. in <code>"x"-axeln</code> .
""	like "-", but producing no hyphen sign (for words that should break at some sign such as <code>och/"eller</code> ).
"~	for an explicit hyphen without a breakpoint; useful for expressions such as <code>"2"~3 veckor</code> where no line-break is desirable.
"=	an explicit hyphen sign allowing subsequent hyphenation, for expressions such as <code>"studiebidrag och -lån</code> .
\-	like the old \-, but allowing hyphenation in the rest of the word.

Table 18: The extra definitions made by `swedish.sty`

Two variations for formatting of dates are added. `\datesymd` makes `\today` output dates formatted as YYYY-MM-DD, which is commonly used in Sweden today. `\datesdmy` formats the date as D/M YYYY, which is also very common in Sweden. These commands should be issued after `\begindocument`.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the @ sign, etc.

43.1 `\<code>`

43.2 `\LdfInit{swedish}\captionsswedish`

When this file is read as an option, i.e. by the `\usepackage` command, `swedish` will be an 'unknown' language in which case we have to make it known. So we check for the existence of `\l@swedish` to see whether we have to do something here.

43.3 `\ifx\l@swedish\@undefined`

43.4 `\@nopatterns{Swedish}`

---

<sup>50</sup>The file described in this section has version number v2.3d and was last revised on 2005/03/31. Contributions were made by Sten Hellman ([HELLMAN@CERNVM.CERN.CH](mailto:HELLMAN@CERNVM.CERN.CH)) and Erik Östhols ([erik\\_osthols@yahoo.com](mailto:erik_osthols@yahoo.com)).

43.5     `\adddialect\l@swedish0\fi`

The next step consists of defining commands to switch to the Swedish language. The reason for this is that a user might want to switch back and forth between languages.

`\captionsswedish` The macro `\captionsswedish` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
43.6 \addto\captionsswedish{%
43.7   \def\prefacename{F\"orord}%
43.8   \def\refname{Referenser}%
43.9   \def\abstractname{Sammanfattning}%
43.10  \def\bibname{Litteraturf\"orteckning}%
43.11  \def\chaptername{Kapitel}%
43.12  \def\appendixname{Bilaga}%
43.13  \def\contentsname{Inneh\"sname aa\endcsname ll}%
43.14  \def\listfigurename{Figurer}%
43.15  \def\listtablename{Tabeller}%
43.16  \def\indexname{Sakregister}%
43.17  \def\figurename{Figur}%
43.18  \def\tablename{Tabell}%
43.19  \def\partname{Del}%

43.20  \def\enclname{Bil.}%
43.21  \def\ccname{Kopia f\"or k\"annedom}%
43.22  \def\headtoname{Till}% in letter
43.23  \def\pagename{Sida}%
43.24  \def\seename{se}%

43.25  \def\alsoname{se \"aven}%

43.26  \def\proofname{Bevis}%
43.27  \def\glossaryname{Ordlista}%
43.28  }%
```

`\dateswedish` The macro `\dateswedish` redefines the command `\today` to produce Swedish dates.

```
43.29 \def\dateswedish{%
43.30   \def\today{%
43.31     \number\day~\ifcase\month\or
43.32     januari\or februari\or mars\or april\or maj\or juni\or
43.33     juli\or augusti\or september\or oktober\or november\or
43.34     december\fi
43.35     \space\number\year}}
```

`\datesymd` The macro `\datesymd` redefines the command `\today` to produce dates in the format YYYY-MM-DD, common in Sweden.

```
43.36 \def\datesymd{%
43.37   \def\today{\number\year-\two@digits\month-\two@digits\day}%
43.38 }
```

`\datesdmy` The macro `\datesdmy` redefines the command `\today` to produce Swedish dates in the format DD/MM YYYY, also common in Sweden.

```
43.39 \def\datesdmy{%
43.40   \def\today{\number\day/\number\month\space\number\year}%
43.41 }
```

`\swedishhyphenmins` The swedish hyphenation patterns can be used with `\lefthyphenmin` set to 2 and `\righthyphenmin` set to 2.

43.42 `\providehyphenmins{swedish}{\tw@\tw@}`

`\extrasswedish` The macro `\extrasswedish` performs all the extra definitions needed for the Swedish language. The macro `\noextrasswedish` is used to cancel the actions of `\extrasswedish`.

For Swedish texts `\frenchspacing` should be in effect. We make sure this is the case and reset it if necessary.

43.43 `\addto\extrasswedish{\bbl@frenchspacing}`

43.44 `\addto\noextrasswedish{\bbl@nonfrenchspacing}`

For Swedish the " character is made active. This is done once, later on its definition may vary.

43.45 `\initiate@active@char{"}`

43.46 `\addto\extrasswedish{\languageshorthands{swedish}}`

43.47 `\addto\extrasswedish{\bbl@activate{"}}`

Don't forget to turn the shorthands off again.

43.48 `\addto\noextrasswedish{\bbl@deactivate{"}}`

The “umlaut” accent macro `\` is changed to lower the “umlaut” dots. The redefinition is done with the help of `\umlautlow`.

43.49 `\addto\extrasswedish{\babel@save{"\umlautlow}`

43.50 `\addto\noextrasswedish{\umlauthigh}`

The code above is necessary because we need an extra active character. This character is then used as indicated in table 18.

To be able to define the function of " , we first define a couple of ‘support’ macros.

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\` can now be typed as " .

43.51 `\begingroup \catcode{"12`

43.52 `\def\x{\endgroup`

43.53 `\def\@SS{\mathchar"7019 }`

43.54 `\def\dq{"}}`

43.55 `\x`

Now we can define the doublequote macros: the umlauts and å.

43.56 `\declare@shorthand{swedish}{w}{\textormath{\aa\allowhyphens}{\ddot w}}`

43.57 `\declare@shorthand{swedish}{a}{\textormath{"a\allowhyphens}{\ddot a}}`

43.58 `\declare@shorthand{swedish}{o}{\textormath{"o\allowhyphens}{\ddot o}}`

43.59 `\declare@shorthand{swedish}{W}{\textormath{\AA\allowhyphens}{\ddot W}}`

43.60 `\declare@shorthand{swedish}{A}{\textormath{"A\allowhyphens}{\ddot A}}`

43.61 `\declare@shorthand{swedish}{O}{\textormath{"O\allowhyphens}{\ddot O}}`

discretionary commands

43.62 `\declare@shorthand{swedish}{b}{\textormath{\bbl@disc b{bb}}{b}}`

43.63 `\declare@shorthand{swedish}{B}{\textormath{\bbl@disc B{BB}}{B}}`

43.64 `\declare@shorthand{swedish}{d}{\textormath{\bbl@disc d{dd}}{d}}`

43.65 `\declare@shorthand{swedish}{D}{\textormath{\bbl@disc D{DD}}{D}}`

43.66 `\declare@shorthand{swedish}{f}{\textormath{\bbl@disc f{ff}}{f}}`

```

43.67 \declare@shorthand{swedish}{F}{\textormath{\bbl@disc F{FF}}{F}}
43.68 \declare@shorthand{swedish}{g}{\textormath{\bbl@disc g{gg}}{g}}
43.69 \declare@shorthand{swedish}{G}{\textormath{\bbl@disc G{GG}}{G}}
43.70 \declare@shorthand{swedish}{l}{\textormath{\bbl@disc l{ll}}{l}}
43.71 \declare@shorthand{swedish}{L}{\textormath{\bbl@disc L{LL}}{L}}
43.72 \declare@shorthand{swedish}{m}{\textormath{\bbl@disc m{mm}}{m}}
43.73 \declare@shorthand{swedish}{M}{\textormath{\bbl@disc M{MM}}{M}}
43.74 \declare@shorthand{swedish}{n}{\textormath{\bbl@disc n{nn}}{n}}
43.75 \declare@shorthand{swedish}{N}{\textormath{\bbl@disc N{NN}}{N}}
43.76 \declare@shorthand{swedish}{p}{\textormath{\bbl@disc p{pp}}{p}}
43.77 \declare@shorthand{swedish}{P}{\textormath{\bbl@disc P{PP}}{P}}
43.78 \declare@shorthand{swedish}{r}{\textormath{\bbl@disc r{rr}}{r}}
43.79 \declare@shorthand{swedish}{R}{\textormath{\bbl@disc R{RR}}{R}}
43.80 \declare@shorthand{swedish}{s}{\textormath{\bbl@disc s{ss}}{s}}
43.81 \declare@shorthand{swedish}{S}{\textormath{\bbl@disc S{SS}}{S}}
43.82 \declare@shorthand{swedish}{t}{\textormath{\bbl@disc t{tt}}{t}}
43.83 \declare@shorthand{swedish}{T}{\textormath{\bbl@disc T{TT}}{T}}

```

and some additional commands:

```

43.84 \declare@shorthand{swedish}{-}{\nobreak-\bbl@allowhyphens}
43.85 \declare@shorthand{swedish}{|}{\%
43.86   \textormath{\nobreak\discretionary{-}{-}{\kern.03em}%
43.87     \bbl@allowhyphens}{}}
43.88 \declare@shorthand{swedish}{"}{\hskip\z@skip}
43.89 \declare@shorthand{swedish}{~}{\%
43.90   \textormath{\leavevmode\hbox{-}\bbl@allowhyphens}{-}}
43.91 \declare@shorthand{swedish}{=}{\hbox{-}\allowhyphens}

```

- \- Redefinition of \-. The new version of \- should indicate an extra hyphenation position, while allowing other hyphenation positions to be generated automatically. The standard behaviour of T<sub>E</sub>X in this respect is very unfortunate for languages such as Dutch, Finnish, German and Swedish, where long compound words are quite normal and all one needs is a means to indicate an extra hyphenation position on top of the ones that T<sub>E</sub>X can generate from the hyphenation patterns.

```

43.92 \addto\extrasswedish{\babel@save\-\}
43.93 \addto\extrasswedish{\def\-\{\allowhyphens
43.94   \discretionary{-}{-}{\allowhyphens}}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

43.95 \ldf@finish{swedish}
43.96 \code

```

## 44 The North Sami language

The file `samin.dtx`<sup>51</sup> defines all the language definition macros for the North Sami language.

Several Sami dialects/languages are spoken in Finland, Norway, Sweden and on the Kola Peninsula (Russia). The alphabets differ, so there will eventually be a need for more `.dtx` files for e.g. Lule and South Sami. Hence the name `samin.dtx` (and not `sami.dtx` or the like) in the North Sami case.

There are currently no hyphenation patterns available for the North Sami language, but you might consider using the patterns for Finnish (`fi8hyph.tex`), Norwegian (`nohyph.tex`) or Swedish (`sehyph.tex`). Add a line for the `samin` language to the `language.dat` file, and rebuild the  $\LaTeX$  format file. See the documentation for your  $\LaTeX$  distribution.

A note on writing North Sami in  $\LaTeX$ : The TI encoding and EC fonts do not include the T WITH STROKE letter, which you will need a workaround for. My suggestion is to place the lines

```
\newcommand{\tx}{\mbox{t\hspace{-.35em}-}}
\newcommand{\txx}{\mbox{T\hspace{-.5em}-}}
in the preamble of your documents. They define the commands
\txx{} for LATIN CAPITAL LETTER T WITH STROKE and
\tx{} for LATIN SMALL LETTER T WITH STROKE.
```

### 44.1 The code of `samin.dtx`

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

44.1 `{*code}`

44.2 `\LdfInit{samin}{captionssamin}`

When this file is read as an option, i.e. by the `\usepackage` command, `samin` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@samin` to see whether we have to do something here.

44.3 `\ifx\undefined\l@samin`

44.4 `\@nopatterns{Samin}`

44.5 `\adddialect\l@samin0\fi`

The next step consists of defining commands to switch to (and from) the North Sami language.

`\saminhyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`.

44.6 `\providehyphenmins{samin}{\tw@{tw@}}`

`\captionssamin` The macro `\captionssamin` defines all strings used in the four standard documentclasses provided with  $\LaTeX$ .

44.7 `\def\captionssamin{%`

44.8 `\def\prefacename{Ovdas\’atni}%`

44.9 `\def\refname{\v Cujhusat}%`

44.10 `\def\abstractname{\v Coahkk\’aigeassu}%`

---

<sup>51</sup>The file described in this section has version number v1.0c and was last revised on 2004/02/20. It was written by Regnor Jernsletten, (`Regnor.Jernsletten@sami.uit.no`) or (`Regnor.Jernsletten@eunet.no`).

```

44.11 \def\bibName{Girjj\'ala\v svuohta}%
44.12 \def\chaptername{Kapihttal}%
44.13 \def\appendixname{\v Cuovus}%
44.14 \def\contentsname{Sisdoallu}%
44.15 \def\listfigurename{Govvosat}%
44.16 \def\listtablename{Tabeallat}%
44.17 \def\indexname{Registtar}%
44.18 \def\figurename{Govus}%
44.19 \def\tablename{Tabealla}%
44.20 \def\partname{Oassi}%
44.21 \def\enclname{Mielddus}%
44.22 \def\ccname{Kopia s\'addejuvvon}%
44.23 \def\headtoname{Vuost\'aiv\'aldi}%
44.24 \def\pagename{Siidu}%
44.25 \def\seenname{geah\v ca}%
44.26 \def\alsoname{geah\v ca maidd\'ai}%
44.27 \def\proofname{Duo\dj{a}\v stus}%
44.28 \def\glossaryname{S\'atnelistu}%
44.29 }%

```

`\datesamin` The macro `\datesamin` redefines the command `\today` to produce North Sami dates.

```

44.30 \def\datesamin{%
44.31   \def\today{\ifcase\month\or
44.32     o\dj{\dj{a}jagem\'anu\or
44.33     guovvam\'anu\or
44.34     njuk\v cam\'anu\or
44.35     cuo\ng{om\'anu\or
44.36     miessem\'anu\or
44.37     geassem\'anu\or
44.38     suoidnem\'anu\or
44.39     borgem\'anu\or
44.40     \v cak\v cam\'anu\or
44.41     golggotm\'anu\or
44.42     sk\'abmam\'anu\or
44.43     juovlam\'anu\fi
44.44     \space\number\day.\~b.\space\number\year}%
44.45 }%

```

`\extrassamin` The macro `\extrassamin` will perform all the extra definitions needed for the North Sami language. The macro `\noextrassamin` is used to cancel the actions of `\extrassamin`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```

44.46 \addto\extrassamin{}
44.47 \addto\noextrassamin{}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

44.48 \ldf@finish{samin}
44.49 \code

```



## 45 The Finnish language

The file `finnish.dtx`<sup>52</sup> defines all the language definition macros for the Finnish language.

For this language the character " is made active. In table 19 an overview is given of its purpose.

"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
"=	an explicit hyphen sign for expressions such as "pakastekaapit ja -arkut".
""	like "-", but producing no hyphen sign (for words that should break at some sign such as "entrada/salida."
"‘	lowered double left quotes (looks like „)
"’	normal double right quotes
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).
\-	like the old \-, but allowing hyphenation in the rest of the word.

Table 19: The extra definitions made by `finnish.ldf`

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the @ sign, etc.

45.1 `(*code)`

45.2 `\LdfInit{finnish}\captionsfinnish`

When this file is read as an option, i.e. by the `\usepackage` command, `finnish` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@finnish` to see whether we have to do something here.

45.3 `\ifx\l@finnish\@undefined`

45.4 `\@nopatterns{Finnish}`

45.5 `\adddialect\l@finnish0\fi`

The next step consists of defining commands to switch to the Finnish language. The reason for this is that a user might want to switch back and forth between languages.

`\captionsfinnish` The macro `\captionsfinnish` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

45.6 `\addto\captionsfinnish{%`

45.7 `\def\prefacename{Esipuhe}%`

45.8 `\def\refname{Viitteet}%`

45.9 `\def\abstractname{Tiivistelmä}`

45.10 `\def\bibname{Kirjallisuutta}%`

45.11 `\def\chaptername{Luku}%`

45.12 `\def\appendixname{Liite}%`

<sup>52</sup>The file described in this section has version number v1.3p and was last revised on 2005/03/30. A contribution was made by Mikko KANERVA (`KANERVA@CERNVM`) and Keranen Reino (`KERANEN@CERNVM`).

```

45.13 \def\contentsname{Sis\alt{o}}% /* Could be "Sis\allys" as well */
45.14 \def\listfigurename{Kuvat}%
45.15 \def\listtablename{Taulukot}%
45.16 \def\indexname{Hakemisto}%
45.17 \def\figurename{Kuva}%
45.18 \def\tablename{Taulukko}%
45.19 \def\partname{Osa}%
45.20 \def\enclname{Liitteet}%
45.21 \def\ccname{Jakelu}%
45.22 \def\headtoname{Vastaanottaja}%
45.23 \def\pagename{Sivu}%
45.24 \def\seenname{katso}%
45.25 \def\alsoname{katso my"os}%
45.26 \def\proofname{Todistus}%
45.27 \def\glossaryname{Sanasto}%
45.28 }%

```

**\datefinnish** The macro **\datefinnish** redefines the command **\today** to produce Finnish dates.

```

45.29 \def\datefinnish{%
45.30   \def\today{\number\day.\~\ifcase\month\or
45.31     tammikuuta\or helmikuuta\or maaliskuuta\or huhtikuuta\or
45.32     toukokuuta\or kes"akuuta\or hein"akuuta\or elokuuta\or
45.33     syyskuuta\or lokakuuta\or marraskuuta\or joulukuuta\fi
45.34     \space\number\year}}

```

**\extrasfinnish** Finnish has many long words (some of them compound, some not). For this reason hyphenation is very often the only solution in line breaking. For this reason the values of **\hyphenpenalty**, **\exhyphenpenalty** and **\doublehyphendemerits** should be decreased. (In one of the manuals of style Matti Rintala noticed a paragraph with ten lines, eight of which ended in a hyphen!)

Matti Rintala noticed that with these changes T<sub>E</sub>X handles Finnish very well, although sometimes the values of **\tolerance** and **\emergencystretch** must be increased. However, I don't think changing these values in **finnish.ldf** is appropriate, as the looseness of the font (and the line width) affect the correct choice of these parameters.

```

45.35 \addto\extrasfinnish{%
45.36   \babel@savevariable\hyphenpenalty\hyphenpenalty=30%
45.37   \babel@savevariable\exhyphenpenalty\exhyphenpenalty=30%
45.38   \babel@savevariable\doublehyphendemerits\doublehyphendemerits=5000%
45.39   \babel@savevariable\finalhyphendemerits\finalhyphendemerits=5000%
45.40 }
45.41 \addto\noextrasfinnish{}

```

Another thing **\extrasfinnish** needs to do is to ensure that **\frenchspacing** is in effect. If this is not the case the execution of **\noextrasfinnish** will switch it of again.

```

45.42 \addto\extrasfinnish{\bbl@frenchspacing}
45.43 \addto\noextrasfinnish{\bbl@nonfrenchspacing}

```

For Finnish the " character is made active. This is done once, later on its definition may vary. Other languages in the same document may also use the " character for shorthands; we specify that the finnish group of shorthands should be used.

```

45.44 \initiate@active@char{"}
45.45 \addto\extrasfinnish{\languageshorthands{finnish}}

```

Don't forget to turn the shorthands off again.

```

45.46 \addto\extrasfinnish{\bbl@activate{}}
45.47 \addto\extrasfinnish{\bbl@deactivate{}}

```

The ‘umlaut’ character should be positioned lower on *all* vowels in Finnish texts.

```

45.48 \addto\extrasfinnish{\umlautlow\umlautelow}
45.49 \addto\extrasfinnish{\umlauthigh}

```

First we define access to the low opening double quote and guillemets for quotations,

```

45.50 \declare@shorthand{finnish}{"'}{%
45.51   \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
45.52 \declare@shorthand{finnish}{"'}{%
45.53   \textormath{\textquotedblright}{\mbox{\textquotedblright}}}
45.54 \declare@shorthand{finnish}{"<"}{%
45.55   \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
45.56 \declare@shorthand{finnish}{">"}{%
45.57   \textormath{\guillemotright}{\mbox{\guillemotright}}}

```

then we define two shorthands to be able to specify hyphenation breakpoints that behave a little different from \-.

```

45.58 \declare@shorthand{finnish}{"-}{\nobreak-\bbl@allowhyphens}
45.59 \declare@shorthand{finnish}{""}{\hskip\z@skip}
45.60 \declare@shorthand{finnish}{"="}{\hbox{-}\bbl@allowhyphens}

```

And we want to have a shorthand for disabling a ligature.

```

45.61 \declare@shorthand{finnish}{"|"}{%
45.62   \textormath{\discretionary{-}{-}{\kern.03em}}{}}

```

\- All that is left now is the redefinition of \-. The new version of \- should indicate an extra hyphenation position, while allowing other hyphenation positions to be generated automatically. The standard behaviour of T<sub>E</sub>X in this respect is very unfortunate for languages such as Dutch, Finnish and German, where long compound words are quite normal and all one needs is a means to indicate an extra hyphenation position on top of the ones that T<sub>E</sub>X can generate from the hyphenation patterns.

```

45.63 \addto\extrasfinnish{\babel@save\-\}
45.64 \addto\extrasfinnish{\def\-\{\bbl@allowhyphens
45.65   \discretionary{-}{-}{\bbl@allowhyphens}}

```

\finishhyphenmins The finnish hyphenation patterns can be used with \lefthyphenmin set to 2 and \righthyphenmin set to 2.

```

45.66 \providehyphenmins{\CurrentOption}{\tw@\tw@}

```

The macro \ldf@finish takes care of looking for a configuration file, setting the main language to be switched on at \begin{document} and resetting the category code of @ to its original value.

```

45.67 \ldf@finish{finnish}
45.68 \code

```

## 46 The Hungarian language

The file option `magyar.dtx` defines all the language definition macros for the Hungarian language.

The `babel` support for the Hungarian language until file version 1.3i was essentially changing the English document elements to Hungarian ones, but because of the differences between these two languages this was actually unusable (‘Part I’ was transferred to ‘Rész I’ which is not usable instead of ‘I. rész’). To enhance the typesetting facilities for Hungarian the following should be considered:

- In Hungarian documents there is a period after the part, section, subsection etc. numbers.
- In the part, chapter, appendix name the number (or letter) goes before the name, so ‘Part I’ translates to ‘I. rész’.
- The same is true with captions (‘Table 2.1’ goes to ‘2.1. táblázat’).
- There is a period after the caption name instead of a colon. (‘Table 2.1.’ goes to ‘2.1. táblázat.’)
- There is a period at the end of the title in a run-in head (when `afterskip<0` in `\@startsection`).
- Special hyphenation rules must be applied for the so-called long double consonants (`ccs`, `ssz`, ...).
- The opening quotation mark is like the German one (the closing is the same as in English).
- In Hungarian figure, table, etc. referencing a definite article is also incorporated. The Hungarian definite articles behave like the English indefinite ones (‘a/an’). ‘a’ is used for words beginning with a consonant and ‘az’ goes for a vowel. Since some numbers begin with a vowel some others with a consonant some commands should be provided for automatic definite article generation.

Until file version 1.3i<sup>53</sup> the special typesetting rules of the Hungarian language mentioned above were not taken into consideration. This version (v1.4j)<sup>54</sup> enables `babel` to typeset ‘good-looking’ Hungarian texts.

`\ontoday` The `\ontoday` command works like `\today` but produces a slightly different date format used in expressions such as ‘on February 10th’.

`\Az` The commands `\Az#1` and `\az#1` write the correct definite article for the argument and the argument itself (separated with a ~). The star-forms (`\Az*` and `\az*`) produce the article only.

`\Azr` `\Azr#1` and `\azr#1` treat the argument as a label so expand it then write the definite article for `\r@#1`, a non-breakable space then the label expansion. The star-forms do not print the label expansion. `\Azr(#1` and `\azr(#1` are used for equation referencing with the syntax `\azr(label)`.

`\Aref` There are two aliases `\Aref` and `\aref` for `\Azr` and `\azr`, respectively.

<sup>53</sup>That file was last revised on 1996/12/23 with a contribution by the next authors: Attila Koppányi ([attila@cernvm.cern.ch](mailto:attila@cernvm.cern.ch)), Árpád Bíró ([JZP1104@HUSZEG11.bitnet](mailto:JZP1104@HUSZEG11.bitnet)), István Hamecz ([hami@ursus.bke.hu](mailto:hami@ursus.bke.hu)) and Dezső Horváth ([horvath@pisa.infn.it](mailto:horvath@pisa.infn.it)).

<sup>54</sup>It was written by József Bérces ([jozsi@docs4.mht.bme.hu](mailto:jozsi@docs4.mht.bme.hu)) with some help from Ferenc Wettl ([wettl@math.bme.hu](mailto:wettl@math.bme.hu)) and an idea from David Carlisle ([david@dcarlisle.demon.co.uk](mailto:david@dcarlisle.demon.co.uk)).

shortcut	explanation	example
‘	same as <code>\glqq</code> in <code>babel</code> , or <code>\quotedblbase</code> in T1 (opening quotation mark, like „)	‘‘ <code>id\’ezet’</code> ’ $\longrightarrow$ „ <code>idézet</code> ”
‘c, ‘C	ccs is hyphenated as cs-cs	lo‘ <code>ccsan</code> $\longrightarrow$ locs-csan
‘d, ‘D	ddz is hyphenated as dz-dz	e‘ <code>ddz\”unk</code> $\longrightarrow$ edz-dzünk
‘g, ‘G	ggy is hyphenated as gy-gy	po‘ <code>ggy\’asz</code> $\longrightarrow$ pogy-gyász
‘l, ‘L	lly is hyphenated as ly-ly	Kod‘ <code>a\’llyal</code> $\longrightarrow$ Kodály-lyal
‘n, ‘N	nny is hyphenated as ny-ny	me‘ <code>nnyei</code> $\longrightarrow$ meny-neyi
‘s, ‘S	ssz is hyphenated as sz-sz	vi‘ <code>ssza</code> $\longrightarrow$ visz-sza
‘t, ‘T	tty is hyphenated as ty-ty	po‘ <code>ttyan</code> $\longrightarrow$ poty-tyan
‘z, ‘Z	zsz is hyphenated as zs-zs	ri‘ <code>zzsel</code> $\longrightarrow$ rizs-zsel

Table 20: The shortcuts defined in `magyar.ldf`

During the preparation of a document it is not known in general, if the code ‘`a~\ref{label}`’ or the code ‘`az~\ref{label}`’ is the grammatically correct one. Writing ‘`\aref{label}`’ instead of the previous ones solves the problem.

- `\Azp`      `\Azp#1` and `\azp#1` also treat the argument as a label but use the label’s page for definite article determination. There are star-forms giving only the definite article without the page number.
- `\Apageref`      There are aliases `\Apageref` and `\apageref` for `\Azp` and `\azp`, respectively. The code `\apageref{label}` is equivalent either to `a~\pageref{label}` or to `az~\pageref{label}`.
- `\Azc`      `\Azc` and `\azc` work like the `\cite` command but (of course) they insert the definite article. There can be several comma separated cite labels and in that case the definite article is given for the first one. They accept `\cite`’s optional argument. There are star-forms giving the definite article only.
- `\Acite`      There are aliases `\Acite` and `\acite` for `\Azc` and `\azc`, respectively.

For this language the character ‘ is made active. Table 20 shows the shortcuts. The main reason for the activation of the ‘ character is to handle the special hyphenation of the long double consonants.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the @ sign, etc.

```
46.1 (*code)
46.2 \LdfInit{magyar}{caption\CurrentOption}
```

When this file is read as an option, i.e. by the `\usepackage` command, `magyar` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@magyar` or `\l@hungarian` to see whether we have to do something here.

```
46.3 \ifx\l@magyar\@undefined
46.4   \ifx\l@hungarian\@undefined
46.5     \nopatterns{Magyar}
46.6     \adddialect\l@magyar0
46.7   \else
46.8     \let\l@magyar\l@hungarian
46.9   \fi
46.10 \fi
```

The statement above makes sure that `\l@magyar` is always defined; if `\l@hungarian` is still undefined we make it equal to `\l@magyar`.

```
46.11 \ifx\l@hungarian\@undefined
46.12   \let\l@hungarian\l@magyar
46.13 \fi
```

The next step consists of defining commands to switch to (and from) the Hungarian language.

`\captionsmagyar` The macro `\captionsmagyar` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X.

```
46.14 \@namedef{captions\CurrentOption}{%
46.15   \def\prefacename{Előszó}%
```

For the list of references at the end of an article we have a choice between two words, ‘Referenciák’ (a Hungarian version of the English word) and ‘Hivatkozások’. The latter seems to be in more widespread use.

```
46.16   \def\refname{Hivatkozások}%
```

If you have a document with a summary instead of an abstract you might want to replace the word ‘Kivonat’ with ‘Összefoglaló’.

```
46.17   \def\abstractname{Kivonat}%
```

The Hungarian version of ‘Bibliography’ is ‘Bibliográfia’, but a more natural word to use is ‘Irodalomjegyzék’.

```
46.18   \def\bibName{Irodalomjegyzék}%
46.19   \def\chaptername{Fejezet}%
46.20   \def\appendixname{Függelék}%
46.21   \def\contentsname{Tartalomjegyzék}%
46.22   \def\listfigurename{Ábrák jegyzéke}%
46.23   \def\listtablename{Táblázatok jegyzéke}%
46.24   \def\indexname{Tárgymutatás}%
46.25   \def\figurename{Ábra}%
46.26   \def\tablename{tábla}%
46.27   \def\partname{rész}%
46.28   \def\enclname{Melléklet}%
46.29   \def\ccname{Körlevél-címzetek}%
46.30   \def\headtoname{Címzet}%
46.31   \def\pagename{oldal}%
46.32   \def\seename{lásd}%
46.33   \def\alsoname{lásd még}%
```

Besides the Hungarian word for Proof, ‘Bizonyítás’ we can also name Corollary (Következmény), Theorem (Tétel) and Lemma (Lemma).

```
46.34   \def\proofname{Bizonyítás}%
46.35   \def\glossaryname{Szójegyzék}%
46.36   }%
```

`\datemagyar` The macro `\datemagyar` redefines the command `\today` to produce Hungarian dates.

```
46.37 \@namedef{date\CurrentOption}{%
46.38   \def\today{%
46.39     \number\year.\nobreakspace\ifcase\month\or
46.40     január\or február\or március\or
46.41     április\or május\or június\or
```

```

46.42 j\'ulius\or augusztus\or szeptember\or
46.43 okt\'ober\or november\or december\fi
46.44 \space\number\day.}}

```

`\ondatemagyar` The macro `\ondatemagyar` produces Hungarian dates which have the meaning ‘*on this day*’. It does not redefine the command `\today`.

```

46.45 \@namedef{ondate\CurrentOption}{%
46.46 \number\year.\nobreakspace\ifcase\month\or
46.47 janu\'ar\or febru\'ar\or m\'arcius\or
46.48 \'aprilis\or m\'ajus\or j\'unius\or
46.49 j\'ulius\or augusztus\or szeptember\or
46.50 okt\'ober\or november\or december\fi
46.51 \space\ifcase\day\or
46.52 1-j\'en\or 2-\'an\or 3-\'an\or 4-\'en\or 5-\'en\or
46.53 6-\'an\or 7-\'en\or 8-\'an\or 9-\'en\or 10-\'en\or
46.54 11-\'en\or 12-\'en\or 13-\'an\or 14-\'en\or 15-\'en\or
46.55 16-\'an\or 17-\'en\or 18-\'an\or 19-\'en\or 20-\'an\or
46.56 21-\'en\or 22-\'en\or 23-\'an\or 24-\'en\or 25-\'en\or
46.57 26-\'an\or 27-\'en\or 28-\'an\or 29-\'en\or 30-\'an\or
46.58 31-\'en\fi}

```

`\extrasmagyar` The macro `\extrasmagyar` will perform all the extra definitions needed for the Hungarian language. The macro `\noextrasmagyar` is used to cancel the actions of `\extrasmagyar`.

```

46.59 \@namedef{extras\CurrentOption}{%
46.60 \expandafter\let\expandafter\ontoday
46.61 \csname ondate\CurrentOption\endcsname}
46.62 \@namedef{noextras\CurrentOption}{\let\ontoday\@undefined}

```

Now we redefine some commands included into `latex.ltx`. The original form of a command is always saved with `\babel@save` and the changes are added to `\extrasmagyar`. This ensures that the Hungarian version of a macro is alive *only* if the Hungarian language is active.

`\fnum@figure` In figure and table captions the order of the figure/table number and `\figurename`  
`\fnum@table` `/\tablename` must be changed. To achieve this `\fnum@figure` and `\fnum@table` are redefined and added to `\extrasmagyar`.

```

46.63 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.64 \babel@save\fnum@figure
46.65 \def\fnum@figure{\thefigure.\nobreakspace\figurename}}
46.66 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.67 \babel@save\fnum@table
46.68 \def\fnum@table{\thetable.\nobreakspace\tablename}}

```

`\@makecaption` The colon in a figure/table caption must be replaced by a dot by redefining `\@makecaption`.

```

46.69 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.70 \babel@save\@makecaption
46.71 \def\@makecaption#1#2{%
46.72 \vskip\abovecaptionskip
46.73 \sbox\@tempboxa{#1. #2}%
46.74 \ifdim \wd\@tempboxa >\hsize
46.75 {#1. #2\csname par\endcsname}

```

```

46.76 \else
46.77 \global \@minipagefalse
46.78 \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
46.79 \fi
46.80 \vskip\belowcaptionskip}}

```

`\@caption` There should be a dot after the figure/table number in lof/lot, so `\@caption` is redefined.

```

46.81 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.82 \babel@save\@caption
46.83 \long\def\@caption#1[#2]#3{%
46.84 \csname par\endcsname
46.85 \addcontentsline{\csname ext@#1\endcsname}{#1}%
46.86 {\protect\numberline{\csname the#1\endcsname.}{\ignorespaces #2}}%
46.87 \begingroup
46.88 \@parboxrestore
46.89 \if@minipage
46.90 \@setminipage
46.91 \fi
46.92 \normalsize
46.93 \@makecaption{\csname fnum@#1\endcsname}%
46.94 {\ignorespaces #3}\csname par\endcsname
46.95 \endgroup}}

```

`\@secntformat` In order to have a dot after the section number `\@secntformat` is redefined.

```

46.96 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.97 \babel@save\@secntformat
46.98 \def\@secntformat#1{\csname the#1\endcsname.\quad}}

```

`\@sect` Alas, `\@sect` must also be redefined to have that dot in toc too. On the other hand, we include a dot after a run-in head.

```

46.99 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.100 \babel@save\@sect
46.101 \def\@sect#1#2#3#4#5#6[#7]#8{%
46.102 \ifnum #2>\c@secnumdepth
46.103 \let\@svsec\@empty
46.104 \else
46.105 \refstepcounter{#1}%
46.106 \protected@edef\@svsec{\@secntformat{#1}\relax}%
46.107 \fi
46.108 \@tempskipa #5\relax
46.109 \ifdim \@tempskipa>\z@
46.110 \begingroup
46.111 #6{%
46.112 \@hangfrom{\hskip #3\relax\@svsec}%
46.113 \interlinepenalty \@M #8\@par}%
46.114 \endgroup
46.115 \csname #1mark\endcsname{#7}%
46.116 \addcontentsline{toc}{#1}{%
46.117 \ifnum #2>\c@secnumdepth \else
46.118 \protect\numberline{\csname the#1\endcsname.}%
46.119 \fi
46.120 #7}%
46.121 \else

```



```

46.122 \def\@svsechd{%
46.123 #6{\hskip #3\relax
46.124 \@svsec #8.}%
46.125 \csname #1mark\endcsname{#7}%
46.126 \addcontentsline{toc}{#1}{%
46.127 \ifnum #2>\c@secnumdepth \else
46.128 \protect\numberline{\csname the#1\endcsname.}%
46.129 \fi
46.130 #7}}%
46.131 \fi
46.132 \@xsect{#5}}

```

`\@ssect` In order to have that dot after a run-in head when the star form of the sectioning commands is used, we have to redefine `\@ssect`.

```

46.133 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.134 \babel@save\@ssect
46.135 \def\@ssect#1#2#3#4#5{%
46.136 \@tempskipa #3\relax
46.137 \ifdim \@tempskipa>\z@
46.138 \begingroup
46.139 #4{%
46.140 \@hangfrom{\hskip #1}%
46.141 \interlinepenalty \@M #5\@par}%
46.142 \endgroup
46.143 \else
46.144 \def\@svsechd{#4{\hskip #1\relax #5.}}%
46.145 \fi
46.146 \@xsect{#3}}

```

`\@begintheorem` Order changing and dot insertion in theorem by redefining `\@begintheorem` and `\@opargbegintheorem` `\@opargbegintheorem`.

```

46.147 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.148 \babel@save\@begintheorem
46.149 \def\@begintheorem#1#2{\trivlist
46.150 \item[\hskip \labelsep{\bfseries #2.\ #1.}]{\itshape}%
46.151 \babel@save\@opargbegintheorem
46.152 \def\@opargbegintheorem#1#2#3{\trivlist
46.153 \item[\hskip \labelsep{\bfseries #2.\ #1\ (#3).}]{\itshape}}

```

The next step is to redefine some macros included into the class files. It is determined which class file is loaded then the original form of the macro is saved and the changes are added to `\extrasmagyar`.

First we check if the `book.cls` is loaded.

```

46.154 \@ifclassloaded{book}{%

```

`\ps@headings` The look of the headings is changed: we have to insert some dots and change the order of chapter number and `\chaptername`.

```

46.155 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.156 \babel@save\ps@headings}
46.157 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.158 \if@twoside
46.159 \def\ps@headings{%
46.160 \let\@oddfoot\@empty\let\@evenfoot\@empty

```

```

46.161         \def\@evenhead{\thepage\hfil\slshape\leftmark}%
46.162         \def\@oddhead{\slshape\rightmark\hfil\thepage}%
46.163         \let\@mkboth\markboth
46.164         \def\chaptermark##1{%
46.165             \markboth {\MakeUppercase{%
46.166                 \ifnum \c@secnumdepth >\m@ne
46.167                     \if@mainmatter
46.168                         \thechapter. \@chapapp. \ %
46.169                     \fi
46.170                 \fi
46.171                 ##1}}{}}%
46.172         \def\sectionmark##1{%
46.173             \markright {\MakeUppercase{%
46.174                 \ifnum \c@secnumdepth >\z@
46.175                     \thesection. \ %
46.176                 \fi
46.177                 ##1}}}%
46.178         \else
46.179             \def\ps@headings{%
46.180                 \let\@oddfoot\@empty
46.181                 \def\@oddhead{\slshape\rightmark\hfil\thepage}%
46.182                 \let\@mkboth\markboth
46.183                 \def\chaptermark##1{%
46.184                     \markright {\MakeUppercase{%
46.185                         \ifnum \c@secnumdepth >\m@ne
46.186                             \if@mainmatter
46.187                                 \thechapter. \@chapapp. \ %
46.188                             \fi
46.189                         \fi
46.190                         ##1}}}%
46.191                 \fi}

```

`\@part` At the beginning of a part we need eg. ‘I. rész’ instead of ‘Part I’ (in toc too). To achieve this `\@part` is redefined.

```

46.192     \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.193         \babel@save\@part
46.194         \def\@part[#1]#2{%
46.195             \ifnum \c@secnumdepth >-2\relax
46.196                 \refstepcounter{part}%
46.197                 \addcontentsline{toc}{part}{\thepart.\hspace{1em}#1}%
46.198             \else
46.199                 \addcontentsline{toc}{part}{#1}%
46.200             \fi
46.201             \markboth{}{}%
46.202             {\centering
46.203                 \interlinepenalty \@M
46.204                 \normalfont
46.205                 \ifnum \c@secnumdepth >-2\relax
46.206                     \huge\bfseries \thepart.\nobreakspace\partname
46.207                     \csname par\endcsname
46.208                     \vskip 20\p@
46.209                 \fi
46.210                 \Huge \bfseries #2\csname par\endcsname}%
46.211             \@endpart}}

```

`\@chapter` The same changes are made to chapter. First the screen typeout and the toc are changed by redefining `\@chapter`.

```

46.212 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.213 \babel@save\@chapter
46.214 \def\@chapter[#1]#2{\ifnum \c@secnumdepth >\m@ne
46.215 \if@mainmatter
46.216 \refstepcounter{chapter}%
46.217 \typeout{\thechapter.\space\@chapapp.}%
46.218 \addcontentsline{toc}{chapter}%
46.219 {\protect\numberline{\thechapter.}#1}%
46.220 \else
46.221 \addcontentsline{toc}{chapter}{#1}%
46.222 \fi
46.223 \else
46.224 \addcontentsline{toc}{chapter}{#1}%
46.225 \fi
46.226 \chaptermark{#1}%
46.227 \addtocontents{lof}{\protect\addvspace{10\p@}}%
46.228 \addtocontents{lot}{\protect\addvspace{10\p@}}%
46.229 \if@twocolumn
46.230 \topnewpage[\@makechapterhead{#2}]%
46.231 \else
46.232 \@makechapterhead{#2}%
46.233 \@afterheading
46.234 \fi}}
```

`\@makechapterhead` Then the look of the chapter-start is modified by redefining `\@makechapterhead`.

```

46.235 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.236 \babel@save\@makechapterhead
46.237 \def\@makechapterhead#1{%
46.238 \vspace*{50\p@}%
46.239 {\parindent \z@ \raggedright \normalfont
46.240 \ifnum \c@secnumdepth >\m@ne
46.241 \if@mainmatter
46.242 \huge\bfseries \thechapter.\nobreakspace\@chapapp{}
46.243 \csname par\endcsname\nobreak
46.244 \vskip 20\p@
46.245 \fi
46.246 \fi
46.247 \interlinepenalty\@M
46.248 \Huge \bfseries #1\csname par\endcsname\nobreak
46.249 \vskip 40\p@
46.250 }}}
```

This the end of the book class modification.

```
46.251 }{}
```

Now we check if `report.cls` is loaded.

```
46.252 \@ifclassloaded{report}{%
```

`\ps@headings` First the headings are modified just in case of the book class.

```

46.253 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.254 \babel@save\ps@headings}
46.255 \expandafter\addto\csname extras\CurrentOption\endcsname{%
```

```

46.256 \if@twoside
46.257 \def\ps@headings{%
46.258 \let\@oddfoot\@empty\let\@evenfoot\@empty
46.259 \def\@evenhead{\thepage\hfil\slshape\leftmark}%
46.260 \def\@oddhead{\slshape\rightmark}\hfil\thepage}%
46.261 \let\@mkboth\markboth
46.262 \def\chaptermark##1{%
46.263 \markboth {\MakeUppercase{%
46.264 \ifnum \c@secnumdepth >\m@ne
46.265 \thechapter. \@chapapp. \ %
46.266 \fi
46.267 ##1}}{}}%
46.268 \def\sectionmark##1{%
46.269 \markright {\MakeUppercase{%
46.270 \ifnum \c@secnumdepth >\z@
46.271 \thesection. \ %
46.272 \fi
46.273 ##1}}}%
46.274 \else
46.275 \def\ps@headings{%
46.276 \let\@oddfoot\@empty
46.277 \def\@oddhead{\slshape\rightmark}\hfil\thepage}%
46.278 \let\@mkboth\markboth
46.279 \def\chaptermark##1{%
46.280 \markright {\MakeUppercase{%
46.281 \ifnum \c@secnumdepth >\m@ne
46.282 \thechapter. \@chapapp. \ %
46.283 \fi
46.284 ##1}}}%
46.285 \fi}

```

`\@chapter` Chapter-start modification with `\@chapter`

```

46.286 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.287 \babel@save\@chapter
46.288 \def\@chapter[#1]#2{\ifnum \c@secnumdepth >\m@ne
46.289 \refstepcounter{chapter}%
46.290 \typeout{\thechapter.\space\@chapapp.}%
46.291 \addcontentsline{toc}{chapter}%
46.292 \protect\numberline{\thechapter.}#1}%
46.293 \else
46.294 \addcontentsline{toc}{chapter}{#1}%
46.295 \fi
46.296 \chaptermark{#1}%
46.297 \addtocontents{lof}{\protect\addvspace{10\p@}}%
46.298 \addtocontents{lot}{\protect\addvspace{10\p@}}%
46.299 \if@twocolumn
46.300 \@topnewpage[\@makechapterhead{#2}]%
46.301 \else
46.302 \@makechapterhead{#2}%
46.303 \@afterheading
46.304 \fi}}

```

`\@makechapterhead` and `\@makechapterhead.`

```

46.305 \expandafter\addto\csname extras\CurrentOption\endcsname{%

```

```

46.306 \babel@save\@makechapterhead
46.307 \def\@makechapterhead#1{%
46.308 \vspace*{50\p@}%
46.309 {\parindent \z@ \raggedright \normalfont
46.310 \ifnum \c@secnumdepth >\m@ne
46.311 \huge\bfseries \thechapter.\nobreakspace\@chapapp{}
46.312 \csname par\endcsname\nobreak
46.313 \vskip 20\p@
46.314 \fi
46.315 \interlinepenalty\@M
46.316 \Huge \bfseries #1\csname par\endcsname\nobreak
46.317 \vskip 40\p@
46.318 }}}%

```

End of report class modification.

```
46.319 }{}
```

Checking if article.cls is loaded.

```
46.320 \ifclassloaded{article}{%
```

\ps@headings Changing headings by redefining \ps@headings.

```

46.321 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.322 \babel@save\ps@headings}
46.323 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.324 \if@twoside
46.325 \def\ps@headings{%
46.326 \let\@oddfoot\@empty\let\@evenfoot\@empty
46.327 \def\@evenhead{\thepage\hfil\slshape\leftmark}%
46.328 \def\@oddhead{\slshape\rightmark}\hfil\thepage}%
46.329 \let\@mkboth\markboth
46.330 \def\sectionmark##1{%
46.331 \markboth {\MakeUppercase{%
46.332 \ifnum \c@secnumdepth >\z@
46.333 \thesection.\quad
46.334 \fi
46.335 ##1}}{}}%
46.336 \def\subsectionmark##1{%
46.337 \markright {%
46.338 \ifnum \c@secnumdepth >\@ne
46.339 \thesubsection.\quad
46.340 \fi
46.341 ##1}}}%
46.342 \else
46.343 \def\ps@headings{%
46.344 \let\@oddfoot\@empty
46.345 \def\@oddhead{\slshape\rightmark}\hfil\thepage}%
46.346 \let\@mkboth\markboth
46.347 \def\sectionmark##1{%
46.348 \markright {\MakeUppercase{%
46.349 \ifnum \c@secnumdepth >\m@ne
46.350 \thesection.\quad
46.351 \fi
46.352 ##1}}}%
46.353 \fi}%

```

No more necessary changes specific to the article class.

46.354 }{}

And now this is the turn of `letter.cls`.

46.355 \@ifclassloaded{letter}{%

\ps@headings In the headings the page number must be followed by a dot and then \pagename.

```

46.356 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.357 \babel@save\ps@headings}
46.358 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.359 \if@twoside
46.360 \def\ps@headings{%
46.361 \let\@oddfoot\@empty\let\@evenfoot\@empty
46.362 \def\@oddhead{\slshape\headtoname{:} \ignorespaces\toname
46.363 \hfil \@date
46.364 \hfil \thepage.\nobreakspace\pagename}%
46.365 \let\@evenhead\@oddhead}
46.366 \else
46.367 \def\ps@headings{%
46.368 \let\@oddfoot\@empty
46.369 \def\@oddhead{\slshape\headtoname{:} \ignorespaces\toname
46.370 \hfil \@date
46.371 \hfil \thepage.\nobreakspace\pagename}}
46.372 \fi}%

```

End of letter class.

46.373 }{}

After making the changes to the L<sup>A</sup>T<sub>E</sub>X macros we define some new ones to handle the problem with definite articles.

\az \az is a user-level command which decides if the next character is a star. \@az is called for \az\* and \az@ for \az.

46.374 \def\az{a\@ifstar{\@az}{\az@}}

\Az \Az is used at the beginning of a sentence. Otherwise it behaves the same as \az.

46.375 \def\Az{A\@ifstar{\@az}{\az@}}

\az@ \az@ is called if there is no star after \az or \Az. It calls \@az and writes #1 separating with a non-breakable space.

46.376 \def\az@#1{\@az{#1}\nobreakspace#1}

\@az This macro calls \hun@tempdef to remove the accents from the argument then calls @@az that determines if a ‘z’ should be written after a/A (written by \az/\Az).

```

46.377 \def\@az#1{%
46.378 \hun@tempdef{relax}{relax}{#1}%
46.379 \edef\@tempb{\noexpand\@az\@tempa\hbox!}%
46.380 \@tempb}

```

\hun@tempdef The macro \hun@tempdef has three tasks:

- Accent removal. Accented letters confuse @@az, the main definite article determinator macro, so they must be changed to their non-accented counterparts. Special letters must also be changed, eg. œ → o.

- Labels must be expanded.
- To handle Roman numerals correctly, commands starting with `\hun@` are defined for labels containing Roman numbers with the Roman numerals replaced by their Arabic representation. This macro can check if there is a `\hun@` command.

There are three arguments:

1. The primary command that should be expanded if it exists. This is usually the `\hun@` command for a label.
2. The secondary command which is used if the first one is `\relax`. This is usually the original L<sup>A</sup>T<sub>E</sub>X command for a label.
3. This is used if the first two is `\relax`. For this one no expansion is carried out but the accents are still removed and special letters are changed.

```

46.381 \def\hun@tempadef#1#2#3{%
46.382   \begingroup
46.383     \def\@safe@activesfalse{%
46.384       \def\setbox ##1{% to get rid of accents and special letters
46.385         \def\hbox ##1{%
46.386         \def\accent ##1 ##2{##2}%
46.387         \def\add@accent ##1##2{##2}%
46.388         \def\@text@composite@x ##1##2{##2}%
46.389         \def\i{i}\def\j{j}%
46.390         \def\ae{a}\def\AE{A}\def\oe{o}\def\OE{O}%
46.391         \def\ss{s}\def\L{L}%
46.392         \def\d{} \def\b{} \def\c{} \def\t{}%
46.393         \expandafter\ifx\csname #1\endcsname\relax
46.394           \expandafter\ifx\csname #2\endcsname\relax
46.395             \xdef\@tempa{#3}%
46.396           \else
46.397             \xdef\@tempa{\csname #2\endcsname}%
46.398           \fi
46.399         \else
46.400           \xdef\@tempa{\csname #1\endcsname}%
46.401         \fi
46.402       \endgroup}

```

The following macros are used to determine the definite article for a label's expansion.

`\aref` `\aref` is an alias for `\azr`.

```
46.403 \def\aref{\azr}
```

`\Aref` `\Aref` is an alias for `\Azr`.

```
46.404 \def\Aref{\Azr}
```

`\azr` `\azr` calls `\@azr` if the next character is a star, otherwise it calls `\azr@`.

```
46.405 \def\azr{a@ifstar{\@azr}{\azr@}}
```

`\Azr` `\Azr` is the same as `\azr` except that it writes 'A' instead of 'a'.

```
46.406 \def\Azr{A@ifstar{\@azr}{\azr@}}
```

`\azr@` `\azr@` decides if the next character is `(` and in that case it calls `\azr@@@` which writes an extra `(` for equation referencing. Otherwise `\azr@@` is called.

```
46.407 \def\azr@{\@ifnextchar ({\azr@@@}{\azr@@}}
```

`\azr@@` Calls `\@azr` then writes the label's expansion preceded by a non-breakable space.

```
46.408 \def\azr@@#1{\@azr{#1}\nobreakspace\ref{#1}}
```

`\azr@@@` Same as `\azr@@` but inserts a `(` between the non-breakable space and the label expansion.

```
46.409 \def\azr@@@(#1{\@azr{#1}\nobreakspace(\ref{#1}}
```

`\@azr` Calls `\hun@tempadef` to choose between the label's `\hun@` or original  $\LaTeX$  command and to expand it with accent removal and special letter substitution. Then calls `\@@az`, the core macro of definite article handling.

```
46.410 \def\@azr#1{%
46.411   \hun@tempadef{hun@r@#1}{r@#1}{}%
46.412   \ifx\@tempa\empty
46.413   \else
46.414     \edef\@tempb{\noexpand\@@az\expandafter\@firstoftwo\@tempa\hbox!}%
46.415     \@tempb
46.416   \fi
46.417 }
```

The following commands are used to generate the definite article for the page number of a label.

`\apageref` `\apageref` is an alias for `\azp`.

```
46.418 \def\apageref{\azp}
```

`\Apageref` `\Apageref` is an alias for `\Azp`.

```
46.419 \def\Apageref{\Azp}
```

`\azp` Checks if the next character is `*` and calls `\@azp` or `\azp@`.

```
46.420 \def\azp{a\@ifstar{\@azp}{\azp@}}
```

`\Azp` Same as `\azp` except that it writes 'A' instead of 'a'.

```
46.421 \def\Azp{A\@ifstar{\@azp}{\azp@}}
```

`\azp@` Calls `\@azp` then writes the label's page preceded by a non-breakable space.

```
46.422 \def\azp@#1{\@azp{#1}\nobreakspace\pageref{#1}}
```

`\@azp` Calls `\hun@tempadef` then takes the label's page and passes it to `\@@az`.

```
46.423 \def\@azp#1{%
46.424   \hun@tempadef{hun@r@#1}{r@#1}{}%
46.425   \ifx\@tempa\empty
46.426   \else
46.427     \edef\@tempb{\noexpand\@@az\expandafter\@secondoftwo\@tempa\hbox!}%
46.428     \@tempb
46.429   \fi
46.430 }
```

The following macros are used to give the definite article to citations.



`\acite` This is an alias for `\azc`.  
46.431 `\def\acite{\azc}`

`\Acite` This is an alias for `\Azc`.  
46.432 `\def\Acite{\Azc}`

`\azc` Checks if the next character is a star and calls `\@azc` or `\azc@`.  
46.433 `\def\azc{a\@ifstar{\@azc}{\azc@}}`

`\Azc` Same as `\azc` but used at the beginning of sentences.  
46.434 `\def\Azc{A\@ifstar{\@azc}{\azc@}}`

`\azc@` If there is no star we accept an optional argument, just like the `\cite` command.  
46.435 `\def\azc@{\@ifnextchar [{\azc@@}{\azc@[]}}`

`\azc@@` First calls `\@azc` then `\cite`.  
46.436 `\def\azc@@[#1]#2{%`  
46.437 `\@azc{#2}\nobreakspace\def\@tempa{#1}%`  
46.438 `\ifx\@tempa\empty\cite{#2}\else\cite[#1]{#2}\fi}`

`\@azc` This is an auxiliary macro to get the first cite label from a comma-separated list.  
46.439 `\def\@azc#1{\@azc#1,\hbox!}`

`\@@azc` This one uses only the first argument, that is the first element of the comma-separated list of cite labels. Calls `\hun@tempadef` to expand the cite label with accent removal and special letter replacement. Then `\@@az`, the core macro, is called.  
46.440 `\def\@@azc#1,#2\hbox#3!{%`  
46.441 `\hun@tempadef{hun@b@#1}{b@#1}{}%`  
46.442 `\ifx\@tempa\empty`  
46.443 `\else`  
46.444 `\edef\@tempb{\noexpand\@@az\@tempa\hbox!}%`  
46.445 `\@tempb`  
46.446 `\fi}`

`\hun@number@length` This macro is used to count the number of digits in its argument until a non-digit character is found or the end of the argument is reached. It must be called as `\hun@number@lengtharg\hbox\hbox!` and `\count@` must be zeroed. It is called by `\@@az`.  
46.447 `\def\hun@number@length#1#2\hbox#3!{%`  
46.448 `\ifcat\noexpand#1%`  
46.449 `\ifnum\expandafter'\csname#1\endcsname>47`  
46.450 `\ifnum\expandafter'\csname#1\endcsname<58`  
46.451 `\advance\count@ by \@ne`  
46.452 `\hun@number@length#2\hbox\hbox!\fi\fi\fi}`

`\hun@alph@length` This is used to count the number of letters until a non-letter is found or the end of the argument is reached. It must be called as `\hun@alph@lengtharg\hbox\hbox!` and `\count@` must be set to zero. It is called by `\@@az@string`.  
46.453 `\def\hun@alph@length#1#2\hbox#3!{%`  
46.454 `\ifcat\noexpand#1A%`  
46.455 `\advance\count@ by \@ne`  
46.456 `\hun@alph@length#2\hbox\hbox!\fi}`

`\@@az@string` This macro is called by `\@@az` if the argument begins with a letter. The task of `\@@az@string` is to determine if the argument starts with a vowel and in that case `\let\@tempa\@tempb`. After checking if the first letter is A, E, I, O, or U, `\hun@alph@length` is called to determine the length of the argument. If it gives 1 (that is the argument is a single-letter one or the second character is not letter) then the letters L, M, N, R, S, X, and Y are also considered as a vowel since their Hungarian pronounced name starts with a vowel.

```

46.457 \def\@@az@string#1#2{%
46.458   \ifx#1A%
46.459     \let\@tempa\@tempb
46.460   \else\ifx#1E%
46.461     \let\@tempa\@tempb
46.462   \else\ifx#1I%
46.463     \let\@tempa\@tempb
46.464   \else\ifx#1O%
46.465     \let\@tempa\@tempb
46.466   \else\ifx#1U%
46.467     \let\@tempa\@tempb
46.468   \fi\fi\fi\fi\fi
46.469   \ifx\@tempa\@tempb
46.470   \else
46.471     \count@\z@
46.472     \hun@alph@length#1#2\hbox\hbox!%
46.473     \ifnum\count@=\@ne
46.474       \ifx#1F%
46.475         \let\@tempa\@tempb
46.476       \else\ifx#1L%
46.477         \let\@tempa\@tempb
46.478       \else\ifx#1M%
46.479         \let\@tempa\@tempb
46.480       \else\ifx#1N%
46.481         \let\@tempa\@tempb
46.482       \else\ifx#1R%
46.483         \let\@tempa\@tempb
46.484       \else\ifx#1S%
46.485         \let\@tempa\@tempb
46.486       \else\ifx#1X%
46.487         \let\@tempa\@tempb
46.488       \else\ifx#1Y%
46.489         \let\@tempa\@tempb
46.490       \fi\fi\fi\fi\fi\fi\fi\fi
46.491     \fi
46.492   \fi}
```

`\@@az` This macro is the core of definite article handling. It determines if the argument needs ‘az’ or ‘a’ definite article by setting `\@tempa` to ‘z’ or `\@empty`. It sets `\@tempa` to ‘z’ if

- the first character of the argument is 5; or
- the first character of the argument is 1 and the *length of the number* (mod 3) = 1 (one–egy, thousand–ezer, million–egymillió, ...); or
- the first character of the argument is a, A, e, E, i, I, o, O, u, or U; or

- the first character of the argument is l, L, m, M, n, N, r, R, s, S, x, X, y, or Y and the length of the argument is 1 or the second character is a non-letter.

At the end it calls `\@tempa`, that is, it either typesets a ‘z’ or nothing.

```

46.493 \def\@az#1#2\hbox#3!{%
46.494   \let\@tempa\@empty
46.495   \def\@tempb{z}%
46.496   \uppercase{%
46.497     \ifx#1%
46.498       \let\@tempa\@tempb
46.499     \else\ifx#1%
46.500       \count@\@ne
46.501       \hun@number@lehgth#2\hbox\hbox!%
46.502     \loop
46.503       \ifnum\count@>\thr@@
46.504         \advance\count@-\thr@@
46.505       \repeat
46.506       \ifnum\count@=\@ne
46.507         \let\@tempa\@tempb
46.508       \fi
46.509     \else
46.510       \@az@string{#1}{#2}%
46.511     \fi\fi
46.512   }%
46.513   \@tempa}

```

`\refstepcounter` `\refstepcounter` must be redefined in order to keep `\@currentlabel` unexpanded. This is necessary to enable the `\label` command to write a `\hunnewlabel` command to the aux file with the Roman numerals substituted by their Arabic representations. Of course, the original definition of `\refstepcounter` is saved and restored if the Hungarian language is switched off.

```

46.514 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.515   \babel@save\refstepcounter
46.516   \def\refstepcounter#1{\stepcounter{#1}}%
46.517   \def\@currentlabel{\csname p@#1\endcsname\csname the#1\endcsname}}%
46.518 }

```

`\label` `\label` is redefined to write another line into the aux file: `\hunnewlabel{ }{ }` where the Roman numerals are replaced their Arabic representations. The original definition of `\label` is saved into `\old@label` and it is also called by `\label`. On leaving the Hungarian typesetting mode `\label`’s original is restored since it is added to `\noextrasmagyar`.

```

46.519 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.520   \let\old@label\label
46.521   \def\label#1{\@bsphack
46.522     \old@label{#1}%
46.523     \begingroup
46.524       \let\romannumeral\number
46.525       \def\@roman##1{\number ##1}%
46.526       \def\@Roman##1{\number ##1}%
46.527       {\toks0={\noexpand\noexpand\noexpand\number}}%
46.528       \def\number##1{\the\toks0 ##1}\xdef\tempb@{\thepage}}%
46.529     \edef\@tempa##1{\noexpand\protected@write\@auxout{}}%

```

```

46.530      {\noexpand\string\noexpand\hunnewlabel
46.531      {##1}{\@currentlabel}{\tempb@}}}%
46.532      \@tempa{#1}%
46.533      \endgroup
46.534      \@esphack}%
46.535  }
46.536  \expandafter\addto\csname noextras\CurrentOption\endcsname{%
46.537      \let\label\oldlabel
46.538  }

```

`\hunnewlabel` Finally, `\hunnewlabel` is defined. It checks if the label's expansion (#2) differs from that one given in the `\newlabel` command. If yes (that is, the label contains some Roman numerals), it defines the macro `\hun@r@label`, otherwise it does nothing.

```

46.539 \def\hunnewlabel#1#2{%
46.540     \def\@tempa{#2}%
46.541     \expandafter\ifx\csname r@#1\endcsname\@tempa
46.542         \relax% \message{No need for def: #1}%
46.543     \else
46.544         \global\expandafter\let\csname hun@r@#1\endcsname\@tempa%
46.545     \fi
46.546 }

```

For Hungarian the ‘ character is made active.

```

46.547 \AtBeginDocument{%
46.548     \if@filesw\immediate\write\@auxout{\catcode096=12}\fi}
46.549 \initiate@active@char{‘}
46.550 \expandafter\addto\csname extras\CurrentOption\endcsname{%
46.551     \languageshortands{magyar}%
46.552     \bbl@activate{‘}}
46.553 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
46.554     \bbl@deactivate{‘}}

```

The character sequence ‘‘ is declared as a shorthand in order to produce the opening quotation sign appropriate for Hungarian.

```

46.555 \declare@shorthand{magyar}{‘}{\glqq}

```

In Hungarian there are some long double consonants which must be hyphenated specially. For all these long double consonants (except dzzs, that is extremely very-very rare) a shortcut is defined.

```

46.556 \declare@shorthand{magyar}{‘c}{\textormath{\bbl@disc{c}{cs}}{c}}
46.557 \declare@shorthand{magyar}{‘C}{\textormath{\bbl@disc{C}{CS}}{C}}
46.558 \declare@shorthand{magyar}{‘d}{\textormath{\bbl@disc{d}{dz}}{d}}
46.559 \declare@shorthand{magyar}{‘D}{\textormath{\bbl@disc{D}{DZ}}{D}}
46.560 \declare@shorthand{magyar}{‘g}{\textormath{\bbl@disc{g}{gy}}{g}}
46.561 \declare@shorthand{magyar}{‘G}{\textormath{\bbl@disc{G}{GY}}{G}}
46.562 \declare@shorthand{magyar}{‘l}{\textormath{\bbl@disc{l}{ly}}{l}}
46.563 \declare@shorthand{magyar}{‘L}{\textormath{\bbl@disc{L}{LY}}{L}}
46.564 \declare@shorthand{magyar}{‘n}{\textormath{\bbl@disc{n}{ny}}{n}}
46.565 \declare@shorthand{magyar}{‘N}{\textormath{\bbl@disc{N}{NY}}{N}}
46.566 \declare@shorthand{magyar}{‘s}{\textormath{\bbl@disc{s}{sz}}{s}}
46.567 \declare@shorthand{magyar}{‘S}{\textormath{\bbl@disc{S}{SZ}}{S}}
46.568 \declare@shorthand{magyar}{‘t}{\textormath{\bbl@disc{t}{ty}}{t}}
46.569 \declare@shorthand{magyar}{‘T}{\textormath{\bbl@disc{T}{TY}}{T}}

```

```

46.570 \declare@shorthand{magyar}{‘z’{\textormath{\bbl@disc{z}{zs}}{z}}}
46.571 \declare@shorthand{magyar}{‘Z’{\textormath{\bbl@disc{Z}{ZS}}{Z}}}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

46.572 \ldf@finish\CurrentOption
46.573 \code

```

## 47 The Estonian language

The file `estonian.dtx`<sup>55</sup> defines the language definition macro's for the Estonian language.

This file was written as part of the TWGML project, and borrows heavily from the `babel` German and Spanish language files `germanb.ldf` and `spanish.ldf`.

Estonian has the same umlauts as German (ä, ö, ü), but in addition to this, we have also õ, and two recent characters š and ž, so we need at least two active characters. We shall use " and ~ to type Estonian accents on ASCII keyboards (in the 7-bit character world). Their use is given in table 21. These active accent

~o	\~o, (and uppercase);
"a	\"a, (and uppercase);
"o	\"o, (and uppercase);
"u	\"u, (and uppercase);
~s	\v s, (and uppercase);
~z	\v z, (and uppercase);
"	disable ligature at this position;
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word;
\-	like the old \-, but allowing hyphenation in the rest of the word;
"‘	for Estonian low left double quotes (same as German);
"’	for Estonian right double quotes;
"<	for French left double quotes (also rather popular)
">	for French right double quotes.

Table 21: The extra definitions made by `estonian.ldf`

characters behave according to their original definitions if not followed by one of the characters indicated in that table; the original quote character can be typed using the macro `\dq`.

We support also the T1 output encoding (and Cork-encoded text input). You can choose the T1 encoding by the command `\usepackage[T1]{fontenc}`. This package must be loaded before `babel`. As the standard Estonian hyphenation file `eehyph.tex` is in the Cork encoding, choosing this encoding will give you better hyphenation.

As mentioned in the Spanish style file, it may happen that some packages fail (usually in a `\message`). In this case you should change the order of the `\usepackage` declarations or the order of the style options in `\documentclass`.

### 47.1 Implementation

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

47.1 (\*code)

---

<sup>55</sup>The file described in this section has version number v1.0h and was last revised on 2005/03/30. The original author is Enn Saar, ([saar@aai.ee](mailto:saar@aai.ee)).

47.2 \LdfInit{estonian}\captionsestonian

If Estonian is not included in the format file (does not have hyphenation patterns), we shall use English hyphenation.

47.3 \ifx\l@estonian\@undefined  
 47.4 \@nopatterns{Estonian}  
 47.5 \adddialect\l@estonian0  
 47.6 \fi

Now come the commands to switch to (and from) Estonian.

`\captionsestonian` The macro `\captionsestonian` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
47.7 \addto\captionsestonian{%
47.8   \def\prefacename{Sissejuhatus}%
47.9   \def\refname{Viited}%
47.10  \def\bibname{Kirjandus}%
47.11  \def\appendixname{Lisa}%
47.12  \def\contentsname{Sisukord}%
47.13  \def\listfigurename{Joonised}%
47.14  \def\listtablename{Tabelid}%
47.15  \def\indexname{Indeks}%
47.16  \def\figurename{Joonis}%
47.17  \def\tablename{Tabel}%
47.18  \def\partname{Osa}%
47.19  \def\enclname{Lisa(d)}%
47.20  \def\ccname{Koopia(d)}%
47.21  \def\headtoname{}%
47.22  \def\pagename{Lk.}%
47.23  \def\seenname{vt.}%
47.24  \def\alsoname{vt. ka}%
47.25  \def\proofname{Korrektuur}%
47.26  \def\glossaryname{Glossary}% <-- Needs translation
47.27 }
```

These captions contain accented characters.

```
47.28 \begingroup \catcode'\active
47.29 \def\x{\endgroup
47.30 \addto\captionsestonian{%
47.31   \def\abstractname{Kokkuvõte}%
47.32   \def\chaptername{Peat"ukk}}
47.33 \x
```

`\dateestonian` The macro `\dateestonian` redefines the command `\today` to produce Estonian dates.

```
47.34 \begingroup \catcode'\active
47.35 \def\x{\endgroup
47.36   \def\month@estonian{\ifcase\month\or
47.37     jaanuar\or veebruar\or m"arts\or aprill\or mai\or juuni\or
47.38     juuli\or august\or september\or oktoober\or november\or
47.39     detsember\fi}}
47.40 \x
47.41 \def\dateestonian{%
47.42   \def\today{\number\day.\space\month@estonian
47.43     \space\number\year.\space a.}}
```

`\extrasestonian` The macro `\extrasestonian` will perform all the extra definitions needed for  
`\noextrasestonian` Estonian. The macro `\noextrasestonian` is used to cancel the actions of  
`\extrasestonian`. For Estonian, " is made active and has to be treated as 'special'  
 (~ is active already).

```
47.44 \initiate@active@char{"}
47.45 \initiate@active@char{~}
47.46 \addto\extrasestonian{\languageshorthands{estonian}}
47.47 \addto\extrasestonian{\bbl@activate{"}\bbl@activate{~}}
```

Store the original macros, and redefine accents.

```
47.48 \addto\extrasestonian{\babel@save"\umlautlow\babel@save"\~\tildelow}
```

Estonian does not use extra spaces after sentences.

```
47.49 \addto\extrasestonian{\bbl@frenchspacing}
47.50 \addto\noextrasestonian{\bbl@nonfrenchspacing}
```

`\estonianhyphenmins` For Estonian, `\lefthyphenmin` and `\righthyphenmin` are both 2.

```
47.51 \providehyphenmins{\CurrentOption}{\tw@tw@}
```

`\tildelow` The standard T<sub>E</sub>X accents are too high for Estonian typography, we have to lower  
`\gentilde` them (following the babel German style). For a detailed explanation see the file  
`\newtilde` `glyphs.dtx`.

```
\newcheck
47.52 \def\tildelow{\def\~{\protect\gentilde}}
47.53 \def\gentilde#1{\if#1o\newtilde{#1}\else\if#10\newtilde{#1}%
47.54   \else\newcheck{#1}%
47.55   \fi\fi}
47.56 \def\newtilde#1{\leavevmode\allowhyphens
47.57   {\U@D 1ex%
47.58   {\setbox\z@\hbox{\char126}\dimen@ -.45ex\advance\dimen@\ht\z@
47.59   \ifdim 1ex<\dimen@ \fontdimen5\font\dimen@ \fi}%
47.60   \accent126\fontdimen5\font\U@D #1}\allowhyphens}
47.61 \def\newcheck#1{\leavevmode\allowhyphens
47.62   {\U@D 1ex%
47.63   {\setbox\z@\hbox{\char20}\dimen@ -.45ex\advance\dimen@\ht\z@
47.64   \ifdim 1ex<\dimen@ \fontdimen5\font\dimen@ \fi}%
47.65   \accent20\fontdimen5\font\U@D #1}\allowhyphens}
```

We save the double quote character in `\dq`, and tilde in `\til`, and store the  
 original definitions of " and ~ as `\dieresis` and `\texttilde`.

```
47.66 \begingroup \catcode'\ "12
47.67 \edef\x{\endgroup
47.68   \def\noexpand\dq{"}
47.69   \def\noexpand\til{~}}
47.70 \x
47.71 \let\dieresis\"
47.72 \let\texttilde\~
```

This part follows closely `spanish.ldf`. We check the encoding and if it is T1,  
 we have to tell T<sub>E</sub>X about our redefined accents.

```
47.73 \ifx\f@encoding\bbl@t@one
47.74   \let\@umlaut\dieresis
47.75   \let\@tilde\texttilde
```



```

47.76 \DeclareTextComposite{\~}{T1}{s}{178}
47.77 \DeclareTextComposite{\~}{T1}{S}{146}
47.78 \DeclareTextComposite{\~}{T1}{z}{186}
47.79 \DeclareTextComposite{\~}{T1}{Z}{154}
47.80 \DeclareTextComposite{\"}{T1}{'}{17}
47.81 \DeclareTextComposite{\"}{T1}{'}{18}
47.82 \DeclareTextComposite{\"}{T1}{<}{19}
47.83 \DeclareTextComposite{\"}{T1}{>}{20}

```

If the encoding differs from T1, we expand the accents, enabling hyphenation beyond the accent. In this case T<sub>E</sub>X will not find all possible breaks, and we have to warn people.

```

47.84 \else
47.85 \wlog{Warning: Hyphenation would work better for the T1 encoding.}
47.86 \let\@umlaut\newumlaut
47.87 \let\@tilde\gentilde
47.88 \fi

```

Now we define the shorthands.

```

47.89 \declare@shorthand{estonian}{\a}{\textormath{"{a}}{\ddot a}}
47.90 \declare@shorthand{estonian}{\A}{\textormath{"{A}}{\ddot A}}
47.91 \declare@shorthand{estonian}{\o}{\textormath{"{o}}{\ddot o}}
47.92 \declare@shorthand{estonian}{\O}{\textormath{"{O}}{\ddot O}}
47.93 \declare@shorthand{estonian}{\u}{\textormath{"{u}}{\ddot u}}
47.94 \declare@shorthand{estonian}{\U}{\textormath{"{U}}{\ddot U}}

```

german and french quotes,

```

47.95 \declare@shorthand{estonian}{\'}{\%
47.96 \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
47.97 \declare@shorthand{estonian}{\'}{\%
47.98 \textormath{\textquotedblleft}{\mbox{\textquotedblleft}}}
47.99 \declare@shorthand{estonian}{\<}{\%
47.100 \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
47.101 \declare@shorthand{estonian}{\>}{\%
47.102 \textormath{\guillemotright}{\mbox{\guillemotright}}}
47.103 \declare@shorthand{estonian}{\~o}{\textormath{\@tilde o}{\tilde o}}
47.104 \declare@shorthand{estonian}{\~O}{\textormath{\@tilde O}{\tilde O}}
47.105 \declare@shorthand{estonian}{\~s}{\textormath{\@tilde s}{\check s}}
47.106 \declare@shorthand{estonian}{\~S}{\textormath{\@tilde S}{\check S}}
47.107 \declare@shorthand{estonian}{\~z}{\textormath{\@tilde z}{\check z}}
47.108 \declare@shorthand{estonian}{\~Z}{\textormath{\@tilde Z}{\check Z}}

```

and some additional commands:

```

47.109 \declare@shorthand{estonian}{\~}{\nobreak\-\bbl@allowhyphens}
47.110 \declare@shorthand{estonian}{\~|}{\%
47.111 \textormath{\nobreak\discretionary{-}{-}{\kern.03em}%
47.112 \allowhyphens}{}}
47.113 \declare@shorthand{estonian}{\~}{\dq}
47.114 \declare@shorthand{estonian}{\~}{\til}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

47.115 \ldf@finish{estonian}
47.116 \code

```

## 48 The Croatian language

The file `croatian.dtx`<sup>56</sup> defines all the language definition macros for the Croatian language.

For this language currently no special definitions are needed or available.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
48.1 (*code)
48.2 \LdfInit{croatian}\captionscroatian
```

When this file is read as an option, i.e. by the `\usepackage` command, `croatian` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@croatian` to see whether we have to do something here.

```
48.3 \ifx\l@croatian\undefined
48.4     \nopatterns{Croatian}
48.5     \adddialect\l@croatian0\fi
```

The next step consists of defining commands to switch to (and from) the Croatian language.

`\captionscroatian` The macro `\captionscroatian` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
48.6 \addto\captionscroatian{%
48.7   \def\prefacename{Predgovor}%
48.8   \def\refname{Literatura}%
48.9   \def\abstractname{Sa\v{z}etak}%
48.10  \def\bibname{Bibliografija}%
48.11  \def\chaptername{Poglavlje}%
48.12  \def\appendixname{Dodatak}%
48.13  \def\contentsname{Sadr\v{z}aj}%
48.14  \def\listfigurename{Popis slika}%
48.15  \def\listtablename{Popis tablica}%
48.16  \def\indexname{Indeks}%
48.17  \def\figurename{Slika}%
48.18  \def\tablename{Tablica}%
48.19  \def\partname{Dio}%
48.20  \def\enclname{Prilozi}%
48.21  \def\ccname{Kopije}%
48.22  \def\headtoname{Prima}%
48.23  \def\pagename{Stranica}%
48.24  \def\seename{Vidjeti}%
48.25  \def\alsoname{Vidjeti i}%
48.26  \def\proofname{Dokaz}%
48.27  \def\glossaryname{Kazalo}%
48.28  }%
```

`\datecroatian` The macro `\datecroatian` redefines the command `\today` to produce Croatian dates.

```
48.29 \def\datecroatian{%
48.30   \def\today{\number\day.\~\ifcase\month\or
```

---

<sup>56</sup>The file described in this section has version number v1.3l and was last revised on 2005/03/29. A contribution was made by Alan Pać (paica@cernvm.cern.ch).

```

48.31   sije\{c}nja\or velja\{c}e\or o\{z}ujka\or travnja\or svibnja\or
48.32   lipnja\or srpnja\or kolovoza\or rujna\or listopada\or studenog\or
48.33   prosinca\fi \space \number\year.}}

```

`\extrascroatian` The macro `\extrascroatian` will perform all the extra definitions needed for the Croatian language. The macro `\noextrascroatian` is used to cancel the actions of `\extrascroatian`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```

48.34 \addto\extrascroatian{}
48.35 \addto\noextrascroatian{}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

48.36 \ldf@finish{croatian}
48.37 \code

```

## 49 The Czech language

The file `czech.dtx`<sup>57</sup> defines all the language definition macros for the Czech language.

For this language `\frenchspacing` is set and two macros `\q` and `\w` for easy access to two accents are defined.

The command `\q` is used with the letters (t, d, l, and L) and adds a ' to them to simulate a 'hook' that should be there. The result looks like `ť`. The command `\w` is used to put the ring-accent which appears in ångström over the letters u and U.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

49.1 `(*code)`

49.2 `\LdfInit{czech}\captionsczech`

When this file is read as an option, i.e. by the `\usepackage` command, `czech` will be an 'unknown' language in which case we have to make it known. So we check for the existence of `\l@czec` to see whether we have to do something here.

49.3 `\ifx\l@czec\@undefined`

49.4 `\@nopatterns{Czech}`

49.5 `\adddialect\l@czec0\fi`

The next step consists of defining commands to switch to (and from) the Czech language.

`\captionsczech` The macro `\captionsczech` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```

49.6 \addto\captionsczech{%
49.7   \def\prefacename{P\v redmluva}%
49.8   \def\refname{Reference}%
49.9   \def\abstractname{Abstrakt}%
49.10  \def\bibname{Literatura}%
49.11  \def\chaptername{Kapitola}%
49.12  \def\appendixname{Dodatek}%
49.13  \def\contentsname{Obsah}%
49.14  \def\listfigurename{Seznam obr\'azk\r{u}}%
49.15  \def\listtablename{Seznam tabulek}%
49.16  \def\indexname{Index}%
49.17  \def\figurename{Obr\'azek}%
49.18  \def\tablename{Tabulka}%
49.19  \def\partname{\v{C}\'}ast}%
49.20  \def\enclname{P\v{r}\'\{i\}loha}%
49.21  \def\ccname{Na v\v{e}dom\'\{i\}:}%
49.22  \def\headtoname{Komu}%
49.23  \def\pagename{Strana}%
49.24  \def\seename{viz}%
49.25  \def\alsoname{viz tak\'e}%
49.26  \def\proofname{D\r{u}kaz}%
49.27  \def\glossaryname{Glos\'a\v{r}}%
49.28 }%
```

<sup>57</sup>The file described in this section has version number v1.3k and was last revised on 2005/03/29. Contributions were made by Milos Lokajicek (LOKAJICK@CERNVM).

`\dateczech` The macro `\dateczech` redefines the command `\today` to produce Czech dates.

```
49.29 \def\dateczech{%
49.30   \def\today{\number\day.\~\ifcase\month\or
49.31     ledna\or \unora\or b\vr}ezna\or dubna\or kv\ve}tna\or
49.32     \vc}ervna\or \vc}ervence\or srpna\or z\'a\vr}\'\{i}\or
49.33     \vr}\'\{i}jna\or listopadu\or prosince\fi
49.34     \space \number\year}}
```

`\extrasczech` The macro `\extrasczech` will perform all the extra definitions needed for the Czech language. The macro `\noextrasczech` is used to cancel the actions of `\extrasczech`. This means saving the meaning of two one-letter control sequences before defining them.

```
49.35 \addto\extrasczech{\babel@save\q\let\q\v}
49.36 \addto\extrasczech{\babel@save\w\let\w\r}
```

For Czech texts `\frenchspacing` should be in effect. We make sure this is the case and reset it if necessary.

```
49.37 \addto\extrasczech{\bbl@frenchspacing}
49.38 \addto\noextrasczech{\bbl@nonfrenchspacing}
```

`\v` L<sup>A</sup>T<sub>E</sub>X's normal `\v` accent places a caron over the letter that follows it (ö). This is not what we want for the letters d, t, l and L; for those the accent should change shape. This is achieved by the following.

```
49.39 \AtBeginDocument{%
49.40   \DeclareTextCompositeCommand{\v}{OT1}{t}{t}{%
49.41     t\kern-.23em\raise.24ex\hbox{'}}
49.42   \DeclareTextCompositeCommand{\v}{OT1}{d}{d}{%
49.43     d\kern-.13em\raise.24ex\hbox{'}}
49.44   \DeclareTextCompositeCommand{\v}{OT1}{l}{l}{\lcaron{}}
49.45   \DeclareTextCompositeCommand{\v}{OT1}{L}{L}{\Lcaron{}}}
```

`\lcaron` For the letters l and L we want to distinguish between normal fonts and monospaced `\Lcaron` fonts.

```
49.46 \def\lcaron{%
49.47   \setbox0\hbox{M}\setbox\tw@\hbox{i}%
49.48   \ifdim\wd0>\wd\tw@\relax
49.49     l\kern-.13em\raise.24ex\hbox{'}\kern-.11em%
49.50   \else
49.51     l\raise.45ex\hbox to\z@{\kern-.35em '\hss}%
49.52   \fi}
49.53 \def\Lcaron{%
49.54   \setbox0\hbox{M}\setbox\tw@\hbox{i}%
49.55   \ifdim\wd0>\wd\tw@\relax
49.56     L\raise.24ex\hbox to\z@{\kern-.28em'\hss}%
49.57   \else
49.58     L\raise.45ex\hbox to\z@{\kern-.40em '\hss}%
49.59   \fi}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
49.60 \ldf@finish{czech}
49.61 \code
```

## 50 The Polish language

The file `polish.dtx`<sup>58</sup> defines all the language-specific macros for the Polish language.

For this language the character " is made active. In table 22 an overview is given of its purpose.

"a	or \aob, for tailed-a (like ą)
"A	or \Aob, for tailed-A (like Ą)
"e	or \eob, for tailed-e (like ę)
"E	or \Eob, for tailed-E (like Ę)
"c	or \'c, for accented c (like ć), same with uppercase letters and n,o,s
"l	or \lpb{ }, for l with stroke (like ł)
"L	or \Lpb{ }, for L with stroke (like Ł)
"r	or \zkb{ }, for pointed z (like ż), cf. pronunciation
"R	or \Zkb{ }, for pointed Z (like Ż)
"z	or \'z, for accented z
"Z	or \'Z, for accented Z
"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
" "	like "-", but producing no hyphen sign (for compound words with hyphen, e.g. x-"y).
"‘	for German left double quotes (looks like „).
"’	for German right double quotes.
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).

Table 22: The extra definitions made by `polish.sty`

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the @ sign, etc.

50.1 `\*code`

50.2 `\LdfInit{polish}\captionspolish`

When this file is read as an option, i.e. by the `\usepackage` command, `polish` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@polish` to see whether we have to do something here.

50.3 `\ifx\l@polish\@undefined`

50.4 `\@nopatterns{Polish}`

50.5 `\adddialect\l@polish0\fi`

The next step consists of defining commands to switch to (and from) the Polish language.

`\captionspolish` The macro `\captionspolish` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

50.6 `\addto\captionspolish{%`

<sup>58</sup>The file described in this section has version number v1.2l and was last revised on 2005/03/31.

```

50.7 \def\prefacename{Przedmowa}%
50.8 \def\refname{Literatura}%
50.9 \def\abstractname{Streszczenie}%
50.10 \def\bibname{Bibliografia}%
50.11 \def\chaptername{Rozdzia\l}%
50.12 \def\appendixname{Dodatek}%
50.13 \def\contentsname{Spis tre\'sci}%
50.14 \def\listfigurename{Spis rysunk\'ow}%
50.15 \def\listtablename{Spis tablic}%
50.16 \def\indexname{Indeks}%
50.17 \def\figurename{Rysunek}%
50.18 \def\tablename{Tablica}%
50.19 \def\partname{Cz\`eob\}\`s\`c}%
50.20 \def\enclname{Za\l\`aob\}cznik}%
50.21 \def\ccname{Kopie:}%
50.22 \def\headtoname{Do}%
50.23 \def\pagename{Strona}%
50.24 \def\seename{Por\`ownaj}%
50.25 \def\alsoname{Por\`ownaj tak\`ze}%
50.26 \def\proofname{Dow\`od}%
50.27 \def\glossaryname{Glossary}% <-- Needs translation
50.28 }

```

`\datepolish` The macro `\datepolish` redefines the command `\today` to produce Polish dates.

```

50.29 \def\datepolish{%
50.30 \def\today{\number\day~\ifcase\month\or
50.31 stycznia\or lutego\or marca\or kwietnia\or maja\or czerwca\or lipca\or
50.32 sierpnia\or wrze\'snia\or pa\'zdziernika\or listopada\or grudnia\fi
50.33 \space\number\year}%
50.34 }

```

`\extrapolish` The macro `\extrapolish` will perform all the extra definitions needed for the Polish language. The macro `\noextrapolish` is used to cancel the actions of `\extrapolish`.

For Polish the " character is made active. This is done once, later on its definition may vary. Other languages in the same document may also use the " character for shorthands; we specify that the polish group of shorthands should be used.

```

50.35 \initiate@active@char{"}
50.36 \addto\extrapolish{\languageshorthands{polish}}
50.37 \addto\extrapolish{\bbl@activate{}}

```

Don't forget to turn the shorthands off again.

```

50.38 \addto\noextrapolish{\bbl@deactivate{}}

```

The code above is necessary because we need an extra active character. This character is then used as indicated in table 22.

If you have problems at the end of a word with a linebreak, use the other version without hyphenation tricks. Some TeX wizard may produce a better solution with forecasting another token to decide whether the character after the double quote is the last in a word. Do it and let us know.

In Polish texts some letters get special diacritical marks. Leszek Holenderski designed the following code to position the diacritics correctly for every font in every size. These macros need a few extra dimension variables.

```
50.39 \newdimen\pl@left
50.40 \newdimen\pl@down
50.41 \newdimen\pl@right
50.42 \newdimen\pl@temp
```

`\sob` The macro `\sob` is used to put the ‘ogonek’ in the right place.

```
50.43 \def\sob#1#2#3#4#5{%parameters: letter and fractions hl,ho,vl,vo
50.44 \setbox0\hbox{#1}\setbox1\hbox{$\_mathchar'454$}\setbox2\hbox{p}%
50.45 \pl@right=#2\wd0 \advance\pl@right by-#3\wd1
50.46 \pl@down=#5\ht1 \advance\pl@down by-#4\ht0
50.47 \pl@left=\pl@right \advance\pl@left by\wd1
50.48 \pl@temp=-\pl@down \advance\pl@temp by\dp2 \dp1=\pl@temp
50.49 \leavevmode
50.50 \kern\pl@right\lower\pl@down\box1\kern-\pl@left #1}
```

`\aob` The ogonek is placed with the letters ‘a’, ‘A’, ‘e’, and ‘E’.

```
\Aob50.51 \DeclareTextCommand{\aob}{OT1}{\sob a{.66}{.20}{0}{.90}}
\Eob50.52 \DeclareTextCommand{\Aob}{OT1}{\sob A{.80}{.50}{0}{.90}}
\Eob50.53 \DeclareTextCommand{\eob}{OT1}{\sob e{.50}{.35}{0}{.93}}
50.54 \DeclareTextCommand{\Eob}{OT1}{\sob E{.60}{.35}{0}{.90}}
```

For the ‘new’ T1 encoding we can provide simpler definitions.

```
50.55 \DeclareTextCommand{\aob}{T1}{\k a}
50.56 \DeclareTextCommand{\Aob}{T1}{\k A}
50.57 \DeclareTextCommand{\eob}{T1}{\k e}
50.58 \DeclareTextCommand{\Eob}{T1}{\k E}
```

Construct the characters by default from the OT1 encoding.

```
50.59 \ProvideTextCommandDefault{\aob}{\UseTextSymbol{OT1}{\aob}}
50.60 \ProvideTextCommandDefault{\Aob}{\UseTextSymbol{OT1}{\Aob}}
50.61 \ProvideTextCommandDefault{\eob}{\UseTextSymbol{OT1}{\eob}}
50.62 \ProvideTextCommandDefault{\Eob}{\UseTextSymbol{OT1}{\Eob}}
```

`\spb` The macro `\spb` is used to put the ‘poprzeczka’ in the right place.

```
50.63 \def\spb#1#2#3#4#5{%
50.64 \setbox0\hbox{#1}\setbox1\hbox{\char'023}%
50.65 \pl@right=#2\wd0 \advance\pl@right by-#3\wd1
50.66 \pl@down=#5\ht1 \advance\pl@down by-#4\ht0
50.67 \pl@left=\pl@right \advance\pl@left by\wd1
50.68 \ht1=\pl@down \dp1=-\pl@down
50.69 \leavevmode
50.70 \kern\pl@right\lower\pl@down\box1\kern-\pl@left #1}
```

`\skb` The macro `\skb` is used to put the ‘kropka’ in the right place.

```
50.71 \def\skb#1#2#3#4#5{%
50.72 \setbox0\hbox{#1}\setbox1\hbox{\char'056}%
50.73 \pl@right=#2\wd0 \advance\pl@right by-#3\wd1
50.74 \pl@down=#5\ht1 \advance\pl@down by-#4\ht0
50.75 \pl@left=\pl@right \advance\pl@left by\wd1
50.76 \leavevmode
50.77 \kern\pl@right\lower\pl@down\box1\kern-\pl@left #1}
```



`\textpl` For the ‘poprzeczka’ and the ‘kropka’ in text fonts we don’t need any special coding, but we can (almost) use what is already available.

```
50.78 \def\textpl{%
50.79   \def\lpb{\p111}%
50.80   \def\Lpb{\pLLL}%
50.81   \def\zkb{\.z}%
50.82   \def\Zkb{\.Z}}
```

Initially we assume that typesetting is done with text fonts.

```
50.83 \textpl
50.84 \let\111=\1 \let\LLL=\L
50.85 \def\p111{\111}
50.86 \def\pLLL{\LLL}
```

`\telepl` But for the ‘teletype’ font in ‘OT1’ encoding we have to take some special actions, involving the macros defined above.

```
50.87 \def\telepl{%
50.88   \def\lpb{\spb 1{.45}{.5}{.4}{.8}}%
50.89   \def\Lpb{\spb L{.23}{.5}{.4}{.8}}%
50.90   \def\zkb{\skb z{.5}{.5}{1.2}{0}}%
50.91   \def\Zkb{\skb Z{.5}{.5}{1.1}{0}}}
```

To activate these codes the font changing commands as they are defined in  $\text{\LaTeX}$  are modified. The same is done for plain  $\text{\TeX}$ ’s font changing commands.

When `\selectfont` is undefined the current format is supposed to be either plain (based) or  $\text{\LaTeX}$  2.09.

```
50.92 \ifx\selectfont@undefined
50.93   \ifx\prm@undefined \addto\rm{\textpl}\else \addto\prm{\textpl}\fi
50.94   \ifx\pit@undefined \addto\it{\textpl}\else \addto\pit{\textpl}\fi
50.95   \ifx\pbf@undefined \addto\bf{\textpl}\else \addto\pbf{\textpl}\fi
50.96   \ifx\psl@undefined \addto\sl{\textpl}\else \addto\psl{\textpl}\fi
50.97   \ifx\psf@undefined \else \addto\psf{\textpl}\fi
50.98   \ifx\psc@undefined \else \addto\psc{\textpl}\fi
50.99   \ifx\ptt@undefined \addto\tt{\telepl}\else \addto\ptt{\telepl}\fi
50.100 \else
```

When `\selectfont` exists we assume  $\text{\LaTeX}$  2 $\epsilon$ .

```
50.101 \expandafter\addto\csname selectfont \endcsname{%
50.102   \csname\fontencoding @pl\endcsname}
50.103 \fi
```

Currently we support the OT1 and T1 encodings. For T1 we don’t have to make a difference between typewriter fonts and other fonts, they all have the same glyphs.

```
50.104 \expandafter\let\csname T1@pl\endcsname\textpl
```

For OT1 we need to check the current font family, stored in `\fontfamily`. Unfortunately we need a hack as `\ttdefault` is defined as a `\long` macro, while `\fontfamily` is not.

```
50.105 \expandafter\def\csname OT1@pl\endcsname{%
50.106   \long\edef\currfontfamily{\fontfamily}%
50.107   \ifx\currfontfamily\ttdefault
50.108     \telepl
50.109   \else
50.110     \textpl
50.111   \fi}
```

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\"` can now be typed as `"`.

```
50.112 \begingroup \catcode'\12
50.113 \def\x{\endgroup
50.114 \def\dq{"}}
50.115 \x
```

Now we can define the doublequote macros for diacritics,

```
50.116 \declare@shorthand{polish}{a}{\textormath{\aob}{\ddot a}}
50.117 \declare@shorthand{polish}{A}{\textormath{\Aob}{\ddot A}}
50.118 \declare@shorthand{polish}{c}{\textormath{\c}{\acute c}}
50.119 \declare@shorthand{polish}{C}{\textormath{\C}{\acute C}}
50.120 \declare@shorthand{polish}{e}{\textormath{\eob}{\ddot e}}
50.121 \declare@shorthand{polish}{E}{\textormath{\Eob}{\ddot E}}
50.122 \declare@shorthand{polish}{l}{\textormath{\lpb}{\ddot l}}
50.123 \declare@shorthand{polish}{L}{\textormath{\Lpb}{\ddot L}}
50.124 \declare@shorthand{polish}{n}{\textormath{\n}{\acute n}}
50.125 \declare@shorthand{polish}{N}{\textormath{\N}{\acute N}}
50.126 \declare@shorthand{polish}{o}{\textormath{\o}{\acute o}}
50.127 \declare@shorthand{polish}{O}{\textormath{\O}{\acute O}}
50.128 \declare@shorthand{polish}{s}{\textormath{\s}{\acute s}}
50.129 \declare@shorthand{polish}{S}{\textormath{\S}{\acute S}}
```

`\polishrz` The command `\polishrz` defines the shorthands `"r`, `"z` and `"x` to produce pointed `z`, accented `z` and `"x`. This is the default as these shorthands were defined by this language definition file for quite some time.

```
50.130 \newcommand*{\polishrz}{%
50.131 \declare@shorthand{polish}{r}{\textormath{\zkb}{\ddot r}}%
50.132 \declare@shorthand{polish}{R}{\textormath{\Zkb}{\ddot R}}%
50.133 \declare@shorthand{polish}{z}{\textormath{\z}{\acute z}}%
50.134 \declare@shorthand{polish}{Z}{\textormath{\Z}{\acute Z}}%
50.135 \declare@shorthand{polish}{x}{\dq x}%
50.136 \declare@shorthand{polish}{X}{\dq X}%
50.137 }
50.138 \polishrz
```

The command `\polishzx` switches to a different set of shorthands, `"z`, `"x` and `"r` to produce pointed `z`, accented `z` and `"r`; a different shorthand notation also in use.

```
50.139 \newcommand*{\polishzx}{%
50.140 \declare@shorthand{polish}{z}{\textormath{\zkb}{\ddot z}}%
50.141 \declare@shorthand{polish}{Z}{\textormath{\Zkb}{\ddot Z}}%
50.142 \declare@shorthand{polish}{x}{\textormath{\z}{\acute x}}%
50.143 \declare@shorthand{polish}{X}{\textormath{\Z}{\acute X}}%
50.144 \declare@shorthand{polish}{r}{\dq r}%
50.145 \declare@shorthand{polish}{R}{\dq R}%
50.146 }
```

Then we define access to two forms of quotation marks, similar to the german and french quotation marks.

```
50.147 \declare@shorthand{polish}{"'}{%
50.148 \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
50.149 \declare@shorthand{polish}{"'}{%
```

```

50.150 \textormath{\textquotedblright}{\mbox{\textquotedblright}}
50.151 \declare@shorthand{polish}{"<}{%
50.152 \textormath{\guillemotleft}{\mbox{\guillemotleft}}
50.153 \declare@shorthand{polish}{">}{%
50.154 \textormath{\guillemotright}{\mbox{\guillemotright}}

```

then we define two shorthands to be able to specify hyphenation breakpoints that behave a little different from \-.

```

50.155 \declare@shorthand{polish}{"-}{\nobreak-\bbl@allowhyphens}
50.156 \declare@shorthand{polish}{""}{\hskip\z@skip}

```

And we want to have a shorthand for disabling a ligature.

```

50.157 \declare@shorthand{polish}{"|}{%
50.158 \textormath{\discretionary{-}{-}{\kern.03em}}{}}

```

\mdqon All that's left to do now is to define a couple of commands for reasons of compatibility with polish.tex.

```

50.159 \def\mdqon{\shorthandon{}}
50.160 \def\mdqoff{\shorthandoff{}}

```

The macro \ldf@finish takes care of looking for a configuration file, setting the main language to be switched on at \begin{document} and resetting the category code of @ to its original value.

```

50.161 \ldf@finish{polish}
50.162 \code

```

## 51 The Serbocroatian language

The file `serbian.dtx`<sup>59</sup> defines all the language definition macros for the Serbian language, typeset in a latin script. In a future version support for typesetting in a cyrillic script may be added.

For this language the character " is made active. In table 23 an overview is given of its purpose. One of the reasons for this is that in the Serbian language some special characters are used.

"c	\c, also implemented for the lowercase and uppercase s and z.
"d	\dj, also implemented for "D
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
"	disable ligature at this position
" "	like "-", but producing no hyphen sign (for compound words with hyphen, e.g. x-"y).
"‘	for Serbian left double quotes (looks like „).
"’	for Serbian right double quotes.
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).

Table 23: The extra definitions made by `serbian.ldf`

Apart from defining shorthands we need to make sure that the first paragraph of each section is intended. Furthermore the following new math operators are defined (`\tg`, `\ctg`, `\arctg`, `\arcctg`, `\sh`, `\ch`, `\th`, `\cth`, `\arsh`, `\arch`, `\arth`, `\arcth`, `\Prob`, `\Expect`, `\Variance`).

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

51.1 `\*code`

51.2 `\LdfInit{serbian}\captionsserbian`

When this file is read as an option, i.e. by the `\usepackage` command, `serbian` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@serbian` to see whether we have to do something here.

51.3 `\ifx\l@serbian\@undefined`

51.4 `\@nopatterns{Serbian}`

51.5 `\adddialect\l@serbian0\fi`

The next step consists of defining commands to switch to (and from) the Serbocroatian language.

`\captionsserbian` The macro `\captionsserbian` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

51.6 `\addto\captionsserbian{%`

51.7 `\def\prefacename{Predgovor}%`

51.8 `\def\refname{Literatura}%`

<sup>59</sup>The file described in this section has version number v1.0d and was last revised on 2005/03/31. A contribution was made by Dejan Muhamedagić ([dejan@unix.com](mailto:dejan@unix.com)).

```

51.9   \def\abstractname{Sa\{v\}etak}%
51.10  \def\bibname{Bibliografija}%
51.11  \def\chaptername{Glava}%
51.12  \def\appendixname{Dodatak}%
51.13  \def\contentsname{Sadr\{v\}aj}%
51.14  \def\listfigurename{Slike}%
51.15  \def\listtablename{Tabele}%
51.16  \def\indexname{Indeks}%
51.17  \def\figurename{Slika}%
51.18  \def\tablename{Tabela}%
51.19  \def\partname{Deo}%
51.20  \def\enclname{Prilozi}%
51.21  \def\ccname{Kopije}%
51.22  \def\headtoname{Prima}%
51.23  \def\pagename{Strana}%
51.24  \def\seename{Vidi}%
51.25  \def\alsoname{Vidi tako\{dj e\}}%
51.26  \def\proofname{Dokaz}%
51.27  \def\glossaryname{Glossary}% <-- Needs translation
51.28  }%

```

**\dateserbian** The macro **\dateserbian** redefines the command **\today** to produce Serbocroatian dates.

```

51.29 \def\dateserbian{%
51.30   \def\today{\number\day .~\ifcase\month\or
51.31     januar\or februar\or mart\or april\or maj\or
51.32     juni\or juli\or avgust\or septembar\or oktobar\or novembar\or
51.33     decembar\fi \space \number\year}}

```

**\extrasserbian** The macro **\extrasserbian** will perform all the extra definitions needed for the Serbocroatian language. The macro **\noextrasserbian** is used to cancel the actions of **\extrasserbian**.

For Serbian the " character is made active. This is done once, later on its definition may vary. Other languages in the same document may also use the " character for shorthands; we specify that the serbian group of shorthands should be used.

```

51.34 \initiate@active@char{"}
51.35 \addto\extrasserbian{\languageshorthands{serbian}}
51.36 \addto\extrasserbian{\bbl@activate{}}

```

Don't forget to turn the shorthands off again.

```

51.37 \addto\noextrasserbian{\bbl@deactivate{}}

```

First we define shorthands to facilitate the occurrence of letters such as č.

```

51.38 \declare@shorthand{serbian}{c}{\textormath{\v c}{\check c}}
51.39 \declare@shorthand{serbian}{d}{\textormath{\dj}{\dj}}%%
51.40 \declare@shorthand{serbian}{s}{\textormath{\v s}{\check s}}
51.41 \declare@shorthand{serbian}{z}{\textormath{\v z}{\check z}}
51.42 \declare@shorthand{serbian}{C}{\textormath{\v C}{\check C}}
51.43 \declare@shorthand{serbian}{D}{\textormath{\DJ}{\DJ}}%%
51.44 \declare@shorthand{serbian}{S}{\textormath{\v S}{\check S}}
51.45 \declare@shorthand{serbian}{Z}{\textormath{\v Z}{\check Z}}

```

Then we define access to two forms of quotation marks, similar to the german and french quotation marks.

```

51.46 \declare@shorthand{serbian}{"'}{%
51.47   \textormath{\quotedblbase{}}{\mbox{\quotedblbase{}}}
51.48 \declare@shorthand{serbian}{"'}{%
51.49   \textormath{\textquotedblleft{}}{\mbox{\textquotedblleft{}}}
51.50 \declare@shorthand{serbian}{"<"}{%
51.51   \textormath{\guillemotleft{}}{\mbox{\guillemotleft{}}}
51.52 \declare@shorthand{serbian}{">"}{%
51.53   \textormath{\guillemotright{}}{\mbox{\guillemotright{}}}

```

then we define two shorthands to be able to specify hyphenation breakpoints that behave a little different from \-.

```

51.54 \declare@shorthand{serbian}{"-"}{\nobreak-\bbl@allowhyphens}
51.55 \declare@shorthand{serbian}{""}{\hskip\z@skip}

```

And we want to have a shorthand for disabling a ligature.

```

51.56 \declare@shorthand{serbian}{"|"}{%
51.57   \textormath{\discretionary{-}{-}{\kern.03em}}{}}

```

`\bbl@frenchindent` In Serbian the first paragraph of each section should be indented. Add this code only in L<sup>A</sup>T<sub>E</sub>X.

```

51.58 \ifx\fmtname plain \else
51.59   \let\@aifORI\@afterindentfalse
51.60   \def\bbl@frenchindent{\let\@afterindentfalse\@afterindenttrue
51.61     \@afterindenttrue}
51.62   \def\bbl@nonfrenchindent{\let\@afterindentfalse\@aifORI
51.63     \@afterindentfalse}
51.64   \addto\extrasserbian{\bbl@frenchindent}
51.65   \addto\noextrasserbian{\bbl@nonfrenchindent}
51.66 \fi

```

`\mathserbian` Some math functions in Serbian math books have other names: e.g. `\sinh` in Serbian is written as `sh` etc. So we define a number of new math operators.

```

51.67 \def\sh{\mathop{\operator@font sh}\nolimits} % same as \sinh
51.68 \def\ch{\mathop{\operator@font ch}\nolimits} % same as \cosh
51.69 \def\th{\mathop{\operator@font th}\nolimits} % same as \tanh
51.70 \def\cth{\mathop{\operator@font cth}\nolimits} % same as \coth
51.71 \def\arsh{\mathop{\operator@font arsh}\nolimits}
51.72 \def\arch{\mathop{\operator@font arch}\nolimits}
51.73 \def\arth{\mathop{\operator@font arth}\nolimits}
51.74 \def\arcth{\mathop{\operator@font arcth}\nolimits}
51.75 \def\tg{\mathop{\operator@font tg}\nolimits} % same as \tan
51.76 \def\ctg{\mathop{\operator@font ctg}\nolimits} % same as \cot
51.77 \def\arctg{\mathop{\operator@font arctg}\nolimits} % same as \arctan
51.78 \def\arcctg{\mathop{\operator@font arcctg}\nolimits}
51.79 \def\Prob{\mathop{\mathsf P\hskip0pt}\nolimits}
51.80 \def\Expect{\mathop{\mathsf E\hskip0pt}\nolimits}
51.81 \def\Variance{\mathop{\mathsf D\hskip0pt}\nolimits}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

51.82 \ldf@finish{serbian}
51.83 \code

```

## 52 The Slovak language

The file `slovak.dtx`<sup>60</sup> defines all the language-specific macros for the Slovak language.

For this language the macro `\q` is defined. It was used with the letters (`t`, `d`, `l`, and `L`) and adds a `'` to them to simulate a ‘hook’ that should be there. The result looks like `ť`. Since the the T1 font encoding has the corresponding characters it is mapped to `\v`. Therefore we recommend using T1 font encoding. If you don’t want to use this encoding, please, feel free to redefine `\q` in your file. I think babel will honour this ;-).

For this language the characters `"`, `'` and `^` are active. In table 24 an overview is given of its purpose. Also the vertical placement of the umlaut can be controlled this way.

<code>"a</code>	<code>\"a</code> , also implemented for the other lowercase and uppercase vowels.
<code>^d</code>	<code>\q d</code> , also implemented for <code>l</code> , <code>t</code> and <code>L</code> .
<code>^c</code>	<code>\v c</code> , also implemented for <code>C</code> , <code>D</code> , <code>N</code> , <code>n</code> , <code>T</code> , <code>Z</code> and <code>z</code> .
<code>^o</code>	<code>\^o</code> , also implemented for <code>O</code> .
<code>'a</code>	<code>\'a</code> , also implemented for the other lowercase and uppercase <code>l</code> , <code>r</code> , <code>y</code> and vowels.
<code>" </code>	disable ligature at this position.
<code>"-</code>	an explicit hyphen sign, allowing hyphenation in the rest of the word.
<code>" "</code>	like <code>"-</code> , but producing no hyphen sign (for compound words with hyphen, e.g. <code>x-" "y</code> ).
<code>"~</code>	for a compound word mark without a breakpoint.
<code>"=</code>	for a compound word mark with a breakpoint, allowing hyphenation in the composing words.
<code>"‘</code>	for German left double quotes (looks like <code>„</code> ).
<code>"’</code>	for German right double quotes.
<code>"&lt;</code>	for French left double quotes (similar to <code>&lt;&lt;</code> ).
<code>"&gt;</code>	for French right double quotes (similar to <code>&gt;&gt;</code> ).

Table 24: The extra definitions made by `slovak.ldf`

The quotes in table 24 can also be typeset by using the commands in table 25.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

52.1 `\*code`

52.2 `\LdfInit{slovak}\captionsslovak`

When this file is read as an option, i.e. by the `\usepackage` command, `slovak` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@slovak` to see whether we have to do something here.

52.3 `\ifx\l@slovak\undefined`

---

<sup>60</sup>The file described in this section has version number v1.3a and was last revised on 2005/03/31. It was written by Jana Chlebková ([chlebk@euromath.dk](mailto:chlebk@euromath.dk)) and modified by Tobias Schlemmer ([Tobias.Schlemmer@web.de](mailto:Tobias.Schlemmer@web.de)).

<code>\glqq</code>	for German left double quotes (looks like „).
<code>\grqq</code>	for German right double quotes (looks like “).
<code>\glq</code>	for German left single quotes (looks like ,).
<code>\grq</code>	for German right single quotes (looks like ‘).
<code>\flqq</code>	for French left double quotes (similar to <<).
<code>\frqq</code>	for French right double quotes (similar to >>).
<code>\flq</code>	for (French) left single quotes (similar to <).
<code>\frq</code>	for (French) right single quotes (similar to >).
<code>\dq</code>	the original quotes character (").
<code>\sq</code>	the original single quote (').

Table 25: More commands which produce quotes, defined by `slovak.ldf`

```
52.4 \nopatterns{Slovak}
52.5 \adddialect\l@slovak0\fi
```

The next step consists of defining commands to switch to (and from) the Slovak language.

`\captionsslovak` The macro `\captionsslovak` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
52.6 \addto\captionsslovak{%
52.7 \def\prefacename{\'Uvod}%
52.8 \def\refname{Referencie}%
52.9 \def\abstractname{Abstrakt}%
52.10 \def\bibname{Literat\'ura}%
52.11 \def\chaptername{Kapitola}%
52.12 \def\appendixname{Dodatok}%
52.13 \def\contentsname{Obsah}%
52.14 \def\listfigurename{Zoznam obr\'azkov}%
52.15 \def\listtablename{Zoznam tabuliek}%
52.16 \def\indexname{Index}%
52.17 \def\figurename{Obr\'azok}%
52.18 \def\tablename{Tabuľka}%% special letter l with hook
52.19 \def\partname{\v{C}asť}%% special letter t with hook
52.20 \def\enclname{Prílohy}%
52.21 \def\ccname{CC}%
52.22 \def\headtoname{Komu}%
52.23 \def\pagename{Strana}%
52.24 \def\seenname{viď}%% Special letter d with hook
52.25 \def\alsosome{viďtiev z}%% Special letter d with hook
52.26 \def\proofname{Dôkaz}%
52.27 \def\glossaryname{Glossary}% <-- Needs translation
52.28 }
```

`\dateslovak` The macro `\dateslovak` redefines the command `\today` to produce Slovak dates.

```
52.29 \def\dateslovak{%
52.30 \def\today{\number\day.\~\ifcase\month\or
52.31 janu\'ara\or febru\'ara\or marca\or apr\'ila\or m\'aja\or
52.32 j\'una\or j\'ula\or augusta\or septembra\or okt\'obra\or
52.33 novembra\or decembra\fi}
```



52.34 `\space \number\year}}`

`\extrasslovak` The macro `\extrasslovak` will perform all the extra definitions needed for the Slovak language. The macro `\noextrasslovak` is used to cancel the actions of `\extrasslovak`. For Slovak three characters are used to define shorthands, they need to be made active.

```
52.35 \addto\extrasslovak{\languageshorthands{slovak}}
52.36 \initiate@active@char{~}
52.37 \addto\extrasslovak{\bbl@activate{~}}
52.38 \addto\noextrasslovak{\bbl@deactivate{~}}
52.39 \initiate@active@char{"}
52.40 \addto\extrasslovak{\bbl@activate{"}\umlautlow}
52.41 \addto\noextrasslovak{\bbl@deactivate{"}\umlauthigh}
52.42 \initiate@active@char{'}
52.43 \@ifpackagewith{babel}{activeacute}{%
52.44   \addto\extrasslovak{\bbl@activate{'}}
52.45   \addto\noextrasslovak{\bbl@deactivate{'}}}%
52.46 }{}
```

52.47 `\addto\extrasslovak{\babel@save\q\let\q\v}`

The slovak hyphenation patterns should be used with `\lefthyphenmin` set to 2 and `\righthyphenmin` set to 2.

52.48 `\providehyphenmins{\CurrentOption}{\tw@}\tw@}`

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\"` can now be typed as `"`.

```
52.49 \begingroup \catcode'\12
52.50 \def\x{\endgroup
52.51   \def\squ{'}
52.52   \def\dq{"}}
52.53 \x
```

In order to prevent problems with the active `~` we add a shorthand on system level which expands to a ‘normal `~`’.

52.54 `\declare@shorthand{system}{~}{\csname normal@char\string~\endcsname}`

Now we can define the doublequote macros: the umlauts,

```
52.55 \declare@shorthand{slovak}{a}{\textormath{"a\allowhyphens}{\ddot a}}
52.56 \declare@shorthand{slovak}{o}{\textormath{"o\allowhyphens}{\ddot o}}
52.57 \declare@shorthand{slovak}{u}{\textormath{"u\allowhyphens}{\ddot u}}
52.58 \declare@shorthand{slovak}{A}{\textormath{"A\allowhyphens}{\ddot A}}
52.59 \declare@shorthand{slovak}{O}{\textormath{"O\allowhyphens}{\ddot O}}
52.60 \declare@shorthand{slovak}{U}{\textormath{"U\allowhyphens}{\ddot U}}
```

tremas,

```
52.61 \declare@shorthand{slovak}{e}{\textormath{"e\allowhyphens}{\ddot e}}
52.62 \declare@shorthand{slovak}{E}{\textormath{"E\allowhyphens}{\ddot E}}
52.63 \declare@shorthand{slovak}{i}{\textormath{"i\allowhyphens}{%
52.64   {\ddot\imath}}}
52.65 \declare@shorthand{slovak}{I}{\textormath{"I\allowhyphens}{\ddot I}}
```

other slovak characters

52.66 `\declare@shorthand{slovak}{^c}{\textormath{\v{c}\allowhyphens}{\check{c}}}`

```

52.67 \declare@shorthand{slovak}{^d}{\textormath{\q{d}\allowhyphens}{\check{d}}}}
52.68 \declare@shorthand{slovak}{^l}{\textormath{\q{l}\allowhyphens}{\check{l}}}}
52.69 \declare@shorthand{slovak}{^n}{\textormath{\v{n}\allowhyphens}{\check{n}}}}
52.70 \declare@shorthand{slovak}{^o}{\textormath{\^o\allowhyphens}{\hat{o}}}}
52.71 \declare@shorthand{slovak}{^s}{\textormath{\v{s}\allowhyphens}{\check{s}}}}
52.72 \declare@shorthand{slovak}{^t}{\textormath{\q{t}\allowhyphens}{\check{t}}}}
52.73 \declare@shorthand{slovak}{^z}{\textormath{\v{z}\allowhyphens}{\check{z}}}}
52.74 \declare@shorthand{slovak}{^C}{\textormath{\v{C}\allowhyphens}{\check{C}}}}
52.75 \declare@shorthand{slovak}{^D}{\textormath{\v{D}\allowhyphens}{\check{D}}}}
52.76 \declare@shorthand{slovak}{^L}{\textormath{\q{L}\allowhyphens}{\check{L}}}}
52.77 \declare@shorthand{slovak}{^N}{\textormath{\v{N}\allowhyphens}{\check{N}}}}
52.78 \declare@shorthand{slovak}{^O}{\textormath{\^O\allowhyphens}{\hat{O}}}}
52.79 \declare@shorthand{slovak}{^S}{\textormath{\v{S}\allowhyphens}{\check{S}}}}
52.80 \declare@shorthand{slovak}{^T}{\textormath{\v{T}\allowhyphens}{\check{T}}}}
52.81 \declare@shorthand{slovak}{^Z}{\textormath{\v{Z}\allowhyphens}{\check{Z}}}}

acute accents,
52.82 \@ifpackagewith{babel}{activeacute}{%
52.83 \declare@shorthand{slovak}{^a}{\textormath{\^a\allowhyphens}{\^{\prime}a}}
52.84 \declare@shorthand{slovak}{^e}{\textormath{\^e\allowhyphens}{\^{\prime}e}}
52.85 \declare@shorthand{slovak}{^i}{\textormath{\^i\allowhyphens}{\^{\prime}i}}
52.86 \declare@shorthand{slovak}{^l}{\textormath{\^l\allowhyphens}{\^{\prime}l}}
52.87 \declare@shorthand{slovak}{^o}{\textormath{\^o\allowhyphens}{\^{\prime}o}}
52.88 \declare@shorthand{slovak}{^r}{\textormath{\^r\allowhyphens}{\^{\prime}r}}
52.89 \declare@shorthand{slovak}{^u}{\textormath{\^u\allowhyphens}{\^{\prime}u}}
52.90 \declare@shorthand{slovak}{^y}{\textormath{\^y\allowhyphens}{\^{\prime}y}}
52.91 \declare@shorthand{slovak}{^A}{\textormath{\^A\allowhyphens}{\^{\prime}A}}
52.92 \declare@shorthand{slovak}{^E}{\textormath{\^E\allowhyphens}{\^{\prime}E}}
52.93 \declare@shorthand{slovak}{^I}{\textormath{\^I\allowhyphens}{\^{\prime}I}}
52.94 \declare@shorthand{slovak}{^L}{\textormath{\^L\allowhyphens}{\^{\prime}l}}
52.95 \declare@shorthand{slovak}{^O}{\textormath{\^O\allowhyphens}{\^{\prime}O}}
52.96 \declare@shorthand{slovak}{^R}{\textormath{\^R\allowhyphens}{\^{\prime}R}}
52.97 \declare@shorthand{slovak}{^U}{\textormath{\^U\allowhyphens}{\^{\prime}U}}
52.98 \declare@shorthand{slovak}{^Y}{\textormath{\^Y\allowhyphens}{\^{\prime}Y}}
52.99 \declare@shorthand{slovak}{^'}{}}
52.100 \textormath{\textquotedblright}{\sp\bgroup\prim@s'}}
52.101 }{}

```

german and french quotes,

```

52.102 \declare@shorthand{slovak}{"'}{\glqq}
52.103 \declare@shorthand{slovak}{"'}{\grqq}
52.104 \declare@shorthand{slovak}{"<"}{\flqq}
52.105 \declare@shorthand{slovak}{">"}{\frqq}

```

and some additional commands:

```

52.106 \declare@shorthand{slovak}{-}{\nobreak\-\bbl@allowhyphens}
52.107 \declare@shorthand{slovak}{"|}{%
52.108 \textormath{\penalty\@M\discretionary{-}{-}{\kern.03em}%
52.109 \bbl@allowhyphens}{}}
52.110 \declare@shorthand{slovak}{""}{\hskip\z@skip}
52.111 \declare@shorthand{slovak}{~}{\textormath{\leavevmode\hbox{-}{-}}}}
52.112 \declare@shorthand{slovak}{=}{\nobreak-\hskip\z@skip}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

52.113 \ldf@finish{slovak}  
52.114 </code>

## 53 The Slovenian language

The file `slovene.dtx`<sup>61</sup> defines all the language-specific macros for the Slovenian language.

For this language the character " is made active. In table 26 an overview is given of its purpose. One of the reasons for this is that in the Slovene language some special characters are used.

"c	\ "c, also implemented for the lowercase and uppercase s and z.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
""	like "-", but producing no hyphen sign (for compound words with hyphen, e.g. x-"y).
"‘	for Slovene left double quotes (looks like „).
"’	for Slovene right double quotes.
"<	for French left double quotes (similar to <<).
">	for French right double quotes (similar to >>).

Table 26: The extra definitions made by `slovene.ldf`

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the @ sign, etc.

53.1 `<*code>`

53.2 `\LdfInit{slovene}\captionsslovene`

When this file is read as an option, i.e. by the `\usepackage` command, `slovene` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@slovene` to see whether we have to do something here.

53.3 `\ifx\l@slovene\@undefined`

53.4 `\@nopatterns{Slovene}`

53.5 `\adddialect\l@slovene0\fi`

The next step consists of defining commands to switch to the Slovenian language. The reason for this is that a user might want to switch back and forth between languages.

`\captionsslovene` The macro `\captionsslovene` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

53.6 `\addto\captionsslovene{%`

53.7 `\def\prefacename{Predgovor}%`

53.8 `\def\refname{Literatura}%`

53.9 `\def\abstractname{Povzetek}%`

53.10 `\def\bibname{Literatura}%`

53.11 `\def\chaptername{Poglavje}%`

53.12 `\def\appendixname{Dodatek}%`

53.13 `\def\contentsname{Kazalo}%`

<sup>61</sup>The file described in this section has version number v1.2m and was last revised on 2005/03/31. Contributions were made by Danilo Zavrtanik, University of Ljubljana (YU) and Leon Zlajpah (leon.zlajpah@ijs.si).

```

53.14 \def\listfigurename{Slike}%
53.15 \def\listtablename{Tabele}%
53.16 \def\indexname{Stvarno kazalo}% used to be Indeks
53.17 \def\figurename{Slika}%
53.18 \def\tablename{Tabela}%
53.19 \def\partname{Del}%
53.20 \def\enclname{Priloge}%
53.21 \def\ccname{Kopije}%
53.22 \def\headtoname{Prejme}%
53.23 \def\pagename{Stran}%
53.24 \def\seename{glej}%
53.25 \def\alsoname{glej tudi}%
53.26 \def\proofname{Dokaz}%
53.27 \def\glossaryname{Glossary}% <-- Needs translation
53.28 }%

```

`\dateslovene` The macro `\dateslovene` redefines the command `\today` to produce Slovenian dates.

```

53.29 \def\dateslovene{%
53.30   \def\today{\number\day.\~\ifcase\month\or
53.31     januar\or februar\or marec\or april\or maj\or junij\or
53.32     julij\or avgust\or september\or oktober\or november\or december\fi
53.33     \space \number\year}}

```

`\extrasslovene` The macro `\extrasslovene` performs all the extra definitions needed for the Slovenian language. The macro `\noextrasslovene` is used to cancel the actions of `\extrasslovene`.

For Slovene the " character is made active. This is done once, later on its definition may vary. Other languages in the same document may also use the " character for shorthands; we specify that the slovenian group of shorthands should be used.

```

53.34 \initiate@active@char{"}
53.35 \addto\extrasslovene{\languageshorthands{slovene}}
53.36 \addto\extrasslovene{\bbl@activate{}}

```

Don't forget to turn the shorthands off again.

```

53.37 \addto\noextrasslovene{\bbl@deactivate{}}

```

First we define shorthands to facilitate the occurrence of letters such as č.

```

53.38 \declare@shorthand{slovene}{c}{\textormath{\v c}{\check c}}
53.39 \declare@shorthand{slovene}{s}{\textormath{\v s}{\check s}}
53.40 \declare@shorthand{slovene}{z}{\textormath{\v z}{\check z}}
53.41 \declare@shorthand{slovene}{C}{\textormath{\v C}{\check C}}
53.42 \declare@shorthand{slovene}{S}{\textormath{\v S}{\check S}}
53.43 \declare@shorthand{slovene}{Z}{\textormath{\v Z}{\check Z}}

```

Then we define access to two forms of quotation marks, similar to the german and french quotation marks.

```

53.44 \declare@shorthand{slovene}{"'}{%
53.45   \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
53.46 \declare@shorthand{slovene}{"'}{%
53.47   \textormath{\textquotedblleft}{\mbox{\textquotedblleft}}}
53.48 \declare@shorthand{slovene}{"<}{%
53.49   \textormath{\guillemotleft}{\mbox{\guillemotleft}}}

```

```

53.50 \declare@shorthand{slovene}{">}{%
53.51   \textormath{\guillemotright}{\mbox{\guillemotright}}}
    then we define two shorthands to be able to specify hyphenation breakpoints that
    behave a little different from \-.
53.52 \declare@shorthand{slovene}{"-}{\nobreak-\bbl@allowhyphens}
53.53 \declare@shorthand{slovene}{""}{\hskip\z@skip}
    And we want to have a shorthand for disabling a ligature.
53.54 \declare@shorthand{slovene}{"}{ }{%
53.55   \textormath{\discretionary{-}{ }{\kern.03em}}{ }}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

53.56 \ldf@finish{slovene}
53.57 \code

```

## 54 The Russian language

The file `russianb.dtx`<sup>62</sup> defines all the language-specific macros for the Russian language. It needs the file `cyrnod` for success documentation with Russian encodings (see below).

For this language the character " is made active. In table 27 an overview is given of its purpose.

"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
"---	Cyrillic emdash in plain text.
"--~	Cyrillic emdash in compound names (surnames).
"--*	Cyrillic emdash for denoting direct speech.
" "	like "-", but producing no hyphen sign (for compound words with hyphen, e.g. x-"y or some other signs as "disable/enable").
"~	for a compound word mark without a breakpoint.
"=	for a compound word mark with a breakpoint, allowing hyphenation in the composing words.
" ,	thinspace for initials with a breakpoint in following surname.
"‘	for German left double quotes (looks like „).
"’	for German right double quotes (looks like “).
"<<	for French left double quotes (looks like <<).
">>	for French right double quotes (looks like >>).

Table 27: The extra definitions made by `russianb`

The quotes in table 27 can also be typeset by using the commands in table 28.

<code>\cdash---</code>	Cyrillic emdash in plain text.
<code>\cdash--~</code>	Cyrillic emdash in compound names (surnames).
<code>\cdash--*</code>	Cyrillic emdash for denoting direct speech.
<code>\glqq</code>	for German left double quotes (looks like „).
<code>\grqq</code>	for German right double quotes (looks like “).
<code>" \flqq</code>	for French left double quotes (looks like <<).
<code>\frqq</code>	for French right double quotes (looks like >>).
<code>\dq</code>	the original quotes character (").

Table 28: More commands which produce quotes, defined by `babel`

The French quotes are also available as ligatures ‘<<’ and ‘>>’ in 8-bit Cyrillic font encodings (LCY, X2, T2\*) and as ‘<’ and ‘>’ characters in 7-bit Cyrillic font encodings (OT2 and LWN).

<sup>62</sup>The file described in this section has version number ? and was last revised on ?. This file was initially derived from the original version of `german.sty`, which has some definitions for Russian. Later the definitions from `russian.sty` version 1.0b (for L<sup>A</sup>T<sub>E</sub>X 2.09), `russian.sty` version v2.5c (for L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>) and `francais.sty` version 4.5c and `germanb.sty` version 2.5c were added.

The quotation marks traditionally used in Russian were borrowed from other languages (e.g., French and German) so they keep their original names.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
54.1 \*code)
54.2 \LdfInit{russian}{captionsrussian}
```

When this file is read as an option, i.e., by the `\usepackage` command, `russianb` will be an ‘unknown’ language, in which case we have to make it known. So we check for the existence of `\l@russian` to see whether we have to do something here.

```
54.3 \ifx\l@russian\@undefined
54.4   \@nopatterns{Russian}
54.5   \adddialect\l@russian0
54.6 \fi
```

`\latinencoding` We need to know the encoding for text that is supposed to be which is active at the end of the `babel` package. If the `fontenc` package is loaded later, then... too bad!

```
54.7 \let\latinencoding\cf@encoding
```

The user may choose between different available Cyrillic encodings—e.g., `X2`, `LCY`, or `LWN`. Hopefully, `X2` will eventually replace the two latter encodings (`LCY` and `LWN`). If the user wants to use another font encoding than the default (`T2A`), he has to load the corresponding file *before* `russianb.sty`. This may be done in the following way:

```
% override the default X2 encoding used in Babel
\usepackage[LCY,OT1]{fontenc}
\usepackage[english,russian]{babel}
```

Note: for the Russian language, the `T2A` encoding is better than `X2`, because `X2` does not contain Latin letters, and users should be very careful to switch the language every time they want to typeset a Latin word inside a Russian phrase or vice versa.

We parse the `\cdp@list` containing the encodings known to  $\text{\LaTeX}$  in the order they were loaded. We set the `\cyrillicencoding` to the *last* loaded encoding in the list of supported Cyrillic encodings: `OT2`, `LWN`, `LCY`, `X2`, `T2C`, `T2B`, `T2A`, if any.

```
54.8 \def\reserved@a#1#2{%
54.9   \edef\reserved@b{#1}%
54.10  \edef\reserved@c{#2}%
54.11  \ifx\reserved@b\reserved@c
54.12    \let\cyrillicencoding\reserved@c
54.13  \fi}
54.14 \def\cdp@elt#1#2#3#4{%
54.15   \reserved@a{#1}{OT2}%
54.16   \reserved@a{#1}{LWN}%
54.17   \reserved@a{#1}{LCY}%
54.18   \reserved@a{#1}{X2}%
54.19   \reserved@a{#1}{T2C}%
54.20   \reserved@a{#1}{T2B}%
54.21   \reserved@a{#1}{T2A}}
54.22 \cdp@list
```



Now, if `\cyrillicencoding` is undefined, then the user did not load any of supported encodings. So, we have to set `\cyrillicencoding` to some default value. We test the presence of the encoding definition files in the order from less preferable to more preferable encodings. We use the lowercase names (i.e., `lcyenc.def` instead of `LCYenc.def`).

```

54.23 \ifx\cyrillicencoding\undefined
54.24   \IfFileExists{ot2enc.def}{\def\cyrillicencoding{OT2}}\relax
54.25   \IfFileExists{lwnenc.def}{\def\cyrillicencoding{LWN}}\relax
54.26   \IfFileExists{lcyenc.def}{\def\cyrillicencoding{LCY}}\relax
54.27   \IfFileExists{x2enc.def}{\def\cyrillicencoding{X2}}\relax
54.28   \IfFileExists{t2cenc.def}{\def\cyrillicencoding{T2C}}\relax
54.29   \IfFileExists{t2benc.def}{\def\cyrillicencoding{T2B}}\relax
54.30   \IfFileExists{t2aenc.def}{\def\cyrillicencoding{T2A}}\relax

```

If `\cyrillicencoding` is still undefined, then the user seems not to have a properly installed distribution. A fatal error.

```

54.31   \ifx\cyrillicencoding\undefined
54.32     \PackageError{babel}%
54.33       {No Cyrillic encoding definition files were found}%
54.34       {Your installation is incomplete.\MessageBreak
54.35         You need at least one of the following files:\MessageBreak
54.36         \space\space
54.37         x2enc.def, t2aenc.def, t2benc.def, t2cenc.def,\MessageBreak
54.38         \space\space
54.39         lcyenc.def, lwnenc.def, ot2enc.def.}%
54.40   \else

```

We avoid `\usepackage[\cyrillicencoding]{fontenc}` because we don't want to force the switch of `\encodingdefault`.

```

54.41     \lowercase
54.42     \expandafter{\expandafter\input\cyrillicencoding enc.def\relax}%
54.43   \fi
54.44 \fi

```

```

\PackageInfo{babel}
{Using ‘\cyrillicencoding’ as a default Cyrillic encoding}%

```

```

54.45 \DeclareRobustCommand{\Russian}{%
54.46   \fontencoding\cyrillicencoding\selectfont
54.47   \let\encodingdefault\cyrillicencoding
54.48   \expandafter\set@hyphenmins\russianhyphenmins
54.49   \language\l@russian}%
54.50 \DeclareRobustCommand{\English}{%
54.51   \fontencoding\latinencoding\selectfont
54.52   \let\encodingdefault\latinencoding
54.53   \expandafter\set@hyphenmins\englishhyphenmins
54.54   \language\l@english}%
54.55 \let\Rus\Russian
54.56 \let\Eng\English
54.57 \let\cyrillictext\Russian
54.58 \let\cyr\Russian

```

Since the X2 encoding does not contain Latin letters, we should make some redefinitions of  $\LaTeX$  macros which implicitly produce Latin letters.

```
54.59 \expandafter\ifx\curname T@X2\endcurname\relax\else
```

We put `\latinencoding` in braces to avoid problems with `\@alph` inside minipages (e.g., footnotes inside minipages) where `\@alph` is expanded and we get for example `'\fontencoding OT1'` (`\fontencoding` is robust).

```
54.60 \def\@alph#1{\fontencoding{\latinencoding}\selectfont
54.61 \ifcase#1\or
54.62 a\or b\or c\or d\or e\or f\or g\or h\or
54.63 i\or j\or k\or l\or m\or n\or o\or p\or
54.64 q\or r\or s\or t\or u\or v\or w\or x\or
54.65 y\or z\else\@ctrerr\fi}}%
54.66 \def\@Alph#1{\fontencoding{\latinencoding}\selectfont
54.67 \ifcase#1\or
54.68 A\or B\or C\or D\or E\or F\or G\or H\or
54.69 I\or J\or K\or L\or M\or N\or O\or P\or
54.70 Q\or R\or S\or T\or U\or V\or W\or X\or
54.71 Y\or Z\else\@ctrerr\fi}}%
```

Unfortunately, the commands `\AA` and `\aa` are not encoding dependent in  $\text{\LaTeX}$  (unlike e.g., `\oe` or `\DH`). They are defined as `\r{A}` and `\r{a}`. This leads to unpredictable results when the font encoding does not contain the Latin letters 'A' and 'a' (like X2).

```
54.72 \DeclareTextSymbolDefault{\AA}{OT1}
54.73 \DeclareTextSymbolDefault{\aa}{OT1}
54.74 \DeclareTextCommand{\aa}{OT1}{\r a}
54.75 \DeclareTextCommand{\AA}{OT1}{\r A}
54.76 \fi
```

The following block redefines the character class of uppercase Greek letters and some accents, if it is equal to 7 (variable family), to avoid incorrect results if the font encoding in some math family does not contain these characters in places of OT1 encoding. The code was taken from `amsmath.dtx`. See comments and further explanation there.

```
54.77 % \begingroup\catcode'\="12
54.78 % % uppercase greek letters:
54.79 % \def\@tempa#1{\expandafter\@tempb\meaning#1\relax\relax\relax\relax
54.80 % "0000\@nil#1}
54.81 % \def\@tempb#1"#2#3#4#5#6\@nil#7{%
54.82 % \ifnum"#2=7 \count@"1#3#4#5\relax
54.83 % \ifnum\count@<"1000 \else \global\mathchardef#7="0#3#4#5\relax \fi
54.84 % \fi}
54.85 % \@tempa\Gamma\@tempa\Delta\@tempa\Theta\@tempa\Lambda\@tempa\Xi
54.86 % \@tempa\Pi\@tempa\Sigma\@tempa\Upsilon\@tempa\Phi\@tempa\Psi
54.87 % \@tempa\Omega
54.88 % % some accents:
54.89 % \def\@tempa#1#2\@nil{\def\@tempc{#1}}\def\@tempb{\mathaccent}
54.90 % \expandafter\@tempa\hat\relax\relax\@nil
54.91 % \ifx\@tempb\@tempc
54.92 % \def\@tempa#1\@nil{#1}%
54.93 % \def\@tempb#1{\afterassignment\@tempa\mathchardef\@tempc}%
54.94 % \def\do#1"#2{}
54.95 % \def\@tempd#1{\expandafter\@tempb#1\@nil
54.96 % \ifnum\@tempc>"FFF
54.97 % \xdef#1{\mathaccent"\expandafter\do\meaning\@tempc\space}%
```

```

54.98 %      \fi}
54.99 %      \@tempd\hat\@tempd\check\@tempd\tilde\@tempd\acute\@tempd\grave
54.100 %      \@tempd\dot\@tempd\ddot\@tempd\breve\@tempd\bar
54.101 % \fi
54.102 % \endgroup

```

The user should use the `inputenc` package when any 8-bit Cyrillic font encoding is used, selecting one of the Cyrillic input encodings. We do not assume any default input encoding, so the user should explicitly call the `inputenc` package by `\usepackage{inputenc}`. We also removed `\AtBeginDocument`, so `inputenc` should be used before `babel`.

```

54.103 \@ifpackageloaded{inputenc}{}{%
54.104   \def\reserved@a{LWN}%
54.105   \ifx\reserved@a\cyrillicencoding\else
54.106     \def\reserved@a{OT2}%
54.107     \ifx\reserved@a\cyrillicencoding\else
54.108       \PackageWarning{babel}%
54.109         {No input encoding specified for Russian language}
54.110     \fi\fi}

```

Now we define two commands that offer the possibility to switch between Cyrillic and Roman encodings.

`\cyrillictext` The command `\cyrillictext` will switch from Latin font encoding to the Cyrillic font encoding, the command `\latintext` switches back. This assumes that the ‘normal’ font encoding is a Latin one. These commands are *declarations*, for shorter peaces of text the commands `\textlatin` and `\textcyrillic` can be used.

```

54.111 %\DeclareRobustCommand{\latintext}{%
54.112 %  \fontencoding{\latinencoding}\selectfont
54.113 %  \def\encodingdefault{\latinencoding}}
54.114 \let\lat\latintext

```

`\textcyrillic` These commands take an argument which is then typeset using the requested font encoding.

```

54.115 \DeclareTextFontCommand{\textcyrillic}{\cyrillictext}
54.116 %\DeclareTextFontCommand{\textlatin}{\latintext}

```

We make the T<sub>E</sub>X

```

54.117 %\ifx\ltxTeX\undefined\let\ltxTeX\TeX\fi
54.118 %\ProvideTextCommandDefault{\TeX}{\textlatin{\ltxTeX}}

```

and L<sup>A</sup>T<sub>E</sub>X logos encoding independent.

```

54.119 %\ifx\ltxLaTeX\undefined\let\ltxLaTeX\LaTeX\fi
54.120 %\ProvideTextCommandDefault{\LaTeX}{\textlatin{\ltxLaTeX}}

```

The next step consists of defining commands to switch to (and from) the Russian language.

`\captionsrussian` The macro `\captionsrussian` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X. The two commands `\cyr` and `\lat` activate Cyrillic resp. Latin encoding.

```

54.121 \addto\captionsrussian{%
54.122 %   FIXME: Where is the \prefacename used?

```

```

54.123 \def\prefacename{%
54.124     {\cyr\CYRP\cyrr\cyre\cyrd\cyri\cyrs\cyrl\cyro\cyrv\cyri\cyre}}%
54.125 %     {\cyr\CYRV\cyrv\cyre\cyrd\cyre\cyrn\cyri\cyre}}%
54.126 \def\refname{%
54.127     {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk
54.128         \ \cyrl\cyri\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyrery}}%
54.129 % \def\refname{%
54.130 %     {\cyr\CYRL\cyri\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyra}}%
54.131 \def\abstractname{%
54.132     {\cyr\CYRA\cyrn\cyrn\cyro\cyrt\cyra\cyrc\cyri\cyrya}}%
54.133 \def\bibName{%
54.134     {\cyr\CYRL\cyri\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyra}}%
54.135 % \def\bibName{%
54.136 %     {\cyr\CYRB\cyri\cyrb\cyrl\cyri\cyro
54.137 %         \cyrg\cyrr\cyra\cyrf\cyri\cyrya}}%
54.138 % for reports according to GOST:
54.139 % \def\bibName{%
54.140 %     {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk
54.141 %         \ \cyri\cyrs\cyrp\cyro\cyrl\cyrsftsn\cyrz\cyro\cyrv\cyra\cyrn
54.142 %         \cyrn\cyrery\cyrh\ \cyri\cyrs\cyrt\cyro\cyrch\cyrn\cyri
54.143 %         \cyrk\cyro\cyrv}}%
54.144 \def\chaptername{{\cyr\CYRG\cyrl\cyra\cyrv\cyra}}%
54.145 % \@ifundefined{chapter}{%
54.146 %     \def\chaptername{{\cyr\CYRG\cyrl\cyra\cyrv\cyra}}}%
54.147 \def\appendixname{%
54.148     {\cyr\CYRP\cyrr\cyri\cyrl\cyro\cyrz\cyre\cyrn\cyri\cyre}}%

```

There are two names for the Table of Contents that are used in Russian publications. For books (and reports) the second variant is appropriate, but for proceedings the first variant is preferred:

```

54.149 \@ifundefined{thechapter}%
54.150     {\def\contentsname{%
54.151         {\cyr\CYRS\cyro\cyrd\cyre\cyrr\cyrz\cyra\cyrn\cyri\cyre}}}%
54.152     {\def\contentsname{%
54.153         {\cyr\CYRO\cyrg\cyrl\cyra\cyrv\cyrl\cyre\cyrn\cyri\cyre}}}%
54.154 \def\listfigurename{%
54.155     {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk
54.156         \ \cyri\cyrl\cyrl\cyryu\cyrs\cyrt\cyrr\cyra\cyrc\cyri\cyrishrt}}%
54.157 % \def\listfigurename{%
54.158 %     {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk
54.159 %         \ \cyrr\cyri\cyrs\cyru\cyrn\cyrk\cyro\cyrv}}%
54.160 \def\listtablename{%
54.161     {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk
54.162         \ \cyrt\cyra\cyrb\cyrl\cyri\cyrc}}%
54.163 \def\indexname{%
54.164     {\cyr\CYRP\cyrr\cyre\cyrd\cyrm\cyre\cyrt\cyrn\cyrery\cyrishrt
54.165         \ \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl\cyrsftsn}}%
54.166 \def\authorname{%
54.167     {\cyr\CYRI\cyrm\cyre\cyrn\cyrn\cyro\cyrishrt
54.168         \ \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl\cyrsftsn}}%
54.169 \def\figurename{{\cyr\CYRR\cyri\cyrs.}}%
54.170 \def\tablename{{\cyr\CYRT\cyra\cyrb\cyrl\cyri\cyrc\cyra}}%
54.171 \def\partname{{\cyr\CYRCH\cyra\cyrs\cyrt\cyrsftsn}}%
54.172 \def\enclname{{\cyr\cyrv\cyrk\cyrl.}}%

```

```

54.173 \def\ccname{\cyr\cyri\cyrs\cyrh.}%
54.174 % \def\ccname{\cyr\cyri\cyrz}%
54.175 \def\headtoname{\cyr\cyrv\cyrh.}%
54.176 % \def\headtoname{\cyr\cyrv}%
54.177 \def\pagename{\cyr\cyrs.}%
54.178 % \def\pagename{\cyr\cyrs\cyrt\cyrr.}%
54.179 \def\seename{\cyr\cyrs\cyrm.}%
54.180 \def\alsoname{\cyr\cyrs\cyrm.\ \cyrt\cyra\cyrk\cyrz\cyre}%

54.181 \def\proofname{\cyr\CYRD\cyro\cyrk\cyra\cyrz\cyra\cyrt
54.182 \cyre\cyrl\cyrsftsn\cyrs\cyrt\cyrv\cyro}%
54.183 \def\glossaryname{Glossary}% <-- Needs translation
54.184 }

```

**\daterussian** The macro `\daterussian` redefines the command `\today` to produce Russian dates.

```

54.185 \def\daterussian{%
54.186 \def\today{\number\day~\ifcase\month\or
54.187 \cyrya\cyrn\cyrv\cyra\cyrr\cyrya\or
54.188 \cyrf\cyre\cyrv\cyrr\cyra\cyrl\cyrya\or
54.189 \cyrm\cyra\cyrr\cyrt\cyra\or
54.190 \cyra\cyrp\cyrr\cyre\cyrl\cyrya\or
54.191 \cyrm\cyra\cyrya\or
54.192 \cyri\cyryu\cyrn\cyrya\or
54.193 \cyri\cyryu\cyrl\cyrya\or
54.194 \cyra\cyrv\cyrg\cyru\cyrs\cyrt\cyra\or
54.195 \cyrs\cyre\cyrn\cyrt\cyrya\cyrb\cyrr\cyrya\or
54.196 \cyro\cyrk\cyrt\cyrya\cyrb\cyrr\cyrya\or
54.197 \cyrn\cyro\cyrya\cyrb\cyrr\cyrya\or
54.198 \cyrd\cyre\cyrk\cyra\cyrb\cyrr\cyrya\fi
54.199 \ \number\year~\cyrg.}}

```

**\extrasrussian** The macro `\extrasrussian` will perform all the extra definitions needed for the Russian language. The macro `\noextrasrussian` is used to cancel the actions of `\extrasrussian`.

The first action we define is to switch on the selected Cyrillic encoding whenever we enter ‘russian’.

```

54.200 \addto\extrasrussian{\cyrillictext}

```

When the encoding definition file was processed by  $\text{\LaTeX}$  the current font encoding is stored in `\latinencoding`, assuming that  $\text{\LaTeX}$  uses T1 or OT1 as default. Therefore we switch back to `\latinencoding` whenever the Russian language is no longer ‘active’.

```

54.201 \addto\noextrasrussian{\latintext}

```

**\verbatim@font** In order to get both Latin and Cyrillic letters in verbatim text we need to change the definition of an internal  $\text{\LaTeX}$  command somewhat:

```

54.202 %\def\verbatim@font{%
54.203 % \let\encodingdefault\latinencoding
54.204 % \normalfont\ttfamily
54.205 % \expandafter\def\csname\cyrillicencoding-cmd\endcsname##1##2{%
54.206 % \ifx\protect\@typeset@protect
54.207 % \begingroup\UseTextSymbol\cyrillicencoding##1\endgroup
54.208 % \else\noexpand##1\fi}}

```

The category code of the characters ‘:’, ‘;’, ‘!’, and ‘?’ is made `\active` to insert a little white space.

For Russian (as well as for German) the " character also is made active.

Note: It is *very* questionable whether the Russian typesetting tradition requires additional spacing before those punctuation signs. Therefore, we make the corresponding code optional. If you need it, then define the `frenchpunct` docstrip option in `babel.ins`.

Borrowed from french. Some users dislike automatic insertion of a space before ‘double punctuation’, and prefer to decide themselves whether a space should be added or not; so a hook `\NoAutoSpaceBeforeFDP` is provided: if this command is added (in file `russianb.cfg`, or anywhere in a document) `russianb` will respect your typing, and introduce a suitable space before ‘double punctuation’ *if and only if* a space is typed in the source file before those signs.

The command `\AutoSpaceBeforeFDP` switches back to the default behavior of `russianb`.

```
54.209 <frenchpunct>
54.210 \initiate@active@char{:}
54.211 \initiate@active@char{;}
54.212 </frenchpunct>
54.213 <frenchpunct | spanishligs>
54.214 \initiate@active@char{!}
54.215 \initiate@active@char{?}
54.216 </frenchpunct | spanishligs>
54.217 \initiate@active@char{"}
```

The code above is necessary because we need extra active characters. The character " is used as indicated in table 27.

We specify that the Russian group of shorthands should be used.

```
54.218 \addto\extrarussian{\languageshorthands{russian}}
```

These characters are ‘turned on’ once, later their definition may vary.

```
54.219 \addto\extrarussian{%
54.220 <frenchpunct> \bbl@activate{:}\bbl@activate{;}%
54.221 <frenchpunct | spanishligs> \bbl@activate{!}\bbl@activate{?}%
54.222 \bbl@activate{"}}
54.223 \addto\noextrarussian{%
54.224 <frenchpunct> \bbl@deactivate{:}\bbl@deactivate{;}%
54.225 <frenchpunct | spanishligs> \bbl@deactivate{!}\bbl@deactivate{?}%
54.226 \bbl@deactivate{"}}
```

The X2 and T2\* encodings do not contain `spanish_shriek` and `spanish_query` symbols; as a consequence, the ligatures ‘?’ and ‘!’ do not work with them (these characters are useless for Cyrillic texts anyway). But we define the shorthands to emulate these ligatures (optionally).

We do not use `\latinencoding` here (but instead explicitly use OT1) because the user may choose T2A to be the primary encoding, but it does not contain these characters.

```
54.227 <spanishligs>
54.228 \declare@shorthand{russian}{?}{\UseTextSymbol{OT1}\textquestiondown}
54.229 \declare@shorthand{russian}{!}{\UseTextSymbol{OT1}\textexclamdown}
54.230 </spanishligs>
```

\russian@sh@;@ We have to reduce the amount of white space before ;, : and !. This should only  
\russian@sh:@ happen in horizontal mode, hence the test with \ifhmode.

```
\russian@sh@!@
54.231 <*\frenchpunct>
\russian@sh@?@
54.232 \declare@shorthand{russian}{;}{;%
54.233 \ifhmode
```

In horizontal mode we check for the presence of a ‘space’, ‘unskip’ if it exists  
and place a 0.1em kerning.

```
54.234 \ifdim\lastskip>\z@
54.235 \unskip\nobreak\kern.1em
54.236 \else
```

If no space has been typed, we add \FDP@thinspace which will be defined, up to  
the user’s wishes, as an automatic added thinspace, or as \@empty.

```
54.237 \FDP@thinspace
54.238 \fi
54.239 \fi
```

Now we can insert a ‘;’ character.

```
54.240 \string;}
```

The other definitions are very similar.

```
54.241 \declare@shorthand{russian}{:}{;%
54.242 \ifhmode
54.243 \ifdim\lastskip>\z@
54.244 \unskip\nobreak\kern.1em
54.245 \else
54.246 \FDP@thinspace
54.247 \fi
54.248 \fi
54.249 \string:}

54.250 \declare@shorthand{russian}{!}{;%
54.251 \ifhmode
54.252 \ifdim\lastskip>\z@
54.253 \unskip\nobreak\kern.1em
54.254 \else
54.255 \FDP@thinspace
54.256 \fi
54.257 \fi
54.258 \string!}

54.259 \declare@shorthand{russian}{?}{;%
54.260 \ifhmode
54.261 \ifdim\lastskip>\z@
54.262 \unskip\nobreak\kern.1em
54.263 \else
54.264 \FDP@thinspace
54.265 \fi
54.266 \fi
54.267 \string?}
```

`\AutoSpaceBeforeFDP` `\FDP@thinspace` is defined as unbreakable spaces if `\AutoSpaceBeforeFDP` is activated or as `\@empty` if `\NoAutoSpaceBeforeFDP` is in use. The default is `\FDP@thinspace` `\AutoSpaceBeforeFDP`.

```
54.268 \def\AutoSpaceBeforeFDP{%
54.269     \def\FDP@thinspace{\nobreak\kern.1em}}
54.270 \def\NoAutoSpaceBeforeFDP{\let\FDP@thinspace\@empty}
54.271 \AutoSpaceBeforeFDP
```

`\FDPon` The next macros allow to switch on/off activeness of double punctuation signs.

```
\FDPoff
54.272 \def\FDPon{\bbl@activate{}}%
54.273     \bbl@activate{;}%
54.274     \bbl@activate{?}%
54.275     \bbl@activate{!}%
54.276 \def\FDPoff{\bbl@deactivate{}}%
54.277     \bbl@deactivate{;}%
54.278     \bbl@deactivate{?}%
54.279     \bbl@deactivate{!}%
```

`\system@sh@:` When the active characters appear in an environment where their Russian behaviour is not wanted they should give an ‘expected’ result. Therefore we define `\system@sh@?` shorthands at system level as well.

```
\system@sh@;
54.280 \declare@shorthand{system}{:}{\string;}
54.281 \declare@shorthand{system}{;}{\string;}
54.282 \frenchpunct
54.283 (*frenchpunct&!spanishlig)
54.284 \declare@shorthand{system}{!}{\string!}
54.285 \declare@shorthand{system}{?}{\string?}
54.286 \frenchpunct&!spanishlig)
```

To be able to define the function of “, we first define a couple of ‘support’ macros.

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent “ can now be typed as “.

```
54.287 \begingroup \catcode“"12
54.288 \def\reserved@a{\endgroup
54.289     \def\@SS{\mathchar"7019 }
54.290     \def\dq{"}}
54.291 \reserved@a
```

Now we can define the doublequote macros: german and french quotes. We use definitions of these quotes made in `babel.sty`. The french quotes are contained in the T2\* encodings.

```
54.292 \declare@shorthand{russian}{"'}{\glqq}
54.293 \declare@shorthand{russian}{"'}{\grqq}
54.294 \declare@shorthand{russian}{"<}{\flqq}
54.295 \declare@shorthand{russian}{">}{\frqq}
```

Some additional commands:

```
54.296 \declare@shorthand{russian}{""}{\hskip\z@skip}
54.297 \declare@shorthand{russian}{""}{\textormath{\leavevmode\hbox{-}}{-}}
54.298 \declare@shorthand{russian}{"=}{\nobreak-\hskip\z@skip}
```



```

54.299 \declare@shorthand{russian}{"}{ }{%
54.300   \textormath{\nobreak\discretionary{-}{ }\kern.03em}%
54.301   \allowhyphens}{ } }

```

The next two macros for "-" and "--- are somewhat different. We must check whether the second token is a hyphen character:

```

54.302 \declare@shorthand{russian}{"-}{ }{%

```

If the next token is '-', we typeset an emdash, otherwise a hyphen sign:

```

54.303   \def\russian@sh@tmp{%
54.304     \if\russian@sh@next-\expandafter\russian@sh@emdash
54.305     \else\expandafter\russian@sh@hyphen\fi
54.306   }%

```

TeX looks for the next token after the first '-': the meaning of this token is written to \russian@sh@next and \russian@sh@tmp is called.

```

54.307   \futurelet\russian@sh@next\russian@sh@tmp}

```

Here are the definitions of hyphen and emdash. First the hyphen:

```

54.308 \def\russian@sh@hyphen{%
54.309   \nobreak\-\bbl@allowhyphens}

```

For the emdash definition, there are the two parameters: we must 'eat' two last hyphen signs of our emdash...

```

54.310 \def\russian@sh@emdash#1#2{\cdash-#1#2}

```

\cdash ... these two parameters are useful for another macro: \cdash:

```

54.311 %\ifx\cdash\undefined % should be defined earlier
54.312 \def\cdash#1#2#3{\def\tempx@{#3}%
54.313 \def\tempa@{-}\def\tempb@{~}\def\tempc@{*}%
54.314 \ifx\tempx@\tempa@\@Acdash\else
54.315 \ifx\tempx@\tempb@\@Bcdash\else
54.316 \ifx\tempx@\tempc@\@Ccdash\else
54.317 \errmessage{Wrong usage of cdash}\fi\fi\fi}

```

second parameter (or third for \cdash) shows what kind of emdash to create in next step

"--- ordinary (plain) Cyrillic emdash inside text: an unbreakable thinspace will be inserted before only in case of a *space* before the dash (it is necessary for dashes after display maths formulae: there could be lists, enumerations etc. started with "— where *a* is ..." i.e., the dash starts a line). (Firstly there were planned rather soft rules for user: he may put a space before the dash or not. But it is difficult to place this thinspace automatically, i.e., by checking modes because after display formulae TeX uses horizontal mode. Maybe there is a misunderstanding? Maybe there is another way?) After a dash a breakable thinspace is always placed;

```

54.318 % What is more grammatically: .2em or .2\fontdimen6\font ?
54.319 \def\@Acdash{\ifdim\lastskip>\z@\unskip\nobreak\hskip.2em\fi
54.320 \cyrdash\hskip.2em\ignorespaces}%

```

"--~ emdash in compound names or surnames (like Mendeleev–Klapeiron); this dash has no space characters around; after the dash some space is added \exhyphenalty

```

54.321 \def\@Bcdash{\leavevmode\ifdim\lastskip>\z@\unskip\fi
54.322 \nobreak\cyrdash\penalty\exhyphenpenalty\hskip\z@skip\ignorespaces}%

    "--*    for denoting direct speech (a space like \enskip must follow the emdash);

54.323 \def\@Ccdash{\leavevmode
54.324 \nobreak\cyrdash\nobreak\hskip.35em\ignorespaces}%
54.325 %\fi

```

**\cyrdash** Finally the macro for “body” of the Cyrillic emdash. The **\cyrdash** macro will be defined in case this macro hasn’t been defined in a fontenc file. For T2\* fonts, cyrdash will be placed in the code of the English emdash thus it uses ligature ---.

```

54.326 % Is there an IF necessary?
54.327 \ifx\cyrdash\undefined
54.328 \def\cyrdash{\hbox to.8em{--\hss--}}
54.329 \fi

```

Here a really new macro—to place thinspace between initials. This macro used instead of \, allows hyphenation in the following surname.

```

54.330 \declare@shorthand{russian}{",}{\nobreak\hskip.2em\ignorespaces}

```

**\mdqon** All that’s left to do now is to define a couple of commands for “.

```

\mdqoff{
54.331 \def\mdqon{\bbl@activate{}}
54.332 \def\mdqoff{\bbl@deactivate{}}

```

The Russian hyphenation patterns can be used with **\lefthyphenmin** and **\righthyphenmin** set to 2.

```

54.333 \providehyphenmins{\CurrentOption}{\tw@\tw@}
54.334 % temporary hack:
54.335 \ifx\englishhyphenmins\undefined
54.336 \def\englishhyphenmins{\tw@\thr@@}
54.337 \fi

```

Now the action **\extrarussian** has to execute is to make sure that the command **\frenchspacing** is in effect. If this is not the case the execution of **\noextrarussian** will switch it off again.

```

54.338 \addto\extrarussian{\bbl@frenchspacing}
54.339 \addto\noextrarussian{\bbl@nonfrenchspacing}

```

Next we add a new enumeration style for Russian manuscripts with Cyrillic letters, and later on we define some math operator names in accordance with Russian typesetting traditions.

**\Asbuk** We begin by defining **\Asbuk** which works like **\Alph**, but produces (uppercase) Cyrillic letters instead of Latin ones. The letters YO, ISHRT, HRDSN, ERY, and SFTSN are skipped, as usual for such enumeration.

```

54.340 \def\Asbuk#1{\expandafter\@Asbuk\csname c@#1\endcsname}
54.341 \def\@Asbuk#1{\ifcase#1\or
54.342 \CYRA\or\CYRB\or\CYRV\or\CYRG\or\CYRD\or\CYRE\or\CYRZH\or
54.343 \CYRZ\or\CYRI\or\CYRK\or\CYRL\or\CYRM\or\CYRN\or\CYRO\or
54.344 \CYRP\or\CYRR\or\CYRS\or\CYRT\or\CYRU\or\CYRF\or\CYRH\or
54.345 \CYRC\or\CYRCH\or\CYRSH\or\CYRSHCH\or\CYREREV\or\CYRYU\or
54.346 \CYRYA\else\@ctrerr\fi}

```

`\asbuk` The macro `\asbuk` is similar to `\alph`; it produces lowercase Russian letters.

```
54.347 \def\asbuk#1{\expandafter\@asbuk\csname c@#1\endcsname}
54.348 \def\@asbuk#1{\ifcase#1\or
54.349   \cyra\or\cyrb\or\cyrv\or\cyrg\or\cyrd\or\cyre\or\cyrzh\or
54.350   \cyrz\or\cyri\or\cyrk\or\cyrl\or\cyrm\or\cyrn\or\cyro\or
54.351   \cyrp\or\cyrr\or\cyrs\or\cyrt\or\cyru\or\cyrf\or\cyrh\or
54.352   \cyrc\or\cyrch\or\cyrsh\or\cyrshch\or\cyrerev\or\cyrYu\or
54.353   \cyrya\else\@ctrerr\fi}
```

Set up default Cyrillic math alphabets. To use Cyrillic letters in math mode user should load the `textmath` package *before* loading fontenc package (or `babel`). Note, that by default Cyrillic letters are taken from upright font in math mode (unlike Latin letters).

```
54.354 %\RequirePackage{textmath}
54.355 \@ifundefined{sym\cyrillicencoding letters}{}{%
54.356 \SetSymbolFont{\cyrillicencoding letters}{bold}\cyrillicencoding
54.357   \rmdefault\bfdefault\updefault
54.358 \DeclareSymbolFontAlphabet\cyrmathrm{\cyrillicencoding letters}}
```

And we need a few commands to be able to switch to different variants.

```
54.359 \DeclareMathAlphabet\cyrmathbf\cyrillicencoding
54.360   \rmdefault\bfdefault\updefault
54.361 \DeclareMathAlphabet\cyrmathsf\cyrillicencoding
54.362   \sfdefault\mddefault\updefault
54.363 \DeclareMathAlphabet\cyrmathit\cyrillicencoding
54.364   \rmdefault\mddefault\itdefault
54.365 \DeclareMathAlphabet\cyrmathtt\cyrillicencoding
54.366   \ttdefault\mddefault\updefault
54.367 %
54.368 \SetMathAlphabet\cyrmathsf{bold}\cyrillicencoding
54.369   \sfdefault\bfdefault\updefault
54.370 \SetMathAlphabet\cyrmathit{bold}\cyrillicencoding
54.371   \rmdefault\bfdefault\itdefault
54.372 }
```

Some math functions in Russian math books have other names: e.g., `\sinh` in Russian is written as `\sh` etc. So we define a number of new math operators.

`\sinh`:

```
54.373 \def\sh{\mathop{\operator@font sh}\nolimits}
```

`\cosh`:

```
54.374 \def\ch{\mathop{\operator@font ch}\nolimits}
```

`\tan`:

```
54.375 \def\tg{\mathop{\operator@font tg}\nolimits}
```

`\arctan`:

```
54.376 \def\arctg{\mathop{\operator@font arctg}\nolimits}
```

`\arctg`:

```
54.377 \def\arcctg{\mathop{\operator@font arcctg}\nolimits}
```

The following macro conflicts with `\th` defined in Latin 1 encoding:

`\tanh`:

```
54.378 \addto\extrasrussian{%
```

```
54.379   \babel@save{\th}%
```

```

54.380 \let\ltx@th\th
54.381 \def\th{\textormath{\ltx@th}}%
54.382 {\mathop{\operator@font th}\nolimits}}%
54.383 }

\cot:
54.384 \def\ctg{\mathop{\operator@font ctg}\nolimits}

\coth:
54.385 \def\cth{\mathop{\operator@font cth}\nolimits}

\csc:
54.386 \def\cosec{\mathop{\operator@font cosec}\nolimits}

And finally some other Russian mathematical symbols:
54.387 \def\Prob{\mathop{\kern\z@\mathsf{P}}\nolimits}
54.388 \def\Variance{\mathop{\kern\z@\mathsf{D}}\nolimits}
54.389 \def\nod{\mathop{\cyrmathrm{\cyrn.\cyro.\cyrd.}}\nolimits}
54.390 \def\nok{\mathop{\cyrmathrm{\cyrn.\cyro.\cyrk.}}\nolimits}
54.391 \def\NOD{\mathop{\cyrmathrm{\CYRN\CYRO\CYRD}}\nolimits}
54.392 \def\NOK{\mathop{\cyrmathrm{\CYRN\CYRO\CYRK}}\nolimits}
54.393 \def\Proj{\mathop{\cyrmathrm{\CYRP\cyrr}}\nolimits}

This is for compatibility with older Russian packages.
54.394 \DeclareRobustCommand{\No}{%
54.395 \ifmmode{\nfss@text{\textnumero}}\else\textnumero\fi}

The macro \ldf@finish takes care of looking for a configuration file, setting
the main language to be switched on at \begin{document} and resetting the
category code of @ to its original value.

54.396 \ldf@finish{russian}
54.397 \code

```

## 55 The Bulgarian language

The file `bulgarian.dtx`<sup>63</sup> provides the language-specific macros for the Bulgarian language.

Users should take note of the various “cyrillic” dashes available now (see below). These should remove many causes of headache. Also, although by default the Bulgarian quotation marks will appear automatically when typesetting in Bulgarian, it is better to use the new commands `\"'` and `\"'` which explicitly typeset them. Note: automatic switch to Bulgarian quotation is withdrawn for the moment and may not be reintroduced at all.

For this language the character `"` is made active. In table 29 an overview is given of its purpose.

<code>" </code>	disable ligature at this position.
<code>"-</code>	an explicit hyphen sign, allowing hyphenation in the rest of the word.
<code>"---</code>	Cyrillic emdash in plain text.
<code>"--~</code>	Cyrillic emdash in compound names (surnames).
<code>"--*</code>	Cyrillic emdash for denoting direct speech.
<code>"</code>	like <code>"-</code> , but producing no hyphen sign (for compound words with hyphen, e.g. <code>x-"y</code> or some other signs as “disable/enable”).
<code>"~</code>	for a compound word mark without a breakpoint.
<code>"=</code>	for a compound word mark with a breakpoint, allowing hyphenation in the composing words.
<code>" ,</code>	thinspace for initials with a breakpoint in following surname.
<code>"‘</code>	for German left double quotes (looks like „).
<code>"’</code>	for German right double quotes (looks like “).
<code>"&lt;</code>	for French left double quotes (looks like <<).
<code>"&gt;</code>	for French right double quotes (looks like >>).

Table 29: The extra definitions made by `bulgarian`

The quotes in table 29 can also be typeset by using the commands in table 30.

The French quotes are also available as ligatures `‘<’` and `‘>’` in 8-bit Cyrillic font encodings (LCY, X2, T2\*) and as `‘<’` and `‘>’` characters in 7-bit Cyrillic font encodings (OT2 and LWN).

The quotation marks traditionally used in Bulgarian were borrowed from German or they keep their original names. French quotation marks may be seen as well in older books.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

55.1 `{*code}`

55.2 `\LdfInit{bulgarian}{captionsbulgarian}`

<sup>63</sup>The file described in this section has version number ? and was last revised on ?. This file was initially derived from the August-1998 version of `russianb.dtx`.

It is (reasonably) backward compatible with the 1994/1996 (non-babel) `bulgarian` style (`bulgaria.sty`) by Georgi Boshnakov—files prepared for that style should compile successfully (with vastly improved appearance due to usage of standard fonts).

<code>\cdash---</code>	Cyrillic emdash in plain text.
<code>\cdash--~</code>	Cyrillic emdash in compound names (surnames).
<code>\cdash--*</code>	Cyrillic emdash for denoting direct speech.
<code>\glqq</code>	for German left double quotes (looks like „).
<code>\grqq</code>	for German right double quotes (looks like “).
<code>” \flqq</code>	for French left double quotes (looks like <<).
<code>\frqq</code>	for French right double quotes (looks like >>).
<code>\dq</code>	the original quotes character (“).

Table 30: More commands which produce quotes, defined by `babel`

When this file is read as an option, i.e., by the `\usepackage` command, `bulgarian` will be an ‘unknown’ language, in which case we have to make it known. So we check for the existence of `\l@bulgarian` to see whether we have to do something here.

```

55.3 \ifx\l@bulgarian\undefined
55.4   \nopatterns{Bulgarian}
55.5   \adddialect\l@bulgarian0
55.6 \fi

```

`\latinencoding` We need to know the encoding for text that is supposed to be which is active at the end of the `babel` package. If the `fontenc` package is loaded later, then ... too bad!

```

55.7 \let\latinencoding\cf@encoding

```

The user may choose between different available Cyrillic encodings—e.g., `X2`, `LCY`, or `LWN`. If the user wants to use a font encoding other than the default (`T2A`), he has to load the corresponding file *before* `bulgarian.sty`. This may be done in the following way:

```

\usepackage[LCY,OT1]{fontenc}      %overwrite the default encoding;
\usepackage[english,bulgarian]{babel}

```

Note: most people would prefer the `T2A` to `X2`, because `X2` does not contain Latin letters, and users should be very careful to switch the language every time they want to typeset a Latin word inside a Bulgarian phrase or vice versa. On the other hand, switching the language is a good practice anyway. With a decent text processing program it does not involve more work than switching between the Bulgarian and English keyboard. Moreover that the far most common disruption occurs as a result of forgetting to switch back to cyrillic keyboard.

We parse the `\cdp@list` containing the encodings known to  $\text{\LaTeX}$  in the order they were loaded. We set the `\cyrillicencoding` to the *last* loaded encoding in the list of supported Cyrillic encodings: `OT2`, `LWN`, `LCY`, `X2`, `T2C`, `T2B`, `T2A`, if any.

```

55.8 \def\reserved@a#1#2{%
55.9   \edef\reserved@b{#1}%
55.10  \edef\reserved@c{#2}%
55.11  \ifx\reserved@b\reserved@c
55.12    \let\cyrillicencoding\reserved@c
55.13  \fi}

```

```

55.14 \def\cdp@elt#1#2#3#4{%
55.15   \reserved@a{#1}{OT2}%
55.16   \reserved@a{#1}{LWN}%
55.17   \reserved@a{#1}{LCY}%
55.18   \reserved@a{#1}{X2}%
55.19   \reserved@a{#1}{T2C}%
55.20   \reserved@a{#1}{T2B}%
55.21   \reserved@a{#1}{T2A}}
55.22 \cdp@list

```

Now, if `\cyrillicencoding` is undefined, then the user did not load any of supported encodings. So, we have to set `\cyrillicencoding` to some default value. We test the presence of the encoding definition files in the order from less preferable to more preferable encodings. We use the lowercase names (i.e., `lcyenc.def` instead of `LCYenc.def`).

```

55.23 \ifx\cyrillicencoding\undefined
55.24   \IfFileExists{ot2enc.def}{\def\cyrillicencoding{OT2}}\relax
55.25   \IfFileExists{lwnenc.def}{\def\cyrillicencoding{LWN}}\relax
55.26   \IfFileExists{lcyenc.def}{\def\cyrillicencoding{LCY}}\relax
55.27   \IfFileExists{x2enc.def}{\def\cyrillicencoding{X2}}\relax
55.28   \IfFileExists{t2cenc.def}{\def\cyrillicencoding{T2C}}\relax
55.29   \IfFileExists{t2benc.def}{\def\cyrillicencoding{T2B}}\relax
55.30   \IfFileExists{t2aenc.def}{\def\cyrillicencoding{T2A}}\relax

```

If `\cyrillicencoding` is still undefined, then the user seems not to have a properly installed distribution. A fatal error.

```

55.31 \ifx\cyrillicencoding\undefined
55.32   \PackageError{babel}%
55.33   {No Cyrillic encoding definition files were found}%
55.34   {Your installation is incomplete. \MessageBreak
55.35   You need at least one of the following files: \MessageBreak
55.36   \space\space
55.37   x2enc.def, t2aenc.def, t2benc.def, t2cenc.def, \MessageBreak
55.38   \space\space
55.39   lcyenc.def, lwnenc.def, ot2enc.def.}%
55.40 \else

```

We avoid `\usepackage[\cyrillicencoding]{fontenc}` because we don't want to force the switch of `\encodingdefault`.

```

55.41   \lowercase
55.42   \expandafter{\expandafter\input\cyrillicencoding enc.def\relax}%
55.43 \fi
55.44 \fi

```

```

\PackageInfo{babel}
{Using ‘\cyrillicencoding’ as a default Cyrillic encoding}%

```

```

55.45 \DeclareRobustCommand{\Bulgarian}{%
55.46   \fontencoding\cyrillicencoding\selectfont
55.47   \let\encodingdefault\cyrillicencoding
55.48   \expandafter\set@hyphenmins\bulgarianhyphenmins
55.49   \language\l@bulgarian}
55.50 \DeclareRobustCommand{\English}{%

```

```

55.51 \fontencoding\latinencoding\selectfont
55.52 \let\encodingdefault\latinencoding
55.53 \expandafter\set@hyphenmins\englishhyphenmins
55.54 \language\l@english}
55.55 \let\Bul\Bulgarian
55.56 \let\Bg\Bulgarian
55.57 \let\cyrillictext\Bulgarian
55.58 \let\cyr\Bulgarian
55.59 \let\Eng\English
55.60 \def\selectenglanguagel{\selectlanguage{english}}
55.61 \def\selectbglanguagel{\selectlanguage{bulgarian}}

```

Since the X2 encoding does not contain Latin letters, we should make some redefinitions of L<sup>A</sup>T<sub>E</sub>X macros which implicitly produce Latin letters.

```

55.62 \expandafter\ifx\csname T@X2\endcsname\relax\else

```

We put `\latinencoding` in braces to avoid problems with `\@alph` inside minipages (e.g., footnotes inside minipages) where `\@alph` is expanded and we get for example ‘`\fontencoding OT1`’ (`\fontencoding` is robust).

```

55.63 \def\@Alph@eng#1{\fontencoding{\latinencoding}\selectfont
55.64 \ifcase#1\or A\or B\or C\or D\or E\or F\or G\or H\or I\or J\or
55.65 K\or L\or M\or N\or O\or P\or Q\or R\or S\or T\or U\or V\or W\or
55.66 X\or Y\or Z\else \@ctrerr\fi}}%
55.67 \def\@alph@eng#1{\fontencoding{\latinencoding}\selectfont
55.68 \ifcase#1\or a\or b\or c\or d\or e\or f\or g\or h\or i\or j\or
55.69 k\or l\or m\or n\or o\or p\or q\or r\or s\or t\or u\or v\or w\or
55.70 x\or y\or z\else \@ctrerr\fi}}%
55.71 \let\@Alph\@Alph@eng
55.72 \let\@alph\@alph@eng

```

Unfortunately, the commands `\AA` and `\aa` are not encoding dependent in L<sup>A</sup>T<sub>E</sub>X (unlike e.g., `\oe` or `\DH`). They are defined as `\r{A}` and `\r{a}`. This leads to unpredictable results when the font encoding does not contain the Latin letters ‘A’ and ‘a’ (like X2).

```

55.73 \DeclareTextSymbolDefault{\AA}{OT1}
55.74 \DeclareTextSymbolDefault{\aa}{OT1}
55.75 \DeclareTextCommand{\AA}{OT1}{\r A}
55.76 \DeclareTextCommand{\aa}{OT1}{\r a}
55.77 \fi

```

The following block redefines the character class of uppercase Greek letters and some accents, if it is equal to 7 (variable family), to avoid incorrect results if the font encoding in some math family does not contain these characters in places of OT1 encoding. The code was taken from `amsmath.dtx`. See comments and further explanation there.

```

55.78 \begingroup\catcode'\=12
55.79 % uppercase greek letters:
55.80 \def\@tempa#1{\expandafter\@tempb\meaning#1\relax\relax\relax\relax
55.81 "0000\@nil#1}
55.82 \def\@tempb#1"#2#3#4#5#6\@nil#7{%
55.83 \ifnum"#2=7 \count@"1#3#4#5\relax
55.84 \ifnum\count@<"1000 \else \global\mathchardef#7="0#3#4#5\relax \fi
55.85 \fi}

```



```

55.86 \@tempa\Gamma\@tempa\Delta\@tempa\Theta\@tempa\Lambda\@tempa\Xi
55.87 \@tempa\Pi\@tempa\Sigma\@tempa\Upsilon\@tempa\Phi\@tempa\Psi
55.88 \@tempa\Omega
55.89 % some accents:
55.90 \def\@tempa#1#2\@nil{\def\@tempc{#1}}\def\@tempb{\mathaccent}
55.91 \expandafter\@tempa\hat\relax\relax\@nil
55.92 \ifx\@tempb\@tempc
55.93 \def\@tempa#1\@nil{#1}%
55.94 \def\@tempb#1{\afterassignment\@tempa\mathchardef\@tempc=}%
55.95 \def\do#1"#2{}
55.96 \def\@tempd#1{\expandafter\@tempb#1\@nil
55.97 \ifnum\@tempc>"FFF
55.98 \xdef#1{\mathaccent"\expandafter\do\meaning\@tempc\space}%
55.99 \fi}
55.100 \@tempd\hat\@tempd\check\@tempd\tilde\@tempd\acute\@tempd\grave
55.101 \@tempd\dot\@tempd\ddot\@tempd\breve\@tempd\bar
55.102 \fi
55.103 \endgroup

```

The user should use the `inputenc` package when any 8-bit Cyrillic font encoding is used, selecting one of the Cyrillic input encodings. We do not assume any default input encoding, so the user should explicitly call the `inputenc` package by `\usepackage{inputenc}`. We also removed `\AtBeginDocument`, so `inputenc` should be used before `babel`.

```

55.104 \@ifpackageloaded{inputenc}{-}{%
55.105 \def\reserved@a{LWN}%
55.106 \ifx\reserved@a\cyrillicencoding\else
55.107 \def\reserved@a{OT2}%
55.108 \ifx\reserved@a\cyrillicencoding\else
55.109 \PackageWarning{babel}%
55.110 {No input encoding specified for Bulgarian language}\fi\fi}

```

Now we define two commands that offer the possibility to switch between Cyrillic and Roman encodings.

`\cyrillictext` The command `\cyrillictext` will switch from Latin font encoding to the Cyrillic font encoding, the command `\latintext` switches back. This assumes that the ‘normal’ font encoding is a Latin one. These commands are *declarations*, for shorter peaces of text the commands `\textlatin` and `\textcyrillic` can be used.

We comment out `\latintext` since it is defined in the core of `babel` (`babel.def`). We add the shorthand `\lat` for `\latintext`. Note that `\cyrillictext` has been defined above.

```

55.111 % \DeclareRobustCommand{\latintext}{%
55.112 % \fontencoding{\latinencoding}\selectfont
55.113 % \def\encodingdefault{\latinencoding}}
55.114 \let\lat\latintext

```

`\textcyrillic` These commands take an argument which is then typeset using the requested font encoding. `\textlatin` is commented out since it is defined in the core of `babel`. (It is defined there with `\DeclareRobustCommand` instead.)

```

55.115 \DeclareTextFontCommand{\textcyrillic}{\cyrillictext}
55.116 % \DeclareTextFontCommand{\textlatin}{\latintext}

```

The next step consists of defining commands to switch to (and from) the Bulgarian language.

`\captionsbulgarian` The macro `\captionsbulgarian` defines all strings used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X. The two commands `\cyr` and `\lat` activate Cyrillic resp. Latin encoding.

```

55.117 \addto\captionsbulgarian{%
55.118   \def\prefacename{%
55.119     {\cyr\CYRP\cyrr\cyre\cyrd\cyrg\cyro\cyrv\cyro\cyrr}}%
55.120   \def\refname{%
55.121     {\cyr\CYRL\cyri\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyra}}%
55.122   \def\abstractname{%
55.123     {\cyr\CYRA\cyrb\cyrs\cyrt\cyrr\cyra\cyrk\cyrt}}%
55.124   \def\bibname{%
55.125     {\cyr\CYRB\cyri\cyrb\cyrl\cyri\cyro\cyrg\cyrr\cyra\cyrf\cyri\cyrya}}%
55.126   \def\chaptername{%
55.127     {\cyr\CYRG\cyrl\cyra\cyrv\cyra}}%
55.128   \def\appendixname{%
55.129     {\cyr\CYRP\cyrr\cyri\cyrl\cyro\cyrrzh\cyre\cyrn\cyri\cyre}}%
55.130   \def\contentsname{%
55.131     {\cyr\CYRS\cyrrhdsn\cyrd\cyrrhdsn\cyrr\cyrrzh\cyra\cyrn\cyri\cyre}}%
55.132   \def\listfigurename{%
55.133     {\cyr\CYRS\cyrp\cyri\cyrs\cyrrhdsn\cyrk\ \cyrn\cyra\ \cyrf\cyri\cyrg\cyru\cyrr\cyri\cyrt\
55.134   \def\listtablename{%
55.135     {\cyr\CYRS\cyrp\cyri\cyrs\cyrrhdsn\cyrk\ \cyrn\cyra\ \cyrt\cyra\cyrb\cyrl\cyri\cyrc\cyri\
55.136   \def\indexname{%
55.137     {\cyr\CYRA\cyrz\cyrb\cyru\cyrch\cyre\cyrn\ \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl}}%
55.138   \def\authorname{%
55.139     {\cyr\CYRI\cyrm\cyre\cyrn\cyre\cyrn\ \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl}}%
55.140   \def\figurename{%
55.141     {\cyr\CYRF\cyri\cyrg\cyru\cyrr\cyra}}%
55.142   \def\tablename{%
55.143     {\cyr\CYRT\cyra\cyrb\cyrl\cyri\cyrc\cyra}}%
55.144   \def\partname{%
55.145     {\cyr\CYRCH\cyra\cyrs\cyrt}}%
55.146   \def\enclname{%
55.147     {\cyr\CYRP\cyrr\cyri\cyrl\cyro\cyrrzh\cyre\cyrn\cyri\cyrya}}%
55.148   \def\ccname{%
55.149     {\cyr\cyrk\cyro\cyrp\cyri\cyrya}}%
55.150   \def\headtoname{%
55.151     {\cyr\CYRZ\cyra}}%
55.152   \def\pagename{%
55.153     {\cyr\CYRS\cyrt\cyrr.}}%
55.154   \def\seename{%
55.155     {\cyr\cyrv\cyrrzh.}}%
55.156   \def\alsoname{%
55.157     {\cyr\cyrv\cyrrzh.\ \cyrs\cyrrhdsn\cyrrshch\cyro\ \cyri}}%
55.158   \def\proofname{Proof}% <-- Needs translation
55.159   \def\glossaryname{Glossary}% <-- Needs translation
55.160 }
```

`\datebulgarian` The macro `\datebulgarian` redefines the command `\today` to produce Bulgarian dates. It also provides the command `\todayRoman` which produces the date with the month in capital roman numerals, a popular format for dates in Bulgarian.

```

55.161 \def\datebulgarian{%
55.162   \def\month@bulgarian{\ifcase\month\or
55.163     \cyrya\cyrn\cyru\cyra\cyrr\cyri\or
55.164     \cyrf\cyre\cyrv\cyrr\cyru\cyra\cyrr\cyri\or
55.165     \cyrm\cyra\cyrr\cyrt\or
55.166     \cyra\cyrp\cyrr\cyri\cyrl\or
55.167     \cyrm\cyra\cyrishrt\or
55.168     \cyryu\cyrn\cyri\or
55.169     \cyryu\cyrl\cyri\or
55.170     \cyra\cyrv\cyrg\cyru\cyrs\cyrt\or
55.171     \cyrs\cyre\cyrp\cyrt\cyre\cyrm\cyrv\cyrr\cyri\or
55.172     \cyro\cyrk\cyrt\cyro\cyrm\cyrv\cyrr\cyri\or
55.173     \cyrn\cyro\cyre\cyrm\cyrv\cyrr\cyri\or
55.174     \cyrd\cyre\cyrk\cyre\cyrm\cyrv\cyrr\cyri\fi}%
55.175   \def\month@Roman{\expandafter\@Roman\month}%
55.176   \def\today{\number\day~\month@bulgarian\ \number\year~\cyrg.}%
55.177   \def\todayRoman{\number\day.\,\month@Roman.\,\number\year~\cyrg.}%
55.178 }

```

`\todayRoman` The month is often written with roman numbers in Bulgarian dates. Here we define date in this format:

```

55.179 \def\Romannumeral#1{\uppercase\expandafter{\romannumeral #1}}
55.180 \def\todayRoman{\number\day.\Romannumeral{\month}.\number\year~\cyrg.}

```

`\extrasbulgarian` The macro `\extrasbulgarian` will perform all the extra definitions needed for the Bulgarian language. The macro `\noextrasbulgarian` is used to cancel the actions of `\extrasbulgarian`.

The first action we define is to switch on the selected Cyrillic encoding whenever we enter ‘bulgarian’.

```

55.181 \addto\extrasbulgarian{\cyrillictext}

```

When the encoding definition file was processed by  $\text{\LaTeX}$  the current font encoding is stored in `\latinencoding`, assuming that  $\text{\LaTeX}$  uses T1 or OT1 as default. Therefore we switch back to `\latinencoding` whenever the Bulgarian language is no longer ‘active’.

```

55.182 \addto\noextrasbulgarian{\latintext}

```

For Bulgarian the " character also is made active.

```

55.183 \initiate@active@char{"}

```

The code above is necessary because we need extra active characters. The character " is used as indicated in table 29. We specify that the Bulgarian group of shorthands should be used.

```

55.184 \addto\extrasbulgarian{\languageshorthands{bulgarian}}

```

These characters are ‘turned on’ once, later their definition may vary.

```

55.185 \addto\extrasbulgarian{%
55.186   \bbl@activate{"}}
55.187 \addto\noextrasbulgarian{%
55.188   \bbl@deactivate{"}}

```

The X2 and T2\* encodings do not contain `spanish_shriek` and `spanish_query` symbols; as a consequence, the ligatures ‘?’ and ‘!’ do not work with them (these characters are useless for Cyrillic texts anyway). But we define the shorthands to emulate these ligatures (optionally).

We do not use `\latinencoding` here (but instead explicitly use OT1) because the user may choose T2A to be the primary encoding, but it does not contain these characters.

```
55.189 <*spanishlig>
55.190 \declare@shorthand{bulgarian}{?'}{\UseTextSymbol{OT1}\textquestiondown}
55.191 \declare@shorthand{bulgarian}{!'}{\UseTextSymbol{OT1}\textexclamdown}
55.192 </spanishlig>
```

To be able to define the function of “”, we first define a couple of ‘support’ macros.

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent “ can now be typed as “.

```
55.193 \begingroup \catcode'\ "12
55.194 \def\reserved@a{\endgroup
55.195 \def\@SS{\mathchar"7019}
55.196 \def\dq{"}}
55.197 \reserved@a
```

Now we can define the doublequote macros: german and french quotes. We use definitions of these quotes made in `babel.sty`. The french quotes are contained in the T2\* encodings.

```
55.198 \declare@shorthand{bulgarian}{"'}{\glqq}
55.199 \declare@shorthand{bulgarian}{"'}{\grqq}
55.200 \declare@shorthand{bulgarian}{"<'}{\flqq}
55.201 \declare@shorthand{bulgarian}{">'}{\frqq}
```

Some additional commands:

```
55.202 \declare@shorthand{bulgarian}{""}{\hskip\z@skip}
55.203 \declare@shorthand{bulgarian}{""}{\textormath{\leavevmode\hbox{-}}{-}}
55.204 \declare@shorthand{bulgarian}{""}{\nobreak-\hskip\z@skip}
55.205 \declare@shorthand{bulgarian}{"}{|}{%
55.206 \textormath{\nobreak\discretionary{-}}{\kern.03em}%
55.207 \allowhyphens}{}}
```

The next two macros for “- and “--- are somewhat different. We must check whether the second token is a hyphen character:

```
55.208 \declare@shorthand{bulgarian}{"-}{%
```

If the next token is ‘-’, we typeset an emdash, otherwise a hyphen sign:

```
55.209 \def\bulgarian@sh@tmp{%
55.210 \if\bulgarian@sh@next-\expandafter\bulgarian@sh@emdash
55.211 \else\expandafter\bulgarian@sh@hyphen\fi
55.212 }%
```

TeX looks for the next token after the first ‘-’: the meaning of this token is written to `\bulgarian@sh@next` and `\bulgarian@sh@tmp` is called.

```
55.213 \futurelet\bulgarian@sh@next\bulgarian@sh@tmp}
```

Here are the definitions of hyphen and emdash. First the hyphen:

```
55.214 \def\bulgarian@sh@hyphen{\nobreak\-\bbl@allowhyphens}
```

For the emdash definition, there are the two parameters: we must ‘eat’ two last hyphen signs of our emdash ...:

```
55.215 \def\bulgarian@sh@emdash#1#2{\cdash-#1#2}
```

`\cdash` ... these two parameters are useful for another macro: `\cdash`:

```
55.216 \ifx\cdash\undefined % should be defined earlier
55.217 \def\cdash#1#2#3{\def\tempx@{#3}%
55.218 \def\tempa@{-}\def\empb@{~}\def\empc@{*}%
55.219 \ifx\tempx@\tempa@\@Acdash\else
55.220 \ifx\tempx@\tempb@\@Bcdash\else
55.221 \ifx\tempx@\tempc@\@Ccdash\else
55.222 \errmessage{Wrong usage of cdash}\fi\fi\fi}
```

second parameter (or third for `\cdash`) shows what kind of emdash to create in next step

"--- ordinary (plain) Cyrillic emdash inside text: an unbreakable thinspace will be inserted before only in case of a *space* before the dash (it is necessary for dashes after display maths formulae: there could be lists, enumerations etc. started with “—where *a* is ...” i.e., the dash starts a line). (Firstly there were planned rather soft rules for user:he may put a space before the dash or not. But it is difficult to place this thinspace automatically, i.e., by checking modes because after display formulae  $\TeX$  uses horizontal mode. Maybe there is a misunderstanding? Maybe there is another way?) After a dash a breakable thinspace is always placed;

```
55.223 % What is more grammatically: .2em or .2\fontdimen6\font?
55.224 \def\@Acdash{\ifdim\lastskip>\z@\unskip\nobreak\hskip.2em\fi
55.225 \cyrdash\hskip.2em\ignorespaces}%
```

"--~ emdash in compound names or surnames (like Mendeleev–Klapeiron); this dash has no space characters around; after the dash some space is added `\exhyphenalty`

```
55.226 \def\@Bcdash{\leavevmode\ifdim\lastskip>\z@\unskip\fi
55.227 \nobreak\cyrdash\penalty\exhyphenpenalty\hskip\z@skip\ignorespaces}%
```

"--\* for denoting direct speech (a space like `\enskip` must follow the emdash);

```
55.228 \def\@Ccdash{\leavevmode
55.229 \nobreak\cyrdash\nobreak\hskip.35em\ignorespaces}%
55.230 %\fi
```

`\cyrdash` Finally the macro for “body” of the Cyrillic emdash. The `\cyrdash` macro will be defined in case this macro hasn’t been defined in a fontenc file. For T2\*fonts, `cyrdash` will be placed in the code of the English emdash thus it uses ligature ---.

```
55.231 % Is there an IF necessary?
55.232 \ifx\cyrdash\undefined
55.233 \def\cyrdash{\hbox to.8em{--\hss--}}
55.234 \fi
```

Here a really new macro—to place thinspace between initials. This macro used instead of \, allows hyphenation in the following surname.

```
55.235 \declare@shorthand{bulgarian}{",}{\nobreak\hskip.2em\ignorespaces}
```

The Bulgarian hyphenation patterns can be used with \lefthyphenmin and \righthyphenmin set to 2.

```
55.236 \providehyphenmins{\CurrentOption}{\tw@\tw@}
```

```
55.237 \fi
```

Now the action \extrasbulgarian has to execute is to make sure that the command \frenchspacing is in effect. If this is not the case the execution of \noextrasbulgarian will switch it off again.

```
55.238 \addto\extrasbulgarian{\bbl@frenchspacing}
```

```
55.239 \addto\noextrasbulgarian{\bbl@nonfrenchspacing}
```

Make the double quotes produce the traditional quotes used in Bulgarian texts (these are the German quotes).

```
55.240 % \initiate@active@char{'}
```

```
55.241 % \initiate@active@char{'}
```

```
55.242 % \addto\extrasbulgarian{%
```

```
55.243 % \bbl@activate{'}}
```

```
55.244 % \addto\extrasbulgarian{%
```

```
55.245 % \bbl@activate{'}}
```

```
55.246 % \addto\noextrasbulgarian{%
```

```
55.247 % \bbl@deactivate{'}}
```

```
55.248 % \addto\noextrasbulgarian{%
```

```
55.249 % \bbl@deactivate{'}}
```

```
55.250 % \def\mlron{\bbl@activate{'}\bbl@activate{'}}
```

```
55.251 % \def\mlroff{\bbl@deactivate{'}\bbl@deactivate{'}}
```

```
55.252 % \declare@shorthand{bulgarian}{''}{\glqq}
```

```
55.253 % \declare@shorthand{bulgarian}{''}{\grqq}
```

Next we add a new enumeration style for Bulgarian manuscripts with Cyrillic letters, and later on we define some math operator names in accordance with Bulgarian typesetting traditions.

**\@Alph@bul** We begin by defining \@Alph@bul which works like \@Alph, but produces (uppercase) Cyrillic letters instead of Latin ones. The letters ISHRT, HRDSN and SFTSN are skipped, as usual for such enumeration.

```
55.254 \def\enumBul{\let\@Alph\@Alph@bul \let\@alph\@alph@bul}
```

```
55.255 \def\enumEng{\let\@Alph\@Alph@eng \let\@alph\@alph@eng}
```

```
55.256 \def\enumLat{\let\@Alph\@Alph@eng \let\@alph\@alph@eng}
```

```
55.257 \addto\extrasbulgarian{\enumBul}
```

```
55.258 \addto\noextrasbulgarian{\enumLat}
```

```
55.259 \def\@Alph@bul#1{%
```

```
55.260 \ifcase#1\or
```

```
55.261 \CYRA\or \CYRB\or \CYRV\or \CYRG\or \CYRD\or \CYRE\or \CYRZH\or
```

```
55.262 \CYRZ\or \CYRI\or \CYRK\or \CYRL\or \CYRM\or \CYRN\or \CYRO\or
```

```
55.263 \CYRP\or \CYRR\or \CYRS\or \CYRT\or \CYRU\or \CYRF\or \CYRH\or
```

```
55.264 \CYRC\or \CYRCH\or \CYRSH\or \CYRSHCH\or \CYRYU\or \CYRYA\else
```

```
55.265 \@ctrerr\fi
```

```
55.266 }
```

```
55.267 \def\@Alph@eng#1{%
```

```

55.268 \ifcase#1\or
55.269 A\or B\or C\or D\or E\or F\or G\or H\or I\or J\or K\or L\or M\or
55.270 N\or O\or P\or Q\or R\or S\or T\or U\or V\or W\or X\or Y\or Z\else
55.271 \@ctrerr\fi
55.272 }

```

`\@alph@bul` The macro `\@alph@bul` is similar to `\@Alph@bul`; it produces lowercase Bulgarian letters.

```

55.273 \def\@alph@bul#1{%
55.274 \ifcase#1\or
55.275 \cyra\or \cyrb\or \cyrv\or \cyrg\or \cyrd\or \cyre\or \cyrzh\or
55.276 \cyrz\or \cyri\or \cyrk\or \cyr1\or \cyrm\or \cyrn\or \cyro\or
55.277 \cyrp\or \cyrr\or \cyrS\or \cyrt\or \cyru\or \cyrf\or \cyrh\or
55.278 \cyrC\or \cyrch\or \cyrsh\or \cyrshch\or \cyrYu\or \cyrYa\else
55.279 \@ctrerr\fi
55.280 }
55.281 \def\@alph@eng#1{%
55.282 \ifcase#1\or
55.283 a\or b\or c\or d\or e\or f\or g\or h\or i\or j\or k\or l\or m\or
55.284 n\or o\or p\or q\or r\or s\or t\or u\or v\or w\or x\or y\or z\else
55.285 \@ctrerr\fi
55.286 }

```

Set up default Cyrillic math alphabets. To use Cyrillic letters in math mode user should load the `textmath` package *before* loading `fontenc` package (or `babel`). Note, that by default Cyrillic letters are taken from upright font in math mode (unlike Latin letters).

```

55.287 %\RequirePackage{textmath}
55.288 \@ifundefined{sym\cyrillicencoding letters}{\{}{%
55.289 \SetSymbolFont{\cyrillicencoding letters}{bold}\cyrillicencoding
55.290 \rmdefault\bfdefault\updefault
55.291 \DeclareSymbolFontAlphabet\cyrmathrm{\cyrillicencoding letters}

```

And we need a few commands to be able to switch to different variants.

```

55.292 \DeclareMathAlphabet\cyrmathbf\cyrillicencoding
55.293 \rmdefault\bfdefault\updefault
55.294 \DeclareMathAlphabet\cyrmathsf\cyrillicencoding
55.295 \sfdefault\mddefault\updefault
55.296 \DeclareMathAlphabet\cyrmathit\cyrillicencoding
55.297 \rmdefault\mddefault\itdefault
55.298 \DeclareMathAlphabet\cyrmathtt\cyrillicencoding
55.299 \ttdefault\mddefault\updefault
55.300 \SetMathAlphabet\cyrmathsf{bold}\cyrillicencoding
55.301 \sfdefault\bfdefault\updefault
55.302 \SetMathAlphabet\cyrmathit{bold}\cyrillicencoding
55.303 \rmdefault\bfdefault\itdefault
55.304 }

```

Some math functions in Bulgarian math books have other names: e.g., `\sinh` in Bulgarian is written as `sh` etc. So we define a number of new math operators.  
`\sinh`:

```

55.305 \def\sh{\mathop{\operator@font sh}\nolimits}

```

```

\cosh:
55.306 \def\ch{\mathop{\operator@font ch}\nolimits}

\tan:
55.307 \def\tg{\mathop{\operator@font tg}\nolimits}

\arctan:
55.308 \def\arctg{\mathop{\operator@font arctg}\nolimits}

\arccot:
55.309 \def\arcctg{\mathop{\operator@font arcctg}\nolimits}

The following macro conflicts with \th defined in Latin 1 encoding: \tanh:
55.310 \addto\extrasrussian{%
55.311 \babel@save{\th}%
55.312 \let\ltx@th\th
55.313 \def\th{\textormath{\ltx@th}%
55.314 {\mathop{\operator@font th}\nolimits}}%
55.315 }

\cot:
55.316 \def\ctg{\mathop{\operator@font ctg}\nolimits}

\coth:
55.317 \def\cth{\mathop{\operator@font cth}\nolimits}

\csc:
55.318 \def\cosec{\mathop{\operator@font cosec}\nolimits}

This is for compatibility with older Bulgarian packages.
55.319 \DeclareRobustCommand{\No}{%
55.320 \ifmmode{\nfss@text{\textnumero}}\else\textnumero\fi}

The macro \ldf@finish takes care of looking for a configuration file, setting
the main language to be switched on at \begin{document} and resetting the
category code of @ to its original value.
55.321 \ldf@finish{bulgarian}
55.322 \code

```



## 56 The Ukrainian language

The file `ukraineb.dtx`<sup>64</sup> defines all the language-specific macros for the Ukrainian language. It needs the file `cyrnod` for success documentation with Ukrainian encodings (see below).

For this language the character " is made active. In table 31 an overview is given of its purpose.

"	disable ligature at this position.
"-	an explicit hyphen sign, allowing hyphenation in the rest of the word.
"---	Cyrillic emdash in plain text.
"--~	Cyrillic emdash in compound names (surnames).
"--*	Cyrillic emdash for denoting direct speech.
"	like "-", but producing no hyphen sign (for compound words with hyphen, e.g. x-"y or some other signs as "disable/enable").
"~	for a compound word mark without a breakpoint.
"=	for a compound word mark with a breakpoint, allowing hyphenation in the composing words.
",	thinspace for initials with a breakpoint in following surname.
"‘	for German left double quotes (looks like „).
"’	for German right double quotes (looks like “).
"<<	for French left double quotes (looks like <<).
">>	for French right double quotes (looks like >>).

Table 31: The extra definitions made by `ukraineb`

The quotes in table 31 (see, also table 27) can also be typeset by using the commands in table 32 (see, also table 28).

<code>\cdash---</code>	Cyrillic emdash in plain text.
<code>\cdash--~</code>	Cyrillic emdash in compound names (surnames).
<code>\cdash--*</code>	Cyrillic emdash for denoting direct speech.
<code>\glqq</code>	for German left double quotes (looks like „).
<code>\grqq</code>	for German right double quotes (looks like “).
<code>"\flqq</code>	for French left double quotes (looks like <<).
<code>\frqq</code>	for French right double quotes (looks like >>).
<code>\dq</code>	the original quotes character (").

Table 32: More commands which produce quotes, defined by `babel`

The French quotes are also available as ligatures ‘<<’ and ‘>>’ in 8-bit Cyrillic font encodings (LCY, X2, T2\*) and as ‘<’ and ‘>’ characters in 7-bit Cyrillic font encodings (OT2 and LWN).

<sup>64</sup>The file described in this section has version number ?. This file was derived from the `russianb.dtx` version 1.1g.

The quotation marks traditionally used in Ukrainian and Russian languages were borrowed from other languages (e.g. French and German) so they keep their original names.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
56.1 (*code)
56.2 \LdfInit{ukrainian}{captionsukrainian}
```

When this file is read as an option, i.e., by the `\usepackage` command, `ukraineb` will be an ‘unknown’ language, in which case we have to make it known. So we check for the existence of `\l@ukrainian` to see whether we have to do something here.

```
56.3 \ifx\l@ukrainian\@undefined
56.4   \@nopatterns{Ukrainian}
56.5   \adddialect\l@ukrainian0
56.6 \fi
```

`\latinencoding` We need to know the encoding for text that is supposed to be which is active at the end of the `babel` package. If the `fontenc` package is loaded later, then... too bad!

```
56.7 \let\latinencoding\cf@encoding
```

The user may choose between different available Cyrillic encodings—e.g., `X2`, `LCY`, or `LWN`. Hopefully, `X2` will eventually replace the two latter encodings (`LCY` and `LWN`). If the user wants to use another font encoding than the default (`T2A`), he has to load the corresponding file *before* `ukraineb.sty`. This may be done in the following way:

```
% override the default X2 encoding used in Babel
\usepackage[LCY,OT1]{fontenc}
\usepackage[english,ukrainian]{babel}
```

Note: for the Ukrainian language, the `T2A` encoding is better than `X2`, because `X2` does not contain Latin letters, and users should be very careful to switch the language every time they want to typeset a Latin word inside a Ukrainian phrase or vice versa.

We parse the `\cdp@list` containing the encodings known to  $\text{\LaTeX}$  in the order they were loaded. We set the `\cyrillicencoding` to the *last* loaded encoding in the list of supported Cyrillic encodings: `OT2`, `LWN`, `LCY`, `X2`, `T2C`, `T2B`, `T2A`, if any.

```
56.8 \def\reserved@a#1#2{%
56.9   \edef\reserved@b{#1}%
56.10  \edef\reserved@c{#2}%
56.11  \ifx\reserved@b\reserved@c
56.12    \let\cyrillicencoding\reserved@c
56.13  \fi}
56.14 \def\cdp@elt#1#2#3#4{%
56.15   \reserved@a{#1}{OT2}%
56.16   \reserved@a{#1}{LWN}%
56.17   \reserved@a{#1}{LCY}%
56.18   \reserved@a{#1}{X2}%
56.19   \reserved@a{#1}{T2C}%
56.20   \reserved@a{#1}{T2B}%
```

```

56.21 \reserved@a{#1}{T2A}}
56.22 \cdp@list

```

Now, if `\cyrillicencoding` is undefined, then the user did not load any of supported encodings. So, we have to set `\cyrillicencoding` to some default value. We test the presence of the encoding definition files in the order from less preferable to more preferable encodings. We use the lowercase names (i.e., `lcyenc.def` instead of `LCYenc.def`).

```

56.23 \ifx\cyrillicencoding\undefined
56.24 \IfFileExists{ot2enc.def}{\def\cyrillicencoding{OT2}}\relax
56.25 \IfFileExists{lwnenc.def}{\def\cyrillicencoding{LWN}}\relax
56.26 \IfFileExists{lcyenc.def}{\def\cyrillicencoding{LCY}}\relax
56.27 \IfFileExists{x2enc.def}{\def\cyrillicencoding{X2}}\relax
56.28 \IfFileExists{t2cenc.def}{\def\cyrillicencoding{T2C}}\relax
56.29 \IfFileExists{t2benc.def}{\def\cyrillicencoding{T2B}}\relax
56.30 \IfFileExists{t2aenc.def}{\def\cyrillicencoding{T2A}}\relax

```

If `\cyrillicencoding` is still undefined, then the user seems not to have a properly installed distribution. A fatal error.

```

56.31 \ifx\cyrillicencoding\undefined
56.32 \PackageError{babel}%
56.33 {No Cyrillic encoding definition files were found}%
56.34 {Your installation is incomplete.\MessageBreak
56.35 You need at least one of the following files:\MessageBreak
56.36 \space\space
56.37 x2enc.def, t2aenc.def, t2benc.def, t2cenc.def,\MessageBreak
56.38 \space\space
56.39 lcyenc.def, lwnenc.def, ot2enc.def.}%
56.40 \else

```

We avoid `\usepackage[\cyrillicencoding]{fontenc}` because we don't want to force the switch of `\encodingdefault`.

```

56.41 \lowercase
56.42 \expandafter{\expandafter\input\cyrillicencoding enc.def\relax}%
56.43 \fi
56.44 \fi

```

```

\PackageInfo{babel}
{Using ‘\cyrillicencoding’ as a default Cyrillic encoding}%

```

```

56.45 \DeclareRobustCommand{\Ukrainian}{%
56.46 \fontencoding\cyrillicencoding\selectfont
56.47 \let\encodingdefault\cyrillicencoding
56.48 \expandafter\set@hyphenmins\ukrainianhyphenmins
56.49 \language\l@ukrainian}%
56.50 \DeclareRobustCommand{\English}{%
56.51 \fontencoding\latinencoding\selectfont
56.52 \let\encodingdefault\latinencoding
56.53 \expandafter\set@hyphenmins\englishhyphenmins
56.54 \language\l@english}%
56.55 \let\Ukr\Ukrainian
56.56 \let\Eng\English
56.57 \let\cyrillictext\Ukrainian
56.58 \let\cyr\Ukrainian

```

Since the X2 encoding does not contain Latin letters, we should make some redefinitions of L<sup>A</sup>T<sub>E</sub>X macros which implicitly produce Latin letters.

```
56.59 \expandafter\ifx\csname T@X2\endcsname\relax\else
```

We put `\latinencoding` in braces to avoid problems with `\@alph` inside minipages (e.g., footnotes inside minipages) where `\@alph` is expanded and we get for example ‘`\fontencoding OT1`’ (`\fontencoding` is robust).

```
56.60 \def\@alph#1{{\fontencoding{\latinencoding}\selectfont
56.61 \ifcase#1\or
56.62 a\or b\or c\or d\or e\or f\or g\or h\or
56.63 i\or j\or k\or l\or m\or n\or o\or p\or
56.64 q\or r\or s\or t\or u\or v\or w\or x\or
56.65 y\or z\else\@ctrerr\fi}}%
56.66 \def\@Alph#1{{\fontencoding{\latinencoding}\selectfont
56.67 \ifcase#1\or
56.68 A\or B\or C\or D\or E\or F\or G\or H\or
56.69 I\or J\or K\or L\or M\or N\or O\or P\or
56.70 Q\or R\or S\or T\or U\or V\or W\or X\or
56.71 Y\or Z\else\@ctrerr\fi}}%
```

Unfortunately, the commands `\AA` and `\aa` are not encoding dependent in L<sup>A</sup>T<sub>E</sub>X (unlike e.g., `\oe` or `\DH`). They are defined as `\r{A}` and `\r{a}`. This leads to unpredictable results when the font encoding does not contain the Latin letters ‘A’ and ‘a’ (like X2).

```
56.72 \DeclareTextSymbolDefault{\AA}{OT1}
56.73 \DeclareTextSymbolDefault{\aa}{OT1}
56.74 \DeclareTextCommand{\aa}{OT1}{\r a}
56.75 \DeclareTextCommand{\AA}{OT1}{\r A}
56.76 \fi
```

The following block redefines the character class of uppercase Greek letters and some accents, if it is equal to 7 (variable family), to avoid incorrect results if the font encoding in some math family does not contain these characters in places of OT1 encoding. The code was taken from `amsmath.dtx`. See comments and further explanation there.

```
56.77 % \begingroup\catcode'\="12
56.78 % % uppercase greek letters:
56.79 % \def\@tempa#1{\expandafter\@tempb\meaning#1\relax\relax\relax\relax
56.80 % "0000\@nil#1}
56.81 % \def\@tempb#1"#2#3#4#5#6\@nil#7{%
56.82 % \ifnum"#2=7 \count@"1#3#4#5\relax
56.83 % \ifnum\count@<"1000 \else \global\mathchardef#7="0#3#4#5\relax \fi
56.84 % \fi}
56.85 % \@tempa\Gamma\@tempa\Delta\@tempa\Theta\@tempa\Lambda\@tempa\Xi
56.86 % \@tempa\Pi\@tempa\Sigma\@tempa\Upsilon\@tempa\Phi\@tempa\Psi
56.87 % \@tempa\Omega
56.88 % % some accents:
56.89 % \def\@tempa#1#2\@nil{\def\@tempc{#1}}\def\@tempb{\mathaccent}
56.90 % \expandafter\@tempa\hat\relax\relax\@nil
56.91 % \ifx\@tempb\@tempc
56.92 % \def\@tempa#1\@nil{#1}%
56.93 % \def\@tempb#1{\afterassignment\@tempa\mathchardef\@tempc}%
56.94 % \def\do#1"#2{}
```

```

56.95 % \def\@tempd#1{\expandafter\@tempb#1\@nil
56.96 % \ifnum\@tempc>"FFF
56.97 % \xdef#1{\mathaccent"\expandafter\do\meaning\@tempc\space}%
56.98 % \fi}
56.99 % \@tempd\hat\@tempd\check\@tempd\tilde\@tempd\acute\@tempd\grave
56.100 % \@tempd\dot\@tempd\ddot\@tempd\breve\@tempd\bar
56.101 % \fi
56.102 % \endgroup

```

The user must use the `inputenc` package when any 8-bit Cyrillic font encoding is used, selecting one of the Cyrillic input encodings. We do not assume any default input encoding, so the user should explicitly call the `inputenc` package by `\usepackage{inputenc}`. We also removed `\AtBeginDocument`, so `inputenc` should be used before `babel`.

```

56.103 \@ifpackageloaded{inputenc}{\fi}%
56.104 \def\reserved@a{LWN}%
56.105 \ifx\reserved@a\cyrillicencoding\else
56.106 \def\reserved@a{OT2}%
56.107 \ifx\reserved@a\cyrillicencoding\else
56.108 \PackageWarning{babel}%
56.109 {No input encoding specified for Ukrainian language}
56.110 \fi\fi}

```

Now we define two commands that offer the possibility to switch between Cyrillic and Roman encodings.

`\cyrillictext` The command `\cyrillictext` will switch from Latin font encoding to the Cyrillic font encoding, the command `\latintext` switches back. This assumes that the ‘normal’ font encoding is a Latin one. These commands are *declarations*, for shorter peaces of text the commands `\textlatin` and `\textcyrillic` can be used.

```

56.111 %\DeclareRobustCommand{\latintext}{\fi}
56.112 % \fontencoding{\latinencoding}\selectfont
56.113 % \def\encodingdefault{\latinencoding}}
56.114 \let\lat\latintext

```

`\textcyrillic` These commands take an argument which is then typeset using the requested font encoding.

```

56.115 \DeclareTextFontCommand{\textcyrillic}{\cyrillictext}
56.116 %\DeclareTextFontCommand{\textlatin}{\latintext}

```

We make the  $\TeX$

```

56.117 %\ifx\ltxTeX\undefined\let\ltxTeX\TeX\fi
56.118 %\ProvideTextCommandDefault{\TeX}{\textlatin{\ltxTeX}}

```

and  $\LaTeX$  logos encoding independent.

```

56.119 %\ifx\ltxLaTeX\undefined\let\ltxLaTeX\LaTeX\fi
56.120 %\ProvideTextCommandDefault{\LaTeX}{\textlatin{\ltxLaTeX}}

```

The next step consists of defining commands to switch to (and from) the Ukrainian language.

`\captionsukrainian` The macro `\captionsukrainian` defines all strings used in the four standard document classes provided with  $\LaTeX$ . The two commands `\cyr` and `\lat` activate Cyrillic resp. Latin encoding.

```

56.121 \addto\captionsukrainian{%
56.122 \def\prefacename{{\cyr\CYRV\cyrs\cyrt\cyru\cyrp}}}%
56.123 % \def\prefacename{{\cyr\CYRP\cyre\cyrr\cyre\cyrd\cyrm\cyro\cyrv\cyra}}}%
56.124 \def\refname{%
56.125 {\cyr\CYRL\cyrii\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyra}}}%
56.126 % \def\refname{%
56.127 % {\cyr\CYRP\cyre\cyrr\cyre\cyrl\cyrii\cyrk
56.128 % \ \cyrp\cyro\cyrs\cyri\cyrl\cyra\cyrn\cyrsftsn}}}%
56.129 \def\abstractname{%
56.130 {\cyr\CYRA\cyrn\cyro\cyrt\cyra\cyrc\cyrii\cyrya}}}%
56.131 % \def\abstractname{{\cyr\CYRR\cyre\cyrf\cyre\cyrr\cyra\cyrt}}}%
56.132 \def\bibname{%
56.133 {\cyr\CYRB\cyrii\cyrb\cyrl\cyrii\cyro\cyrgup\cyrr\cyra\cyrf\cyrii\cyrya}}}%
56.134 % \def\bibname{{\cyr\CYRL\cyrii\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyra}}}%
56.135 \def\chaptername{{\cyr\CYRR\cyro\cyrz\cyrd\cyrii\cyrl}}}%
56.136 % \def\chaptername{{\cyr\CYRG\cyrl\cyra\cyrv\cyra}}}%
56.137 \def\appendixname{{\cyr\CYRD\cyro\cyrd\cyra\cyrt\cyro\cyrk}}}%
56.138 \def\contentsname{{\cyr\CYRZ\cyrm\cyrii\cyrs\cyrt}}}%
56.139 \def\listfigurename{{\cyr\CYRP\cyre\cyrr\cyre\cyrl\cyrii\cyrk
56.140 \ \cyrii\cyrl\cyryu\cyrs\cyrt\cyrr\cyra\cyrc\cyrii\cyrishrt}}}%
56.141 \def\listtablename{{\cyr\CYRP\cyre\cyrr\cyre\cyrl\cyrii\cyrk
56.142 \ \cyrt\cyra\cyrb\cyrl\cyri\cyrc\cyrsftsn}}}%
56.143 \def\indexname{{\cyr\CYRP\cyro\cyrk\cyra\cyrz\cyrch\cyri\cyrk}}}%
56.144 \def\authorname{{\cyr\CYRII\cyrm\cyre\cyrn\cyrn\cyri\cyrishrt
56.145 \ \cyrp\cyro\cyrk\cyra\cyrz\cyrch\cyri\cyrk}}}%
56.146 \def\figurename{{\cyr\CYRR\cyri\cyrs.}}}%
56.147 % \def\figurename{{\cyr\CYRR\cyri\cyrs\cyru\cyrn\cyro\cyrk}}}%
56.148 \def\tablename{{\cyr\CYRT\cyra\cyrb\cyrl.}}}%
56.149 % \def\tablename{{\cyr\CYRT\cyra\cyrb\cyrl\cyri\cyrc\cyrya}}}%
56.150 \def\partname{{\cyr\CYRCH\cyra\cyrs\cyrt\cyri\cyrn\cyra}}}%
56.151 \def\enclname{{\cyr\cyrv\cyrk\cyrl\cyra\cyrd\cyrk\cyra}}}%
56.152 \def\ccname{{\cyr\cyrk\cyro\cyrp\cyrii\cyrya}}}%
56.153 \def\headtoname{{\cyr\CYRD\cyro}}}%
56.154 \def\pagename{{\cyr\cyrs.}}}%
56.155 % \def\pagename{{\cyr\cyrs\cyrt\cyro\cyrr\cyrii\cyrn\cyrk\cyra}}}%
56.156 \def\seename{{\cyr\cyrd\cyri\cyrv.}}}%
56.157 \def\alsoname{{\cyr\cyrd\cyri\cyrv.\ \cyrt\cyra\cyrk\cyro\cyrz}}}%
56.158 \def\proofname{{\cyr\CYRD\cyro\cyrv\cyre\cyrd\cyre\cyrn\cyrn\cyrya}}}%
56.159 \def\glossaryname{{\cyr\CYRS\cyrl\cyro\cyrv\cyrn\cyri\cyrk \
56.160 \cyrt\cyre\cyrr\cyrm\cyrii\cyrn\cyrii\cyrv}}}%
56.161 }

```

`\dateukrainian` The macro `\dateukrainian` redefines the command `\today` to produce Ukrainian dates.

```

56.162 \def\dateukrainian{%
56.163 \def\today{\number\day~\ifcase\month\or
56.164 \cyrs\cyrii\cyrch\cyrn\cyrya\or
56.165 \cyrl\cyryu\cyrt\cyro\cyrg\cyro\or
56.166 \cyrb\cyre\cyrr\cyre\cyrz\cyrn\cyrya\or
56.167 \cyrk\cyrv\cyrii\cyrt\cyrn\cyrya\or
56.168 \cyrt\cyrr\cyra\cyrv\cyrn\cyrya\or
56.169 \cyrch\cyre\cyrr\cyrv\cyrn\cyrya\or
56.170 \cyrl\cyri\cyrp\cyrn\cyrya\or
56.171 \cyrs\cyre\cyrr\cyrp\cyrn\cyrya\or

```

```

56.172 \cyrv\cyre\cyrr\cyre\cyrs\cyrn\cyrya\or
56.173 \cyrzh\cyro\cyrv\cyrt\cyrn\cyrya\or
56.174 \cyr1\cyri\cyrs\cyrt\cyro\cyrp\cyra\cyrd\cyra\or
56.175 \cyrq\cyrr\cyru\cyrd\cyrn\cyrya\fi
56.176 \space\number\year~\cyrr.}}

```

**\extrasukrainian** The macro `\extrasukrainian` will perform all the extra definitions needed for the Ukrainian language. The macro `\noextrasukrainian` is used to cancel the actions of `\extrasukrainian`.

The first action we define is to switch on the selected Cyrillic encoding whenever we enter ‘ukrainian’.

```
56.177 \addto\extrasukrainian{\cyrillictext}
```

When the encoding definition file was processed by  $\text{\LaTeX}$  the current font encoding is stored in `\latinencoding`, assuming that  $\text{\LaTeX}$  uses T1 or OT1 as default. Therefore we switch back to `\latinencoding` whenever the Ukrainian language is no longer ‘active’.

```
56.178 \addto\noextrasukrainian{\latintext}
```

Next we must allow hyphenation in the Ukrainian words with apostrophe whenever we enter ‘ukrainian’. This solution was proposed by Vladimir Volovich <vvv@vvv.vsu.ru>

```
56.179 \addto\extrasukrainian{\lccode'\='\'}
```

```
56.180 \addto\noextrasukrainian{\lccode'\'=0}
```

**\verbatim@font** In order to get both Latin and Cyrillic letters in verbatim text we need to change the definition of an internal  $\text{\LaTeX}$  command somewhat:

```

56.181 %\def\verbatim@font{%
56.182 % \let\encodingdefault\latinencoding
56.183 % \normalfont\ttfamily
56.184 % \expandafter\def\csname\cyrillicencoding-cmd\endcsname##1##2{%
56.185 % \ifx\protect\@typeset@protect
56.186 % \begingroup\UseTextSymbol\cyrillicencoding##1\endgroup
56.187 % \else\noexpand##1\fi}}

```

The category code of the characters ‘:’, ‘;’, ‘!’, and ‘?’ is made `\active` to insert a little white space.

For Ukrainian (as well as for Russian and German) the “ character also is made active.

Note: It is *very* questionable whether the Russian typesetting tradition requires additional spacing before those punctuation signs. Therefore, we make the corresponding code optional. If you need it, then define the `frenchpunct` docstrip option in `babel.ins`.

Borrowed from french. Some users dislike automatic insertion of a space before ‘double punctuation’, and prefer to decide themselves whether a space should be added or not; so a hook `\NoAutoSpaceBeforeFDP` is provided: if this command is added (in file `ukraineb.cfg`, or anywhere in a document) `ukraineb` will respect your typing, and introduce a suitable space before ‘double punctuation’ *if and only if* a space is typed in the source file before those signs.

The command `\AutoSpaceBeforeFDP` switches back to the default behavior of `ukraineb`.

```

56.188 <*frenchpunct>
56.189 \initiate@active@char{:}
56.190 \initiate@active@char{;}
56.191 </frenchpunct>
56.192 <*frenchpunct | spanishlig>
56.193 \initiate@active@char{!}
56.194 \initiate@active@char{?}
56.195 </frenchpunct | spanishlig>
56.196 \initiate@active@char{"}

```

The code above is necessary because we need extra active characters. The character " is used as indicated in table 31.

We specify that the Ukrainian group of shorthands should be used.

```

56.197 \addto\extrasukrainian{\languageshorthands{ukrainian}}

```

These characters are ‘turned on’ once, later their definition may vary.

```

56.198 \addto\extrasukrainian{%
56.199 <frenchpunct> \bbl@activate{:}\bbl@activate{;}%
56.200 <frenchpunct | spanishlig> \bbl@activate{!}\bbl@activate{?}%
56.201 \bbl@activate{"}}
56.202 \addto\noextrasukrainian{%
56.203 <frenchpunct> \bbl@deactivate{:}\bbl@deactivate{;}%
56.204 <frenchpunct | spanishlig> \bbl@deactivate{!}\bbl@deactivate{?}%
56.205 \bbl@deactivate{"}}

```

The X2 and T2\* encodings do not contain `spanish_shriek` and `spanish_query` symbols; as a consequence, the ligatures ‘?’ and ‘!’ do not work with them (these characters are useless for Cyrillic texts anyway). But we define the shorthands to emulate these ligatures (optionally).

We do not use `\latinencoding` here (but instead explicitly use OT1) because the user may choose T2A to be the primary encoding, but it does not contain these characters.

```

56.206 <*spanishlig>
56.207 \declare@shorthand{ukrainian}{?'}{\UseTextSymbol{OT1}\textquestiondown}
56.208 \declare@shorthand{ukrainian}{!'}{\UseTextSymbol{OT1}\textexclamdown}
56.209 </spanishlig>

```

`\ukrainian@sh@;` We have to reduce the amount of white space before ;, : and !. This should only happen in horizontal mode, hence the test with `\ifhmode`.

```

\ukrainian@sh@!@
\ukrainian@sh@?@
56.210 <*frenchpunct>
56.211 \declare@shorthand{ukrainian}{;}{;}%
56.212 \ifhmode

```

In horizontal mode we check for the presence of a ‘space’, ‘unskip’ if it exists and place a 0.1em kerning.

```

56.213 \ifdim\lastskip>\z@
56.214 \unskip\nobreak\kern.1em
56.215 \else

```

If no space has been typed, we add `\FDP@thinspace` which will be defined, up to the user’s wishes, as an automatic added thinspace, or as `\@empty`.

```

56.216 \FDP@thinspace
56.217 \fi
56.218 \fi

```



Now we can insert a ‘;’ character.

```
56.219 \string;}
```

The other definitions are very similar.

```
56.220 \declare@shorthand{ukrainian}{:}{}%
56.221 \ifhmode
56.222 \ifdim\lastskip>\z@
56.223 \unskip\nobreak\kern.1em
56.224 \else
56.225 \FDP@thinspace
56.226 \fi
56.227 \fi
56.228 \string;}

56.229 \declare@shorthand{ukrainian}{!}{}%
56.230 \ifhmode
56.231 \ifdim\lastskip>\z@
56.232 \unskip\nobreak\kern.1em
56.233 \else
56.234 \FDP@thinspace
56.235 \fi
56.236 \fi
56.237 \string!}

56.238 \declare@shorthand{ukrainian}{?}{}%
56.239 \ifhmode
56.240 \ifdim\lastskip>\z@
56.241 \unskip\nobreak\kern.1em
56.242 \else
56.243 \FDP@thinspace
56.244 \fi
56.245 \fi
56.246 \string?}
```

\AutoSpaceBeforeFDP \FDP@thinspace is defined as unbreakable spaces if \AutoSpaceBeforeFDP is activated or as \@empty if \NoAutoSpaceBeforeFDP is in use. The default is \FDP@thinspace \AutoSpaceBeforeFDP.

```
56.247 \def\AutoSpaceBeforeFDP{%
56.248 \def\FDP@thinspace{\nobreak\kern.1em}}
56.249 \def\NoAutoSpaceBeforeFDP{\let\FDP@thinspace\@empty}
56.250 \AutoSpaceBeforeFDP
```

\FDPon The next macros allow to switch on/off activeness of double punctuation signs.

```
\FDPoff
56.251 \def\FDPon{\bbl@activate{:}}%
56.252 \bbl@activate{;}%
56.253 \bbl@activate{?}%
56.254 \bbl@activate{!}%
56.255 \def\FDPoff{\bbl@deactivate{:}}%
56.256 \bbl@deactivate{;}%
56.257 \bbl@deactivate{?}%
56.258 \bbl@deactivate{!}%
```

\system@sh@: When the active characters appear in an environment where their Ukrainian behaviour is not wanted they should give an ‘expected’ result. Therefore we define \system@sh@? shorthands at system level as well.  
\system@sh@;

```

56.259 \declare@shorthand{system}{:}{\string:}
56.260 \declare@shorthand{system}{;}{\string;}
56.261 \frenchpunct
56.262 \*frenchpunct&!spanishligs)
56.263 \declare@shorthand{system}{!}{\string!}
56.264 \declare@shorthand{system}{?}{\string?}
56.265 \frenchpunct&!spanishligs)

```

To be able to define the function of “”, we first define a couple of ‘support’ macros.

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent “” can now be typed as “”.

```

56.266 \begingroup \catcode'\ "12
56.267 \def\reserved@a{\endgroup
56.268 \def\@SS{\mathchar"7019 }
56.269 \def\dq{"}}
56.270 \reserved@a

```

Now we can define the doublequote macros: german and french quotes. We use definitions of these quotes made in `babel.sty`. The french quotes are contained in the T2\* encodings.

```

56.271 \declare@shorthand{ukrainian}{"'}{\glqq}
56.272 \declare@shorthand{ukrainian}{"'}{\grqq}
56.273 \declare@shorthand{ukrainian}{"<}{\flqq}
56.274 \declare@shorthand{ukrainian}{">}{\frqq}

```

Some additional commands:

```

56.275 \declare@shorthand{ukrainian}{""}{\hskip\z@skip}
56.276 \declare@shorthand{ukrainian}{""}{\textormath{\leavevmode\hbox{-}}{-}}
56.277 \declare@shorthand{ukrainian}{""}{\nobreak-\hskip\z@skip}
56.278 \declare@shorthand{ukrainian}{"|}{\%
56.279 \textormath{\nobreak\discretionary{-}{-}{\kern.03em}%
56.280 \allowhyphens}{}}

```

The next two macros for “-” and “---” are somewhat different. We must check whether the second token is a hyphen character:

```

56.281 \declare@shorthand{ukrainian}{"-}{\%

```

If the next token is ‘-’, we typeset an emdash, otherwise a hyphen sign:

```

56.282 \def\ukrainian@sh@tmp{%
56.283 \if\ukrainian@sh@next-\expandafter\ukrainian@sh@emdash
56.284 \else\expandafter\ukrainian@sh@hyphen\fi
56.285 }%

```

TeX looks for the next token after the first ‘-’: the meaning of this token is written to `\ukrainian@sh@next` and `\ukrainian@sh@tmp` is called.

```

56.286 \futurelet\ukrainian@sh@next\ukrainian@sh@tmp}

```

Here are the definitions of hyphen and emdash. First the hyphen:

```

56.287 \def\ukrainian@sh@hyphen{%
56.288 \nobreak\-\bbl@allowhyphens}

```

For the emdash definition, there are the two parameters: we must ‘eat’ two last hyphen signs of our emdash. . . :

```
56.289 \def\ukrainian@sh@emdash#1#2{\cdash-#1#2}
```

`\cdash` . . . these two parameters are useful for another macro: `\cdash`:

```
56.290 %\ifx\cdash\undefined % should be defined earlier
56.291 \def\cdash#1#2#3{\def\tempx@{#3}%
56.292 \def\tempa@{-}\def\tempb@{~}\def\tempc@{*}%
56.293 \ifx\tempx@\tempa@\@Acdash\else
56.294 \ifx\tempx@\tempb@\@Bcdash\else
56.295 \ifx\tempx@\tempc@\@Ccdash\else
56.296 \errmessage{Wrong usage of cdash}\fi\fi\fi}
```

second parameter (or third for `\cdash`) shows what kind of emdash to create in next step

"-- ordinary (plain) Cyrillic emdash inside text: an unbreakable thinspace will be inserted before only in case of a *space* before the dash (it is necessary for dashes after display maths formulae: there could be lists, enumerations etc. started with “— where *a* is ...” i.e., the dash starts a line). (Firstly there were planned rather soft rules for user: he may put a space before the dash or not. But it is difficult to place this thinspace automatically, i.e., by checking modes because after display formulae T<sub>E</sub>X uses horizontal mode. Maybe there is a misunderstanding? Maybe there is another way?) After a dash a breakable thinspace is always placed;

```
56.297 % What is more grammatically: .2em or .2\fontdimen6\font ?
56.298 \def\@Acdash{\ifdim\lastskip>z@\unskip\nobreak\hskip.2em\fi
56.299 \cyrdash\hskip.2em\ignorespaces}%
```

"--~ emdash in compound names or surnames (like Mendeleev–Klapeiron); this dash has no space characters around; after the dash some space is added `\exhyphenalty`

```
56.300 \def\@Bcdash{\leavevmode\ifdim\lastskip>z@\unskip\fi
56.301 \nobreak\cyrdash\penalty\exhyphenpenalty\hskip\z@skip\ignorespaces}%
```

"--\* for denoting direct speech (a space like `\enskip` must follow the emdash);

```
56.302 \def\@Ccdash{\leavevmode
56.303 \nobreak\cyrdash\nobreak\hskip.35em\ignorespaces}%
56.304 %\fi
```

`\cyrdash` Finally the macro for “body” of the Cyrillic emdash. The `\cyrdash` macro will be defined in case this macro hasn’t been defined in a fontenc file. For T2\* fonts, `cyrdash` will be placed in the code of the English emdash thus it uses ligature ---.

```
56.305 % Is there an IF necessary?
56.306 \ifx\cyrdash\undefined
56.307 \def\cyrdash{\hbox to.8em{--\hss--}}
56.308 \fi
```

Here a really new macro—to place thinspace between initials. This macro used instead of `\,`, allows hyphenation in the following surname.

```
56.309 %\declare@shorthand{ukrainian}{",}\{\nobreak\hskip.2em\ignorespaces}
```



And we need a few commands to be able to switch to different variants.

```

56.338 \DeclareMathAlphabet\cyrmathbf\cyrillicencoding
56.339   \rmdefault\bfdefault\updefault
56.340 \DeclareMathAlphabet\cyrmathsf\cyrillicencoding
56.341   \sfdefault\mddefault\updefault
56.342 \DeclareMathAlphabet\cyrmathit\cyrillicencoding
56.343   \rmdefault\mddefault\itdefault
56.344 \DeclareMathAlphabet\cyrmathtt\cyrillicencoding
56.345   \ttdefault\mddefault\updefault
56.346 %
56.347 \SetMathAlphabet\cyrmathsf{bold}\cyrillicencoding
56.348   \sfdefault\bfdefault\updefault
56.349 \SetMathAlphabet\cyrmathit{bold}\cyrillicencoding
56.350   \rmdefault\bfdefault\itdefault
56.351 }

```

Some math functions in Ukrainian and Russian math books have other names: e.g.,  $\sinh$  in Russian is written as  $\text{sh}$  etc. So we define a number of new math operators.

```

\sinh:
56.352 \def\sh{\mathop{\operator@font sh}\nolimits}
\cosh:
56.353 \def\ch{\mathop{\operator@font ch}\nolimits}
\tan:
56.354 \def\tg{\mathop{\operator@font tg}\nolimits}
\arctan:
56.355 \def\arctg{\mathop{\operator@font arctg}\nolimits}
arcctg:
56.356 \def\arcctg{\mathop{\operator@font arcctg}\nolimits}

```

The following macro conflicts with  $\text{th}$  defined in Latin 1 encoding:

```

\tanh:
56.357 \addto\extrasrussian{%
56.358   \babel@save{\th}%
56.359   \let\ltx@th\th
56.360   \def\th{\textormath{\ltx@th}%
56.361     {\mathop{\operator@font th}\nolimits}}}%
56.362 }
\cot:
56.363 \def\ctg{\mathop{\operator@font ctg}\nolimits}
\coth:
56.364 \def\cth{\mathop{\operator@font cth}\nolimits}
\csc:
56.365 \def\cosec{\mathop{\operator@font cosec}\nolimits}

```

And finally some other Ukrainian and Russian mathematical symbols:

```

56.366 \def\Prob{\mathop{\kern\z@\mathsf{P}}\nolimits}
56.367 \def\Variance{\mathop{\kern\z@\mathsf{D}}\nolimits}
56.368 \def\nsd{\mathop{\cyrmathrm{\cyrn.\cyrs.\cyrd.}}\nolimits}
56.369 \def\nsk{\mathop{\cyrmathrm{\cyrn.\cyrs.\cyrk.}}\nolimits}

```

```

56.370 \def\NSD{\mathop{\cyrmathrm{\CYRN\CYRS\CYRD}}\nolimits}
56.371 \def\NSK{\mathop{\cyrmathrm{\CYRN\CYRS\CYRK}}\nolimits}
56.372 \def\nod{\mathop{\cyrmathrm{\cyrn.\cyro.\cyrd.}}\nolimits} % ??????
56.373 \def\nok{\mathop{\cyrmathrm{\cyrn.\cyro.\cyrk.}}\nolimits} % ??????
56.374 \def\NOD{\mathop{\cyrmathrm{\CYRN\CYRO\CYRD}}\nolimits} % ??????
56.375 \def\NOK{\mathop{\cyrmathrm{\CYRN\CYRO\CYRK}}\nolimits} % ??????
56.376 \def\Proj{\mathop{\cyrmathrm{\CYRP\cyrr}}\nolimits}

```

This is for compatibility with older Ukrainian packages.

```

56.377 \DeclareRobustCommand{\No}{%
56.378 \ifmmode{\nfss@text{\textnumero}}\else\textnumero\fi}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

56.379 \ldf@finish{ukrainian}
56.380 \code

```

## 57 The Lower Sorbian language

The file `lsorbian.dtx`<sup>65</sup> It defines all the language-specific macros for Lower Sorbian.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
57.1 (*code)
57.2 \LdfInit{lsorbian}\captionlsorbian
```

When this file is read as an option, i.e. by the `\usepackage` command, `lsorbian` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@lsorbian` to see whether we have to do something here.

```
57.3 \ifx\l@lsorbian\undefined
57.4   \nopatterns{Lsorbian}
57.5   \adddialect\l@lsorbian\l@usorbian\fi
```

The next step consists of defining commands to switch to (and from) the Lower Sorbian language.

`\captionlsorbian` The macro `\captionlsorbian` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
57.6 \addto\captionlsorbian{%
57.7   \def\prefacename{Zawod}%
57.8   \def\refname{Referency}%
57.9   \def\abstractname{Abstrakt}%
57.10  \def\bibname{Literatura}%
57.11  \def\chaptername{Kapitl}%
57.12  \def\appendixname{Dodawki}%
57.13  \def\contentsname{Wop\’simje\’se}%
57.14  \def\listfigurename{Zapis wobrazow}%
57.15  \def\listtablename{Zapis tabulkow}%
57.16  \def\indexname{Indeks}%
57.17  \def\figurename{Wobraz}%
57.18  \def\tablename{Tabulka}%
57.19  \def\partname{\’Z\’v el}%
57.20  \def\enclname{P\’si\’l oga}%
57.21  \def\ccname{CC}%
57.22  \def\headtoname{Komu}%
57.23  \def\pagename{Strona}%
57.24  \def\seename{gl.}%
57.25  \def\alsoname{gl.~teke}%
57.26  \def\proofname{Proof}% <-- needs translation
57.27  \def\glossaryname{Glossary}% <-- Needs translation
57.28  }%
```

`\newdatelsorbian` The macro `\newdatelsorbian` redefines the command `\today` to produce Lower Sorbian dates.

```
57.29 \def\newdatelsorbian{%
57.30   \def\today{\number\day.\~\ifcase\month\or
57.31     januara\or februara\or m\’v erca\or apryla\or maja\or
```

---

<sup>65</sup>The file described in this section has version number v1.0f and was last revised on 2005/03/31. It was written by Eduard Werner ([edi@kaihh.hanse.de](mailto:edi@kaihh.hanse.de)).

```

57.32     junija\or julija\or awgusta\or septembra\or oktobra\or
57.33     nowembra\or decembra\fi
57.34     \space \number\year}}

```

`\olddatelsorbian` The macro `\olddatelsorbian` redefines the command `\today` to produce old-style Lower Sorbian dates.

```

57.35 \def\olddatelsorbian{%
57.36   \def\today{\number\day.\~\ifcase\month\or
57.37     wjelikego ro\ v zka\or
57.38     ma\l ego ro\ v zka\or
57.39     nal\ v etnika\or
57.40     jat\ v sownika\or
57.41     ro\ v zownika\or
57.42     sma\ v znika\or
57.43     pra\ v znika\or
57.44     \ v znje\ 'nca\or
57.45     po\ v znje\ 'nca\or
57.46     winowca\or
57.47     nazymnika\or
57.48     godownika\fi \space \number\year}}

```

The default will be the new-style dates.

```

57.49 \let\datelsorbian\newdatelsorbian

```

`\extraslsorbian` The macro `\extraslsorbian` will perform all the extra definitions needed for the `\noextraslsorbian` lsorbian language. The macro `\noextraslsorbian` is used to cancel the actions of `\extraslsorbian`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```

57.50 \addto\extraslsorbian{}
57.51 \addto\noextraslsorbian{}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

57.52 \ldf@finish{lsorbian}
57.53 \code

```



## 58 The Upper Sorbian language

The file `usorbian.dtx`<sup>66</sup> It defines all the language-specific macros for Upper Sorbian.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
58.1 (*code)
58.2 \LdfInit{usorbian}\captionusorbian
```

When this file is read as an option, i.e. by the `\usepackage` command, `usorbian` will be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@usorbian` to see whether we have to do something here.

```
58.3 \ifx\l@usorbian\undefined
58.4     \nopatterns{Usorbian}
58.5     \adddialect\l@usorbian0\fi
```

The next step consists of defining commands to switch to (and from) the Upper Sorbian language.

`\captionusorbian` The macro `\captionusorbian` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
58.6 \addto\captionusorbian{%
58.7   \def\prefacename{Zawod}%
58.8   \def\refname{Referency}%
58.9   \def\abstractname{Abstrakt}%
58.10  \def\bibname{Literatura}%
58.11  \def\chaptername{Kapitl}%
58.12  \def\appendixname{Dodawki}%
58.13  \def\contentsname{Wobsah}%
58.14  \def\listfigurename{Zapis wobrazow}%
58.15  \def\listtablename{Zapis tabulkow}%
58.16  \def\indexname{Indeks}%
58.17  \def\figurename{Wobraz}%
58.18  \def\tablename{Tabulka}%
58.19  \def\partname{D\'z\'v el}%
58.20  \def\enclname{P\'v r\'l oha}%
58.21  \def\ccname{CC}%
58.22  \def\headtoname{Komu}%
58.23  \def\pagename{Strona}%
58.24  \def\seename{hl.}%
58.25  \def\alsiname{hl.~te\'v z}
58.26  \def\proofname{Proof}% <-- needs translation
58.27  \def\glossaryname{Glossary}% <-- Needs translation
58.28  }%
```

`\newdateusorbian` The macro `\newdateusorbian` redefines the command `\today` to produce Upper Sorbian dates.

```
58.29 \def\newdateusorbian{%
58.30   \def\today{\number\day.~\ifcase\month\or
58.31     januara\or februara\or m\'v erca\or apryla\or meje\or junija\or
```

---

<sup>66</sup>The file described in this section has version number v1.0i and was last revised on 2005/03/31. It was written by Eduard Werner ([edi@kaihh.hanse.de](mailto:edi@kaihh.hanse.de)).

```

58.32   julijs\or awgusta\or septembra\or oktobra\or
58.33   nowembra\or decembra\fi
58.34   \space \number\year}}

```

`\olddateusorbian` The macro `\olddateusorbian` redefines the command `\today` to produce old-style Upper Sorbian dates.

```

58.35 \def\olddateusorbian{%
58.36   \def\today{\number\day.\~\ifcase\month\or
58.37     wulkeho r\'o\v zka\or ma\l eho r\'o\v zka\or nal\v etnika\or
58.38     jutrownika\or r\'o\v zownika\or sma\v znika\or pra\v znika\or
58.39     \v znjenca\or po\v znjenca\or winowca\or nazymnika\or
58.40     hodownika\fi \space \number\year}}

```

The default will be the new-style dates.

```

58.41 \let\dateusorbian\newdateusorbian

```

`\extrasusorbian` The macro `\extrasusorbian` will perform all the extra definitions needed for the Upper Sorbian language. It's pirated from `germanb.sty`. The macro `\noextrasusorbian` is used to cancel the actions of `\extrasusorbian`.

Because for Upper Sorbian (as well as for Dutch) the " character is made active. This is done once, later on its definition may vary.

```

58.42 \initiate@active@char{"}
58.43 \addto\extrasusorbian{\languageshorthands{usorbian}}
58.44 \addto\extrasusorbian{\bbl@activate{}}

```

Don't forget to turn the shorthands off again.

```

58.45 \addto\noextrasusorbian{\bbl@deactivate{}}

```

In order for  $\TeX$  to be able to hyphenate German Upper Sorbian words which contain 'ß' we have to give the character a nonzero `\lccode` (see Appendix H, the  $\TeX$ book).

```

58.46 \addto\extrasusorbian{\babel@savevariable{\lccode'\^^Y}%
58.47   \lccode'\^^Y'\^^Y}

```

The umlaut accent macro `\"` is changed to lower the umlaut dots. The redefinition is done with the help of `\umlautlow`.

```

58.48 \addto\extrasusorbian{\babel@save"\\umlautlow}
58.49 \addto\noextrasusorbian{\umlauthigh}

```

The Upper Sorbian hyphenation patterns can be used with `\lefthyphenmin` and `\righthyphenmin` set to 2.

```

58.50 \providehyphenmins{\CurrentOption}{\tw@\tw@}

```

`\dq` We save the original double quote character in `\dq` to keep it available, the math accent `\"` can now be typed as `"`. Also we store the original meaning of the command `\"` for future use.

```

58.51 \begingroup \catcode'\^"12
58.52 \def\x{\endgroup
58.53   \def\@SS{\mathchar"7019 }
58.54   \def\dq{"}}
58.55 \x

```

Now we can define the doublequote macros: the umlauts,

```
58.56 \declare@shorthand{usorbian}{\a}{\textormath{"a}{\ddot a}}
58.57 \declare@shorthand{usorbian}{\o}{\textormath{"o}{\ddot o}}
58.58 \declare@shorthand{usorbian}{\u}{\textormath{"u}{\ddot u}}
58.59 \declare@shorthand{usorbian}{\A}{\textormath{"A}{\ddot A}}
58.60 \declare@shorthand{usorbian}{\O}{\textormath{"O}{\ddot O}}
58.61 \declare@shorthand{usorbian}{\U}{\textormath{"U}{\ddot U}}
```

tremas,

```
58.62 \declare@shorthand{usorbian}{\e}{\textormath{"e}{\ddot e}}
58.63 \declare@shorthand{usorbian}{\E}{\textormath{"E}{\ddot E}}
58.64 \declare@shorthand{usorbian}{\i}{\textormath{"i}{\ddot i}\imath}}
58.65 \declare@shorthand{usorbian}{\I}{\textormath{"I}{\ddot I}}
```

usorbian es-zet (sharp s),

```
58.66 \declare@shorthand{usorbian}{\s}{\textormath{ss}}{\@SS}}
58.67 \declare@shorthand{usorbian}{\S}{SS}
```

german and french quotes,

```
58.68 \declare@shorthand{usorbian}{\'}{\%
58.69 \textormath{\quotedblbase}{\mbox{\quotedblbase}}}
58.70 \declare@shorthand{usorbian}{\'}{\%
58.71 \textormath{\textquotedblleft}{\mbox{\textquotedblleft}}}
58.72 \declare@shorthand{usorbian}{\<}{\%
58.73 \textormath{\guillemotleft}{\mbox{\guillemotleft}}}
58.74 \declare@shorthand{usorbian}{\>}{\%
58.75 \textormath{\guillemotright}{\mbox{\guillemotright}}}
```

discretionary commands

```
58.76 \declare@shorthand{usorbian}{\c}{\textormath{\bbl@disc ck}{c}}
58.77 \declare@shorthand{usorbian}{\C}{\textormath{\bbl@disc CK}{C}}
58.78 \declare@shorthand{usorbian}{\f}{\textormath{\bbl@disc f{ff}}{f}}
58.79 \declare@shorthand{usorbian}{\F}{\textormath{\bbl@disc F{FF}}{F}}
58.80 \declare@shorthand{usorbian}{\l}{\textormath{\bbl@disc l{ll}}{l}}
58.81 \declare@shorthand{usorbian}{\L}{\textormath{\bbl@disc L{LL}}{L}}
58.82 \declare@shorthand{usorbian}{\m}{\textormath{\bbl@disc m{mm}}{m}}
58.83 \declare@shorthand{usorbian}{\M}{\textormath{\bbl@disc M{MM}}{M}}
58.84 \declare@shorthand{usorbian}{\n}{\textormath{\bbl@disc n{nn}}{n}}
58.85 \declare@shorthand{usorbian}{\N}{\textormath{\bbl@disc N{NN}}{N}}
58.86 \declare@shorthand{usorbian}{\p}{\textormath{\bbl@disc p{pp}}{p}}
58.87 \declare@shorthand{usorbian}{\P}{\textormath{\bbl@disc P{PP}}{P}}
58.88 \declare@shorthand{usorbian}{\t}{\textormath{\bbl@disc t{tt}}{t}}
58.89 \declare@shorthand{usorbian}{\T}{\textormath{\bbl@disc T{TT}}{T}}
```

and some additional commands:

```
58.90 \declare@shorthand{usorbian}{\~}{\nobreak\~\bbl@allowhyphens}
58.91 \declare@shorthand{usorbian}{\|}{\%
58.92 \textormath{\nobreak\discretionary{-}{\kern.03em}%
58.93 \allowhyphens}{}}
58.94 \declare@shorthand{usorbian}{\"}{\hskip\z@skip}
```

\mdqon All that's left to do now is to define a couple of commands for reasons of compat-  
\mdqoff ibility with german.sty.

```
\ck58.95 \def\mdqon{\shorthandon{}}
58.96 \def\mdqoff{\shorthandoff{}}
58.97 \def\ck{\allowhyphens\discretionary{k-}{k}{ck}\allowhyphens}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

58.98 `\ldf@finish{usorbian}`

58.99 `\end{code}`

## 59 The Turkish language

The file `turkish.dtx`<sup>67</sup> defines all the language definition macros for the Turkish language<sup>68</sup>.

Turkish typographic rules specify that a little ‘white space’ should be added before the characters ‘:’, ‘!’ and ‘=’. In order to insert this white space automatically these characters are made ‘active’. Also `\frenhspace` is set.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

59.1 `(*code)`

59.2 `\LdfInit{turkish}\captionsturkish`

When this file is read as an option, i.e. by the `\usepackage` command, `turkish` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@turkish` to see whether we have to do something here.

59.3 `\ifx\l@turkish\@undefined`

59.4 `\@nopatterns{Turkish}`

59.5 `\adddialect\l@turkish0\fi`

The next step consists of defining commands to switch to (and from) the Turkish language.

`\captionsturkish` The macro `\captionsturkish` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

59.6 `\addto\captionsturkish{%`

59.7 `\def\prefacename{"Ons"oz}%`

59.8 `\def\refname{Kaynaklar}%`

59.9 `\def\abstractname{"Ozet}%`

59.10 `\def\bibname{Kaynakca}%`

59.11 `\def\chaptername{Bölüm}%`

59.12 `\def\appendixname{Ek}%`

59.13 `\def\contentsname{İçindekiler}%`

59.14 `\def\listfigurename{Çekirdek Listesi}%`

59.15 `\def\listtablename{Tablo Listesi}%`

59.16 `\def\indexname{Dizin}%`

59.17 `\def\figurename{Çekirdek}%`

59.18 `\def\tablename{Tablo}%`

59.19 `\def\partname{Kısım}%`

59.20 `\def\enclname{İlişik}%`

59.21 `\def\ccname{Diğer Alıcılar}%`

59.22 `\def\headtoname{Alıcı}%`

59.23 `\def\pagename{Sayfa}%`

59.24 `\def\subjectname{İlgili}%`

59.25 `\def\seename{bkz.}%`

59.26 `\def\alsoname{ayrıca bkz.}%`

59.27 `\def\proofname{Kanıt}%`

59.28 `\def\glossaryname{Glossary}% <-- Needs translation`

59.29 `%`

<sup>67</sup>The file described in this section has version number v1.2m and was last revised on 2005/03/31.

<sup>68</sup>Mustafa Burc, `z6001@rziris01.rrz.uni-hamburg.de` provided the code for this file. It is based on the work by Pierre Mackay; Turgut Uyar, `uyar@cs.itu.edu.tr` supplied additional translations in version 1.2j and later

`\dateturkish` The macro `\dateturkish` redefines the command `\today` to produce Turkish dates.

```
59.30 \def\dateturkish{%
59.31   \def\today{\number\day~\ifcase\month\or
59.32     Ocak\or \c Subat\or Mart\or Nisan\or May\i{s}\or Haziran\or
59.33     Temmuz\or A\u gustos\or Eyl\"ul\or Ekim\or Kas\i{m}\or
59.34     Aral\i{k}\fi
59.35   \space\number\year}}
```

`\extrasturkish` The macro `\extrasturkish` will perform all the extra definitions needed for the Turkish language. The macro `\noextrasturkish` is used to cancel the actions of `\extrasturkish`.

Turkish typographic rules specify that a little ‘white space’ should be added before the characters ‘:’, ‘!’ and ‘=’. In order to insert this white space automatically these characters are made `\active`, so they have to be treated in a special way.

```
59.36 \initiate@active@char{:}
59.37 \initiate@active@char{!}
59.38 \initiate@active@char{=}
```

We specify that the turkish group of shorthands should be used.

```
59.39 \addto\extrasturkish{\languageshorthands{turkish}}
```

These characters are ‘turned on’ once, later their definition may vary.

```
59.40 \addto\extrasturkish{%
59.41   \bbl@activate{:}\bbl@activate{!}\bbl@activate{=}}
```

For Turkish texts `\frenchspacing` should be in effect. We make sure this is the case and reset it if necessary.

```
59.42 \addto\extrasturkish{\bbl@frenchspacing}
59.43 \addto\noextrasturkish{\bbl@nonfrenchspacing}
```

`\turkish@sh@!` The definitions for the three active characters were made using intermediate macros. These are defined now. The insertion of extra ‘white space’ should only happen outside math mode, hence the check `\ifmmode` in the macros.

```
59.44 \declare@shorthand{turkish}{:}{%
59.45   \ifmmode
59.46     \string:%
59.47   \else\relax
59.48     \ifhmode
59.49       \ifdim\lastskip>\z@
59.50         \unskip\penalty\@M\thinspace
59.51       \fi
59.52     \fi
59.53     \string:%
59.54   \fi}
59.55 \declare@shorthand{turkish}{!}{%
59.56   \ifmmode
59.57     \string!%
59.58   \else\relax
59.59     \ifhmode
59.60       \ifdim\lastskip>\z@
59.61         \unskip\penalty\@M\thinspace
59.62       \fi
```

```

59.63     \fi
59.64     \string!%
59.65     \fi}
59.66 \declare@shorthand{turkish}{=}{%
59.67     \ifmmode
59.68         \string=%
59.69     \else\relax
59.70         \ifhmode
59.71             \ifdim\lastskip>\z@
59.72                 \unskip\kern\fontdimen2\font
59.73                 \kern-1.4\fontdimen3\font
59.74             \fi
59.75         \fi
59.76         \string=%
59.77     \fi}

```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```

59.78 \ldf@finish{turkish}
59.79 \code

```

## 60 The Hebrew language

The file `hebrew.dtx`<sup>69</sup> provides the following packages and files for Hebrew language support:

`hebrew.ldf` file defines all the language-specific macros for the Hebrew language.

`rlbabel.def` file is used by `hebrew.ldf` for bidirectional versions of the major  $\text{\LaTeX}$  commands and environments. It is designed to be used with other right-to-left languages, not only with Hebrew.

`hebcals` package defines a set of macros for computing Hebrew date from Gregorian one.

Additional Hebrew input and font encoding definition files that should be included and used with `hebrew.ldf` are:

`hebinp.dtx` provides Hebrew input encodings, such as ISO 8859-8, MS Windows codepage 1255 or IBM PC codepage 862 (see Section 61 on page 371).

`hebrew.fdd` contains Hebrew font encodings, related font definition files and `hebfont` package that provides Hebrew font switching commands (see Section 62 on page 378 for further details).

$\text{\LaTeX}$  2.09 compatibility files are included with `heb209.dtx` and gives possibility to compile existing  $\text{\LaTeX}$  2.09 Hebrew documents with small (if any) changes (see Section 63 on page 395 for details).

Finally, optional document class `hebtech` may be useful for writing theses and dissertations in both Hebrew and English (and any other languages included with `babel`). It designed to meet requirements of the Graduate School of the Technion — Israel Institute of Technology.

*As of version 2.3e hebtech is no longer distributed together with heblatex. It should be part of a new "hebclasses" package*

### 60.1 Acknowledgement

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Tatiana Samoilov and Vitaly Surazhsky found a number of serious bugs in preliminary version of Hebrew package.

A number of other people have contributed comments and information. Specific contributions are acknowledged within the document.

I want to thank my wife, Vita, and son, Mishka, for their infinite love and patience.

If you made a contribution and I haven't mentioned it, don't worry, it was an accident. I'm sorry. Just tell me and I will add you to the next version.

---

<sup>69</sup>The Hebrew language support files described in this section have version number v2.3h and were last revised on 2005/03/30.



## 60.2 The DOCSTRIP modules

The following modules are used in the implementation to direct DOCSTRIP in generating external files:

driver	produce a documentation driver file
hebrew	produce Hebrew language support file
rightleft	create right-to-left support file
calendar	create Hebrew calendar package

A typical DOCSTRIP command file would then have entries like:

```
\generateFile{hebrew.1df}{t}{\from{hebrew.dtx}{hebrew}}
```

## 60.3 Hebrew language definitions

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
60.1 (*hebrew)
60.2 \LdfInit{hebrew}{captionshebrew}
```

When this file is read as an option, i.e., by the `\usepackage` command, `hebrew` will be an ‘unknown’ language, in which case we have to make it known. So we check for the existence of `\l@hebrew` to see whether we have to do something here.

```
60.3 \ifx\l@hebrew\@undefined
60.4   \@nopatterns{Hebrew}%
60.5   \addialect\l@hebrew0
60.6 \fi
```

`\hebrewencoding` *FIX DOCS REGARDING 8BIT*

Typesetting Hebrew texts implies that a special input and output encoding needs to be used. Generally, the user may choose between different available Hebrew encodings provided. The current support for Hebrew uses all available fonts from the Hebrew University of Jerusalem encoded in ‘old-code’ 7-bit encoding also known as Israeli Standard SI-960. We define for these fonts the Local Hebrew Encoding LHE (see the file `hebrew.fdd` for more details), and the LHE encoding definition file should be loaded by default.

Other fonts are available in `windows-cp1255` (a superset of ISO-8859-8 with nikud). For those, the encoding `HE8` should be used. Such fonts are, e.g., windows’ TrueType fonts (once converted to Type1 or MetaFont) and IBM’s Type1 fonts.

However, if an user wants to use another font encoding, for example, cyrillic encoding T2 and extended latin encoding T1, — he/she has to load the corresponding file *before* the `hebrew` package. This may be done in the following way:

```
\usepackage[LHE,T2,T1]{fontenc}
\usepackage[hebrew,russian,english]{babel}
```

We make sure that the LHE encoding is known to  $\text{\LaTeX}$  at end of this package.

Also note that if you want to use the encoding `HE8`, you should define the following in your document, *before loading babel*:

```
\def\HeblatexEncoding{HE8}
\def\HeblatexEncodingFile{he8enc}
```

```

60.7 \providecommand{\HeblatexEncoding}{LHE}%
60.8 \providecommand{\HeblatexEncodingFile}{lheenc}%
60.9 \newcommand{\heblatex@set@encoding}[2]{
60.10 }
60.11 \AtEndOfPackage{%
60.12   \ifpackageloaded{fontenc}{%
60.13     \ifl@ad@ed{def}{%
60.14       \HeblatexEncodingFile}{\def\hebrewencoding{\HeblatexEncoding}}{%
60.15     }{%
60.16       \input{\HeblatexEncodingFile.def}%
60.17       \def\hebrewencoding{\HeblatexEncoding}%
60.18     }}

```

We also need to load inputenc package with one of the Hebrew input encodings. By default, we set up the 8859-8 codepage. If an user wants to use many input encodings in the same document, for example, the MS Windows Hebrew codepage cp1255 and the standard IBM PC Russian codepage cp866, he/she has to load the corresponding file *before* the hebrew package too. This may be done in the following way:

```

\usepackage[cp1255,cp866]{inputenc}
\usepackage[hebrew,russian,english]{babel}

```

An user can switch input encodings in the document using the command `\inputencoding`, for example, to use the cp1255:

```

\inputencoding{cp1255}

```

```

60.19 \AtEndOfPackage{%
60.20   \ifpackageloaded{inputenc}{\RequirePackage[8859-8]{inputenc}}

```

The next step consists of defining commands to switch to (and from) the Hebrew language.

`\hebrewhyphenmins` This macro is used to store the correct values of the hyphenation parameters `\lefthyphenmin` and `\righthyphenmin`. They are set to 2.

```

60.21 \providehyphenmins{\CurrentOption}{\tw@\tw@}

```

`\captionshebrew` The macro `\captionshebrew` replaces all captions used in the four standard document classes provided with L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> with their Hebrew equivalents.

```

60.22 \addto\captionshebrew{%
60.23   \def\prefacename{\@ensure@R{\hebmem\hebbet\hebvav\hebalef}}%
60.24   \def\refname{\@ensure@R{\hebresh\hebshin\hebyod\hebmam\hebtav\ %
60.25     \hebmem\hebqof\hebvav\hebresh\hebvav\hebtav}}%
60.26   \def\abstractname{\@ensure@R{\hebtav\hebqof\hebtsadi\hebyod\hebresh}}%
60.27   \def\bibname{\@ensure@R{\hebbet\hebyod\hebbet\heblamed\hebyod\hebvav\ %
60.28     \hebgimel\hebresh\hebpe\hebyod\hebhe}}%
60.29   \def\chaptername{\@ensure@R{\hebpe\hebresh\hebqof}}%
60.30   \def\appendixname{\@ensure@R{\hebnun\hebsamekh\hebpe\hebheth}}%
60.31   \def\contentsname{\@ensure@R{%
60.32     \hebtav\hebvav\hebkafe\hebfinalnun\ %
60.33     \hebayin\hebnun\hebyod\hebyod\hebnun\hebyod\hebfinalmem}}%
60.34   \def\listfigurename{\@ensure@R{%
60.35     \hebresh\hebshin\hebyod\hebmam\hebtav\ %
60.36     \hebalef\hebyod\hebvav\hebresh\hebyod\hebfinalmem}}%

```

```

60.37 \def\listtablename{\@ensure@R{%
60.38 \hebresh\hebshin\hebyod\hebmemb\hebtav\
60.39 \hebtet\hebbet\heblamed\hebalef\hebvav\hebtav}}%
60.40 \def\indexname{\@ensure@R{\hebmem\hebpe\hebtav\hebbet}}%
60.41 \def\figurename{\@ensure@R{\hebalef\hebyod\hebvav\hebresh}}%
60.42 \def\tablename{\@ensure@R{\hebtet\hebbet\heblamed\hebhe}}%
60.43 \def\partname{\@ensure@R{\hebbet\heblamed\hebqof}}%
60.44 \def\enclname{\@ensure@R{\hebresh\hebtsadi"\hebbet}}%
60.45 \def\ccname{\@ensure@R{\hebhe\hebayin\hebtav\hebqof\hebyod%
60.46 \hebfinalmem}}%
60.47 \def\headtoname{\@ensure@R{\hebalef\heblamed}}%
60.48 \def\pagename{\@ensure@R{\hebayin\hebmemb\hebvav\hebdalet}}%
60.49 \def\psname{\@ensure@R{\hebnun.\hebbet.}}%
60.50 \def\seename{\@ensure@R{\hebresh\hebalef\hebhe}}%
60.51 \def\alsaname{\@ensure@R{\hebresh\hebalef\hebhe \hebgimel%
60.52 \hebmemb\hebbet}}%
60.53 \def\proofname{\@ensure@R{\hebhe\hebvav\hebkaf\hebbet\hebhe}}
60.54 \def\glossaryname{\@ensure@L{Glossary}}% <-- Needs translation
60.55 }

```

`\slidelabel` Here we fix the macro `slidelabel` of the seminar package. Note that this still won't work well enough when overlays will be involved

```

60.56 \@ifclassloaded{seminar}{%
60.57 \def\slidelabel{\bf \if@r1\R{\hebshin\hebqof\hebfinalpe{} \theslide}%
60.58 \else\L{Slide \theslide}%
60.59 \fi}%
60.60 }{}

```

Here we provide an user with translation of Gregorian dates to Hebrew. In addition, the `hebcald` package can be used to create Hebrew calendar dates.

`\hebmonth` The macro `\hebmonth{month}` produces month names in Hebrew.

```

60.61 \def\hebmonth#1{%
60.62 \ifcase#1\or \hebyod\hebnun\hebvav\hebalef\hebresh\or %
60.63 \hebpe\hebbet\hebresh\hebvav\hebalef\hebresh\or %
60.64 \hebmem\hebresh\hebfinaltsadi\or %
60.65 \hebalef\hebpe\hebresh\hebyod\heblamed\or %
60.66 \hebmem\hebalef\hebyod\or \hebyod\hebvav\hebnun\hebyod\or %
60.67 \hebyod\hebvav\heblamed\hebyod\or %
60.68 \hebalef\hebvav\hebgimel\hebvav\hebsamekh\hebtet\or %
60.69 \hebsamekh\hebpe\hebtet\hebmemb\hebbet\hebresh\or %
60.70 \hebalef\hebvav\hebqof\hebtet\hebvav\hebbet\hebresh\or %
60.71 \hebnun\hebvav\hebbet\hebmemb\hebbet\hebresh\or %
60.72 \hebdalet\hebtsadi\hebmem\hebbet\hebresh\fi}

```

`\hebdate` The macro `\hebdate{day}{month}{year}` translates a given Gregorian date to Hebrew.

```

60.73 \def\hebdate#1#2#3{%
60.74 \beginR\beginL\number#1\endL\ \hebbet\hebmonth{#2}
60.75 \beginL\number#3\endL\endR}

```

`\hebday` The macro `\hebday` will replace `\today` command when in Hebrew mode.

```

60.76 \def\hebday{\hebdate{\day}{\month}{\year}}

```

`\datehebrew` The macro `\datehebrew` redefines the command `\today` to produce Gregorian dates in Hebrew. It uses the macro `\hebday`.

```
60.77 \def\datehebrew{\let\today=\hebday}
```

The macro `\extrashebrew` will perform all the extra definitions needed for the Hebrew language. The macro `\noextrashebrew` is used to cancel the actions of `\extrashebrew`.

`\extrashebrew` We switch font encoding to Hebrew and direction to right-to-left. We cannot use the regular language switching commands (for example, `\sethebrew` and `\unsethebrew` or `\selectlanguage{hebrew}`), when in restricted horizontal mode, because it will result in *unbalanced* `\beginR` or `\beginL` primitives. Instead, in T<sub>E</sub>X's restricted horizontal mode, the `\L{latin text}` and `\R{hebrew text}`, or `\embox{latin text}` and `\hmbbox{hebrew text}` should be used.

Hence, we use `\beginR` and `\beginL` switching commands only when not in restricted horizontal mode.

```
60.78 \addto\extrashebrew{%
60.79   \tohebrew%
60.80   \ifhmode\ifinner\else\beginR\fi\fi}
```

`\noextrashebrew` The macro `\noextrashebrew` is used to cancel the actions of `\extrashebrew`. We switch back to the previous font encoding and restore left-to-right direction.

```
60.81 \addto\noextrashebrew{%
60.82   \fromhebrew%
60.83   \ifhmode\ifinner\else\beginL\fi\fi}
```

Generally, we can switch to- and from- Hebrew by means of standard babel-defined commands, for example,

```
\selectlanguage{hebrew}
```

or

```
\begin{otherlanguage}{hebrew}
  some Hebrew text
\end{otherlanguage}
```

Now we define two additional commands that offer the possibility to switch to and from Hebrew language. These commands are backward compatible with the previous versions of `hebrew.sty`.

`\sethebrew` The command `\sethebrew` will switch from the current font encoding to the hebrew font encoding, and from the current direction of text to the right-to-left mode. The command `\unsethebrew` switches back.

Both commands use standard right-to-left switching macros `\setrlanguage{rtl language name}` and `\unsetrlanguage{rtl language name}`, that defined in the `rlbabel.def` file.

```
60.84 \def\sethebrew{\setrlanguage{hebrew}}
60.85 \def\unsethebrew{\unsetrlanguage{hebrew}}
```

`\hebrewtext` The following two commands are *obsolete* and work only in L<sup>A</sup>T<sub>E</sub>X 2.09 compatibility mode. They are synonyms of `\sethebrew` and `\unsethebrew` defined above.

```

60.86 \if@compatibility
60.87   \let\hebrewtext=\sethebrew
60.88   \let\nohebrewtext=\unsethebrew
60.89 \fi

```

`\tohebrew` These two commands change only the current font encoding to- and from- Hebrew encoding. Their implementation uses `\@torl{language name}` and `\@fromrl` macros defined in `rlbabel.def` file. Both commands may be useful *only* for package and class writers, not for regular users.

```

60.90 \def\tohebrew{\@torl{hebrew}}%
60.91 \def\fromhebrew{\@fromrl}

```

`\@hebrew` Sometimes we need to preserve Hebrew mode without knowing in which environment we are located now. For these cases, the `\@hebrew{hebrew text}` macro will be useful. Not that this macro is similar to the `\@number` and `\@latin` macros defined in `rlbabel.def` file.

```

60.92 \def\@hebrew#1{\beginR{\tohebrew#1}\endR}
60.93 \def\@hebrew{\protect\@hebrew}

```

### 60.3.1 Hebrew numerals

We provide commands to print numbers in the traditional notation using Hebrew letters. We need commands that print a Hebrew number from a decimal input, as well as commands to print the value of a counter as a Hebrew number.

`\if@gim@apost` Hebrew numbers can be written in various styles: with or without apostrophes, and with the letters kaf, mem, nun, pe, tsadi as either final or initial forms when they are the last letters in the sequence. We provide two flags to set the style options.

```

60.94 \newif\if@gim@apost % whether we print apostrophes
60.95 \newif\if@gim@final % whether we use final or initial letters

```

`\hebrewnumeral` The commands that print a Hebrew number must specify the style locally: relying on a global style option could cause a counter to print in an inconsistent manner—for instance, page numbers might appear in different styles if the global style option changed mid-way through a document. The commands only allow three of the four possible flag combinations (I do not know of a use that requires the combination of final letters and no apostrophes –RA).

Each command sets the style flags and calls `\@hebrew@numeral`. Double braces are used in order to protect the values of `\@tempcnta` and `\@tempcntb`, which are changed by this call; they also keep the flag assignments local (this is not important because the global values are never used).

```

60.96 \newcommand*{\hebrewnumeral}[1] % no apostrophe, no final letters
60.97   {\@gim@finalfalse\@gim@apostfalse\@hebrew@numeral{#1}}
60.98 \newcommand*{\Hebrewnumeral}[1] % apostrophe, no final letters
60.99   {\@gim@finalfalse\@gim@aposttrue\@hebrew@numeral{#1}}
60.100 \newcommand*{\Hebrewnumeralfinal}[1] % apostrophe, final letters
60.101   {\@gim@finaltrue\@gim@aposttrue\@hebrew@numeral{#1}}

```

`\alph` Counter-printing commands are based on the above commands. The natural name for the counter-printing commands is `\alph`, because Hebrew numerals are the only way to represent numbers with Hebrew letters (kaf always means 20, never 11).

```

\@Alph
\Alphfinal
\@Alphfinal

```

Hebrew has no uppercase letters, hence no need for the familiar meaning of `\Alph`; we therefore define `\alph` to print counters as Hebrew numerals without apostrophes, and `\Alph` to print with apostrophes. A third form, `\Alphfinal`, is provided to print with apostrophes and final letters, as is required for Hebrew year designators. The commands `\alph` and `\Alph` are defined in `latex.ltx`, and we only need to redefine the internal commands `\@alph` and `\@Alph`; for `\Alphfinal` we need to provide both a wrapper and an internal command. The counter printing commands are made semi-robust: without the `\protect`, commands like `\theenumii` break (I'm not quite clear on why this happens, –RA); at the same time, we cannot make the commands too robust (e.g. with `\DeclareRobustCommand`) because this would enter the command name rather than its value into files like `.aux`, `.toc` etc. The old meanings of meaning of `\@alph` and `\@Alph` are saved upon entering Hebrew mode and restored upon exiting it.

```

60.102 \addto\extrashebrew{%
60.103   \let\saved@alph=\@alph%
60.104   \let\saved@Alph=\@Alph%
60.105   \renewcommand*{\@alph}[1]{\protect\hebrewnumeral{\number#1}}%
60.106   \renewcommand*{\@Alph}[1]{\protect\Hebrewnumeral{\number#1}}%
60.107   \def\Alphfinal#1{\expandafter\@Alphfinal\csname c@#1\endcsname}%
60.108   \providecommand*{\@Alphfinal}[1]{\protect\Hebrewnumeralfinal{\number#1}}%
60.109 \addto\noextrashebrew{%
60.110   \let\@alph=\saved@alph%
60.111   \let\@Alph=\saved@Alph}

```

Note that `\alph` (without apostrophes) is already the appropriate choice for the second-level enumerate label, and `\Alph` (with apostrophes) is an appropriate choice for appendix; however, the default L<sup>A</sup>T<sub>E</sub>X labels need to be redefined for appropriate cross-referencing, see below. L<sup>A</sup>T<sub>E</sub>X default class files specify `\Alph` for the fourth-level enumerate level, this should probably be changed. Also, the way labels get flushed left by default looks inappropriate for Hebrew numerals, so we should redefine `\labelenumii` as well as `\labelenumiv` (presently not implemented).

<code>\theenumii</code>	Cross-references to counter labels need to be printed according to the language
<code>\theenumiv</code>	environment in which a label was issued, not the environment in which it is called:
<code>\label</code>	for example, a label (1b) issued in a Latin environment should be referred to as (1b) in a Hebrew text, and label (2dalet) issued in a Hebrew environment should be referred to as (2dalet) in a Latin text. This was the unanimous opinion in a poll sent to the IvriT <sub>E</sub> X list. We therefore redefine <code>\theenumii</code> and <code>\theenumiv</code> , so that an explicit language instruction gets written to the <code>.aux</code> file.

```

60.112 \renewcommand{\theenumii}
60.113   {\if@rl\protect\hebrewnumeral{\number\c@enumii}}%
60.114   \else\protect\L{\protect\@alph{\number\c@enumii}}\fi}
60.115 \renewcommand{\theenumiv}
60.116   {\if@rl\protect\Hebrewnumeral{\number\c@enumiv}}%
60.117   \else\protect\L{\protect\@Alph{\number\c@enumiv}}\fi}

```

We also need to control for the font and direction in which a counter label is printed. Direction is straightforward: a Latin label like (1b) should be written left-to-right when called in a Hebrew text, and a Hebrew label like (2dalet) should be written right-to-left when called in a Latin text. The font question is more delicate, because we should decide whether the numerals should be typeset in

the font of the language environment in which the label was issued, or that of the environment in which it is called.

- A purely numeric label like (23) looks best if it is set in the font of the surrounding language.
- But a mixed alphanumeric label like (1b) looks weird if the ‘1’ is taken from the Hebrew font; likewise, (2dalet) looks weird if the ‘2’ is taken from a Latin font.
- Finally, mixing the two possibilities is worst, because a single Hebrew sentence referring to examples (1b) and (2) would take the ‘1’ from the Latin font and the ‘2’ from the Hebrew font, and this looks really awful. (It is also very hard to implement).

In light of the conflicting considerations it seems like there’s no perfect solution. I have chosen to implement the top option, where numerals are taken from the font of the surrounding language, because it seems to me that reference to purely numeric labels is the most common, so this gives a good solution to the majority of cases and a mediocre solution to the minority.

We redefine the `\label` command which writes to the `.aux` file. Depending on the language environment we issue appropriate `\beginR/L... \endR/L` commands to control the direction without affecting the font. Since these commands do not affect the value of `\if@rl`, we cannot use the macro `\@brackets` to determine the correct brackets to be used with `\p@enumiii`; instead, we let the language environment determine an explicit definition.

```

60.118 \def\label#1{\@bsphack
60.119   \if@rl
60.120     \def\p@enumiii{\p@enumii}\thenumii}%
60.121     \protected@write\@auxout{}%
60.122       {\string\newlabel{#1}{\beginR\@currentlabel\endR}{\thepage}}}%
60.123   \else
60.124     \def\p@enumiii{\p@enumii(\thenumii)}%
60.125     \protected@write\@auxout{}%
60.126       {\string\newlabel{#1}{\beginL\@currentlabel\endL}{\thepage}}}%
60.127   \fi
60.128   \@esphack}

```

NOTE: it appears that the definition of `\label` is language-independent and thus belongs in `rlbabel.def`, but this is not the case. The decision to typeset label numerals in the font of the surrounding language is reasonable for Hebrew, because mixed-font (1b) and (2dalet) are somewhat acceptable. The same may not be acceptable for Arabic, whose numeral glyphs are radically different from those in the Latin fonts. The decision about the direction may also be different for Arabic, which is more right-to-left oriented than Hebrew (two examples: dates like 15/6/2003 are written left-to-right in Hebrew but right-to-left in Arabic; equations like  $1 + 2 = 3$  are written left-to-right in Hebrew but right-to-left in Arabic elementary school textbooks using Arabic numeral glyphs). My personal hunch is that a label like (1b) in an Arabic text would be typeset left-to-right if the ‘1’ is a Western glyph, but right-to-left if the ‘1’ is an Arabic glyph. But this is just a guess, I’d have to ask Arab typesetters to find the correct answer. –RA.

`\appendix` The following code provides for the proper printing of appendix numbers in tables of contents. Section and chapter headings are normally bilingual: regardless of

the text language, the author supplies each section/chapter with two headings—one for the Hebrew table of contents and one for the Latin table of contents. It makes sense that the label should be a Latin letter in the Latin table of contents and a Hebrew letter in the Hebrew table of contents. The definition is similar to that of `\theenumii` and `\theenumiv` above, but additional `\protect` commands ensure that the entire condition is written the `.aux` file. The appendix number will therefore be typeset according to the environment in which it is used rather than issued: a Hebrew number (with apostrophes) in a Hebrew environment and a Latin capital letter in a Latin environment (the command `\@@Alph` is set in `rlbabel.def` to hold the default meaning of L<sup>A</sup>T<sub>E</sub>X [latin] `\@@Alph`, regardless of the mode in which it is issued). The net result is that the second appendix will be marked with ‘B’ in the Latin table of contents and with ‘bet’ in the Hebrew table of contents; the mark in the main text will depend on the language of the appendix itself.

```

60.129 \ifclassloaded{letter}{\}%
60.130 \ifclassloaded{slides}{\}%
60.131 \let\@@appendix=\appendix%
60.132 \ifclassloaded{article}{\%
60.133 \renewcommand\appendix{\@@appendix%
60.134 \renewcommand\thesection
60.135 {\protect\ifrl\protect\Hebrewnumeral{\number\c@section}%
60.136 \protect\else\@@Alph\c@section\protect\fi}}
60.137 {\renewcommand\appendix{\@@appendix%
60.138 \renewcommand\thechapter
60.139 {\protect\ifrl\protect\Hebrewnumeral{\number\c@chapter}%
60.140 \protect\else\@@Alph\c@chapter\protect\fi}}}}

```

QUESTION: is this also the appropriate way to refer to an appendix in the text, or should we retain the original label the same way we did with `enumerate` labels? ANOTHER QUESTION: are similar redefinitions needed for other counters that generate texts in bilingual lists like `.lof/.fol` and `.lot/.tol`? –RA.

`\@hebrew@numeral` The command `\@hebrew@numeral` prints a Hebrew number. The groups of thousands, millions, billions are separated by apostrophes and typeset without apostrophes or final letters; the remainder (under 1000) is typeset conventionally, with the selected styles for apostrophes and final letters. The function calls on `\gim@no@mil` to typeset each three-digit block. The algorithm is recursive, but the maximum recursion depth is 4 because T<sub>E</sub>X only allows numbers up to  $2^{31} - 1 = 2,147,483,647$ . The typesetting routine is wrapped in `\@hebrew` in order to ensure that numbers are always typeset in Hebrew mode.

Initialize: `\@tempcnta` holds the value, `\@tempcntb` is used for calculations.

```

60.141 \newcommand*{\@hebrew@numeral}[1]
60.142 {\@hebrew{\@tempcnta=#1\@tempcntb=#1\relax
60.143 \divide\@tempcntb by 1000

```

If we’re under 1000, call `\gim@nomil`

```

60.144 \ifnum\@tempcntb=0\gim@nomil\@tempcnta\relax

```

If we’re above 1000 then force no apostrophe and no final letter styles for the value above 1000, recur for the value above 1000, add an apostrophe, and call `\gim@nomil` for the remainder.

```

60.145 \else{\@gim@apostfalse\@gim@finalfalse\@hebrew@numeral\@tempcntb}'%
60.146 \multiply\@tempcntb by 1000\relax

```



```

60.147      \advance\@tempcnta by -\@tempcntb\relax
60.148      \gim@nomil\@tempcnta\relax
60.149 \fi
60.150 }}

```

NOTE: is it the case that 15,000 and 16,000 are written as yod-he and yod-vav, rather than tet-vav and tet-zayin? This vaguely rings a bell, but I'm not certain. If this is the case, then the current behavior is incorrect and should be changed. —RA.

\gim@nomil The command \gim@nomil typesets an integer between 0 and 999 (for 0 it typesets nothing). The code has been modified from the old `hebcals.sty` (appropriate credits—Boris Lavva and Michail Rozman ?). \@tempcnta holds the total value that remains to be typeset. At each stage we find the highest valued letter that is less than or equal to \@tempcnta, and call on \gim@print to subtract this value and print the letter.

Initialize: \@tempcnta holds the value, there is no previous letter.

```

60.151 \newcommand*\gim@nomil[1]{\@tempcnta=#1\gim@prevfalse
Find the hundreds digit.
60.152 \@tempcntb=\@tempcnta\divide\@tempcntb by 100\relax % hundreds digit
60.153 \ifcase\@tempcntb % print nothing if no hundreds
60.154 \or\gim@print{100}{\hebqof}%
60.155 \or\gim@print{200}{\hebreash}%
60.156 \or\gim@print{300}{\hebshin}%
60.157 \or\gim@print{400}{\hebtav}%
60.158 \or\hebtav\@gim@prevtrue\gim@print{500}{\hebqof}%
60.159 \or\hebtav\@gim@prevtrue\gim@print{600}{\hebreash}%
60.160 \or\hebtav\@gim@prevtrue\gim@print{700}{\hebshin}%
60.161 \or\hebtav\@gim@prevtrue\gim@print{800}{\hebtav}%
60.162 \or\hebtav\@gim@prevtrue\hebtav\gim@print{900}{\hebqof}%
60.163 \fi

```

Find the tens digit. The numbers 15 and 16 are traditionally printed as tet-vav (9 + 6) and tet-zayin (9 + 7) to avoid spelling the Lord's name.

```

60.164 \@tempcntb=\@tempcnta\divide\@tempcntb by 10\relax % tens digit
60.165 \ifcase\@tempcntb % print nothing if no tens
60.166 \or % number between 10 and 19
60.167 \ifnum\@tempcnta = 16 \gim@print {9}{\hebtet}% tet-zayin
60.168 \else\ifnum\@tempcnta = 15 \gim@print {9}{\hebtet}% tet-vav
60.169 \else \gim@print{10}{\hebyod}%
60.170 \fi % \@tempcnta = 15
60.171 \fi % \@tempcnta = 16

```

Initial or final forms are selected according to the current style option; \gim@print will force a non-final letter in non-final position by means of a local style change.

```

60.172 \or\gim@print{20}{\if@gim@final\hebfinalkaf\else\hebqof\fi}%
60.173 \or\gim@print{30}{\heblamed}%
60.174 \or\gim@print{40}{\if@gim@final\hebfinalmem\else\hebmam\fi}%
60.175 \or\gim@print{50}{\if@gim@final\hebfinalnun\else\hebnun\fi}%
60.176 \or\gim@print{60}{\hebsamekh}%
60.177 \or\gim@print{70}{\hebayin}%
60.178 \or\gim@print{80}{\if@gim@final\hebfinalpe\else\hebbe\fi}%
60.179 \or\gim@print{90}{\if@gim@final\hebfinaltsadi\else\hebttsadi\fi}%
60.180 \fi

```

Print the ones digit.

```

60.181 \ifcase\@tempcnta % print nothing if no ones
60.182 \or\gim@print{1}{\hebalef}%
60.183 \or\gim@print{2}{\hebbet}%
60.184 \or\gim@print{3}{\hebgimel}%
60.185 \or\gim@print{4}{\hebdalet}%
60.186 \or\gim@print{5}{\hebhe}%
60.187 \or\gim@print{6}{\hebvav}%
60.188 \or\gim@print{7}{\hebzayin}%
60.189 \or\gim@print{8}{\hebheth}%
60.190 \or\gim@print{9}{\hebtet}%
60.191 \fi
60.192 }

```

`\gim@print` The actual printing routine typesets a digit with the appropriate apostrophes: `\if@gim@prev` if a number sequence consists of a single letter then it is followed by a single apostrophe, and if it consists of more than one letter then a double apostrophe is inserted before the last letter. We typeset the letters one at a time, keeping a flag that tells us if any previous letters had been typeset.

```

60.193 \newif\if@gim@prev % flag if a previous letter has been typeset

```

For each letter, we first subtract its value from the total. Then,

- if the result is zero then this is the last letter; we check the flag to see if this is the only letter and print it with the appropriate apostrophe;
- if the result is not zero then there remain additional letters to be typeset; we print without an apostrophe and set the ‘previous letter’ flag.

`\@tempcnta` holds the total value that remains to be typeset. We first deduct the letter’s value from `\@tempcnta`, so `\@tempcnta` is zero if and only if this is the last letter.

```

60.194 \newcommand*{\gim@print}[2]{% #2 is a letter, #1 is its value.
60.195 \advance\@tempcnta by -#1\relax% deduct the value from the remainder

```

If this is the last letter, we print with the appropriate apostrophe (depending on the style option): if there is a preceding letter, print “x if the style calls for apostrophes, x if it doesn’t; otherwise, this is the only letter: print x’ if the style calls for apostrophes, x if it doesn’t.

```

60.196 \ifnum\@tempcnta=0% if this is the last letter
60.197 \if@gim@prev\if@gim@apost"\fi#2%
60.198 \else#2\if@gim@apost'\fi\fi%

```

If this is not the last letter: print a non-final form (by forcing a local style option) and set the ‘previous letter’ flag.

```

60.199 \else{\@gim@finalfalse#2}\@gim@prevtrue\fi}

```

`\hebr` The older Hebrew counter commands `\hebr` and `\gim` are retained in order to keep older documents from breaking. They are set to be equivalent to `\alph`, and their use is deprecated. Note that `\hebr` gives different results than it had in the past—it now typesets 11 as yod-alef rather than kaf.

```

60.200 \let\hebr=\alph
60.201 \let\gim=\alph

```

For backward compatibility with ‘older’ `hebrew.sty` packages, we define Hebrew equivalents of some useful  $\text{\LaTeX}$  commands. Note, however, that 8-bit macros defined in Hebrew are no longer supported.

```
60.202 \def\hebcopy{\protect\R{\hebhe\hebayin\hebtav\he bqof}}
60.203 \def\hebincl{\protect\R{\hebresh\hebtsadi"\hebbet}}
60.204 \def\hebpagel{\protect\R{\hebayin\hebmeme\hebvav\hebdalet}}
60.205 \def\hebto{\protect\R{\hebayin\hebdalet}}
```

`\hades` produce “poor man’s bold” (heavy printout), when used with normal font glyphs. It is advisable to use bold font (for example, *Dead Sea*) instead of this macro.

```
60.206 \def\hades#1{\leavevmode\setbox0=\hbox{#1}%
60.207 \kern-.025em\copy0\kern-\wd0
60.208 \kern.05em\copy0\kern-\wd0
60.209 \kern-.025em\raise.0433em\box0 }
```

`\piska` and `\piskapiska` sometimes used in ‘older’ hebrew sources, and should not be used in  $\text{\LaTeX} 2_{\epsilon}$ .

```
60.210 \ifcompatibility
60.211 \def\piska#1{\item{#1}\hangindent=-\hangindent}
60.212 \def\piskapiska#1{\itemitem{#1}\hangindent=-\hangindent}
60.213 \fi
```

The following commands are simply synonyms for the standard ones, provided with  $\text{\LaTeX} 2_{\epsilon}$ .

```
60.214 \let\makafgadol=\textendash
60.215 \let\makafanak=\textemdash
60.216 \let\geresh=\textquoteright
60.217 \let\opengeresh=\textquoteright
60.218 \let\closegeresh=\textquoteleft
60.219 \let\openquote=\textquotedblright
60.220 \let\closequote=\textquotedblleft
60.221 \let\leftquotation=\textquotedblright
60.222 \let\rightquotation=\textquotedblleft
```

We need to ensure that Hebrew is used as the default right-to-left language at `\begin{document}`. The mechanism of defining the `\@rllanguagename` is the same as in `babel`’s `\languagename`: the last right-to-left language in the `\usepackage{babel}` line is set as the default right-to-left language at document beginning.

For example, the following code:

```
\usepackage[russian,hebrew,arabic,greek,english]{babel}
```

will set the Arabic language as the default right-to-left language and the English language as the default language. As a result, the commands `\L{}` and `\embox{}` will use English and `\R{}` and `\hmbbox{}` will use Arabic by default. These defaults can be changed with the next `\sethebrew` or `\selectlanguage{language name}` command.

```
60.223 \AtBeginDocument{\def\@rllanguagename{hebrew}}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
60.224 \ldf@finish{hebrew}
60.225 \end{hebrew}
```

## 60.4 Right to left support

This file `rlbabel.def` defines necessary bidirectional macro support for  $\text{\LaTeX} 2_{\epsilon}$ . It is designed for use not only with Hebrew, but with any Right-to-Left languages, supported by `babel`. The macros provided in this file are language and encoding independent.

Right-to-left languages will use  $\text{\TeX}$  extensions, namely  $\text{\TeX}$  primitives `\beginL`, `\endL` and `\beginR`, `\endR`, currently implemented only in  $\epsilon\text{-TeX}$  and in  $\text{\TeX--XeT}$ .

If  $\epsilon\text{-TeX}$  is used, we should switch it to the *enhanced* mode:

```
60.226 (*rightleft)
60.227 \ifx\TeXXeTstate\undefined\else%
60.228     \TeXXeTstate=1
60.229 \fi
```

Note, that  $\epsilon\text{-TeX}$ 's format file should be created for *extended* mode. Mode can be checked by running  $\epsilon\text{-TeX}$  on some  $\text{\TeX}$  file, for example:

```
This is e-TeX, Version 3.14159-1.1 (Web2c 7.0)
entering extended mode
```

The second line should be `entering extended mode`.

We check if user uses Right-to-Left enabled engine instead of regular Knuth's  $\text{\TeX}$ :

```
60.230 \ifx\beginL\@undefined%
60.231     \newlinechar'\^^J
60.232     \typeout{^^JTo avoid this error message,^^J%
60.233         run TeX--XeT or e-TeX engine instead of regular TeX.^^J}
60.234     \errmessage{Right-to-Left Support Error: use TeX--XeT or e-TeX
60.235         engine}%
60.236 \fi
```

### 60.4.1 Switching from LR to RL mode and back

`\@torl` and `\@fromrl` are called each time the horizontal direction changes. They do all that is necessary besides changing the direction. Currently their task is to change the encoding information and mode (condition `\if@rl`). They should not normally be called by users: user-level macros, such as `\sethebrew` and `\unsethebrew`, as well as `babel`'s `\selectlanguage` are defined in language-definition files and should be used to change default language (and direction).

Local direction changing commands (for small pieces of text): `\L{}`, `\R{}`, `\embox{}` and `\hmbbox{}` are defined below in this file in language-independent manner.

```
\if@rl  rltrue means that the main mode is currently Right-to-Left.
        rlfalse means that the main mode is currently Left-to-Right.
```

```
60.237 \newif\if@rl
```

```
\if@rlmain This is the main direction of the document. Unlike \if@rl it is set once and never
changes.
```

```
rltrue means that the document is Right-to-Left.
rlfalse means that the document is Left-to-Right.
```

Practically `\if@rlmain` is set according to the value of `\if@rl` in the beginning of the run.

```
60.238 \AtBeginDocument{% Here we set the main document direction
60.239   \newif\if@rlmain%
60.240   \if@rl% e.g: if the options to babel were [english,hebrew]
60.241     \@rlmaintrue%
60.242   \else% e.g: if the options to babel were [hebrew,english]
60.243     \@rlmainfalse%
60.244   \fi%
60.245 }
```

`\@torl` Switches current direction to Right-to-Left: saves current Left-to-Right encoding in `\lr@encodingdefault`, sets required Right-to-Left language name in `\@rllanguagename` (similar to babel's `\languagename`) and changes direction.

The Right-to-Left language encoding should be defined in `.ldf` file as special macro created by concatenation of the language name and string `encoding`, for example, for Hebrew it will be `\hebrewencoding`.

```
60.246 \DeclareRobustCommand{\@torl}[1]{%
60.247   \if@rl\else%
60.248     \let\lr@encodingdefault=\encodingdefault%
60.249   \fi%
60.250   \def\@rllanguagename{#1}%
60.251   \def\encodingdefault{\csname#1encoding\endcsname}%
60.252   \fontencoding{\encodingdefault}%
60.253   \selectfont%
60.254   \@rltrue}
```

`\@fromrl` Opposite to `\@torl`, switches current direction to Left-to-Right: restores saved Left-to-Right encoding (`\lr@encodingdefault`) and changes direction.

```
60.255 \DeclareRobustCommand{\@fromrl}{%
60.256   \if@rl%
60.257     \let\encodingdefault=\lr@encodingdefault%
60.258   \fi%
60.259   \fontencoding{\encodingdefault}%
60.260   \selectfont%
60.261   \@rlfalse}
```

`\selectlanguage` This standard babel's macro should be redefined to support bidirectional tables. We divide `\selectlanguage` implementation to two parts, and the first part calls the second `\@@selectlanguage`.

```
60.262 \expandafter\def\csname selectlanguage \endcsname#1{%
60.263   \edef\languagename{%
60.264     \ifnum\escapechar=\expandafter'\string#1\@empty
60.265     \else \string#1\@empty\fi}%
60.266   \@@selectlanguage{\languagename}}
```

`\@@selectlanguage` This new internal macro redefines a final part of the standard babel's `\selectlanguage` implementation.

Standard L<sup>A</sup>T<sub>E</sub>X provides us with 3 tables: Table of Contents (`.toc`), List of Figures (`.lof`), and List of Tables (`.lot`). In multi-lingual texts mixing Left-to-Right languages with Right-to-Left ones, the use of various directions in one table results in very ugly output. Therefore, these 3 standard tables will be used now

only for Left-to-Right languages, and we will add 3 Right-to-Left tables (their extensions are simply reversed ones): RL Table of Contents (.cot), RL List of Figures (.fol), and RL List of Tables (.lof).

```

60.267 \def\@@selectlanguage#1{%
60.268   \select@language{#1}%
60.269   \if@filesw
60.270     \protected@write\@auxout{}\string\select@language{#1}%
60.271     \if@rl%
60.272       \addtocontents{cot}{\xstring\select@language{#1}}%
60.273       \addtocontents{fol}{\xstring\select@language{#1}}%
60.274       \addtocontents{tol}{\xstring\select@language{#1}}%
60.275     \else%
60.276       \addtocontents{toc}{\xstring\select@language{#1}}%
60.277       \addtocontents{lof}{\xstring\select@language{#1}}%
60.278       \addtocontents{lot}{\xstring\select@language{#1}}%
60.279     \fi%
60.280   \fi}

```

`\setrlanguage` The `\setrlanguage` and `\unsetrlanguage` pair of macros is proved to very useful in bilingual texts, for example, in Hebrew-English texts. The language-specific commands, for example, `\sethebrew` and `\unsethebrew` use these macros as basis.

Implementation saves and restores other language in `\other@language` variable, and uses internal macro `\@@selectlanguage`, defined above, to switch between languages.

```

60.281 \let\other@language=\language
60.282 \DeclareRobustCommand{\setrlanguage}[1]{%
60.283   \if@rl\else%
60.284     \let\other@language=\language%
60.285   \fi%
60.286   \def\language{#1}%
60.287   \@@selectlanguage{\language}}
60.288 \DeclareRobustCommand{\unsetrlanguage}[1]{%
60.289   \if@rl%
60.290     \let\language=\other@language%
60.291   \fi
60.292   \@@selectlanguage{\language}}

```

`\L` Macros for changing direction, originally taken from TUGboat. Usage: `\L{Left to Right text}` and `\R{Right to Left text}`. Numbers should also be enclosed in `\L{}`, as in `\L{123}`.

Note, that these macros do not receive language name as parameter. Instead, the saved `\@rllanguage` will be used. We assume that each Right-to-Left language defines `\tolanguage` and `\fromlanguage` macros in language definition file, for example, for Hebrew: `\tohebrew` and `\fromhebrew` macros in `hebrew.ldf` file.

The macros `\L` and `\R` include ‘protect’ to make them robust and allow use, for example, in tables.

Due to the fact that some packages have different definitions for `\L` the macro `\HeblatexRedefineL` is provided to override them. This may be required with `hyperref`, for instance.

```

60.293 \let\next=
60.294 \def\HeblatexRedefineL{%
60.295   \def\L{\protect\pL}%
60.296 }
60.297 \HeblatexRedefineL
60.298 \def\pL{\protect\afterassignment\moreL \let\next= }
60.299 \def\moreL{\bracetext \aftergroup\endL \beginL\csname
60.300   from\@rllanguagename\endcsname}
60.301 \def\R{\protect\pR}
60.302 \def\pR{\protect\afterassignment\moreR \let\next= }
60.303 \def\moreR{\bracetext \aftergroup\endR \beginR\csname
60.304   to\@rllanguagename\endcsname}
60.305 \def\bracetext{\ifcat\next{\else\ifcat\next}\fi
60.306   \errmessage{Missing left brace has been substituted}\fi \bgroup}
60.307 \everydisplay{\if@rl\aftergroup\beginR\fi }

```

**\@ensure@R** Two small internal macros, a-la `\ensuremath`

```

\@ensure@L
60.308 \def\@ensure@R#1{\if@rl#1\else\R{#1}\fi}
60.309 \def\@ensure@L#1{\if@rl\L{#1}\else#1\fi}

```

Take care of Right-to-Left indentation in every paragraph. Originally, `\noindent` was redefined for right-to-left by Yaniv Bargury, then the implementation was rewritten by Alon Ziv using an idea by Chris Rowley: `\noindent` now works unmodified.

```

60.310 \def\rl@everypar{\if@rl{\setbox\z@\lastbox\beginR\usebox\z@}\fi}
60.311 \let\o@everypar=\everypar
60.312 \def\everypar#1{\o@everypar{\rl@everypar#1}}

```

**\hmbox** Useful vbox commands. All text in math formulas is best enclosed in these: LR text in `\embox` and RL text in `\hmbox`. `\mbox{}` is useless for both cases, since it typesets in Left-to-Right even for Right-to-Left languages (additions by Yaniv Bargury).

```

60.313 \newcommand{\hmbox}[1]{\mbox{\R{#1}}}
60.314 \newcommand{\embox}[1]{\mbox{\L{#1}}}

```

**\@brackets** When in Right-to-Left mode, brackets should be swapped. This macro receives 3 parameters: left bracket, content, right bracket. Brackets can be square brackets, braces, or parentheses.

```

60.315 \def\@brackets#1#2#3{\protect\if@rl #3#2#1\protect\else
60.316   #1#2#3\protect\fi}

```

**\@number** `\@number` preserves numbers direction from Left to Right. `\@latin` in addition `\@latin` switches current encoding to the latin.

```

60.317 \def\@@number#1{\ifmmode\else\beginL\fi#1\ifmmode\else\endL\fi}
60.318 \def\@@latin#1{\@@number{\@fromrl#1}}
60.319 \def\@number{\protect\@@number}
60.320 \def\@latin{\protect\@@latin}

```

## 60.4.2 Counters

To make counter references work in Right to Left text, we need to surround their original definitions with an `\@number{...}` or `\@latin{...}`. Note, that language-specific counters, such as `\hebr` or `\gim` are provided with language definition file.

We start with saving the original definitions:

```
60.321 \let\@@arabic=\@arabic
60.322 \let\@@roman=\@roman
60.323 \let\@@Roman=\@Roman
60.324 \let\@@alph=\@alph
60.325 \let\@@Alph=\@Alph
```

`\@arabic` Arabic and roman numbers should be from Left to Right. In addition, roman  
`\@roman` numerals, both lower- and upper-case should be in latin encoding.

```
\@Roman
60.326 \def\@arabic#1{\@number{\@@arabic#1}}
60.327 \def\@roman#1{\@latin{\@@roman#1}}
60.328 \def\@Roman#1{\@latin{\@@Roman#1}}
```

`\arabicnorl` This macro preserves the original definition of `\arabic` (overrides the overriding  
of `\@arabic`)

```
60.329 \def\arabicnorl#1{\expandafter\@@arabic\csname c@#1\endcsname}
```

`\make@lr` In Right to Left documents all counters defined in the standard document  
classes *article*, *report* and *book* provided with L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, such as `\thesection`,  
`\thefigure`, `\theequation` should be typed as numbers from left to right. To  
ensure direction, we use the following `\make@lr{counter}` macro:

```
60.330 \def\make@lr#1{\begingroup
60.331   \toks@=\expandafter{#1}%
60.332   \edef\x{\endgroup
60.333   \def\noexpand#1{\noexpand\@number{\the\toks@}}}%
60.334   \x}
60.335 \@ifclassloaded{letter}{-}{%
60.336   \@ifclassloaded{slides}{-}{%
60.337     \make@lr\thesection
60.338     \make@lr\thesubsection
60.339     \make@lr\thesubsubsection
60.340     \make@lr\theparagraph
60.341     \make@lr\thesubparagraph
60.342     \make@lr\thefigure
60.343     \make@lr\thetable
60.344   }
60.345   \make@lr\theequation
60.346 }
```

### 60.4.3 Preserving logos

Preserve T<sub>E</sub>X, L<sup>A</sup>T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> logos.

`\TeX`

```
60.347 \let\@@TeX\TeX
60.348 \def\TeX{\@latin{\@@TeX}}
```

`\LaTeX`

```
60.349 \let\@@LaTeX\LaTeX
60.350 \def\LaTeX{\@latin{\@@LaTeX}}
```

`\LaTeXe`

```
60.351 \let\@@LaTeXe\LaTeXe
60.352 \def\LaTeXe{\@latin{\@@LaTeXe}}
```



#### 60.4.4 List environments

List environments in Right-to-Left languages, are ticked and indented from the right instead of from the left. All the definitions that caused indentation are revised for Right-to-Left languages. L<sup>A</sup>T<sub>E</sub>X keeps track on the indentation with the `\leftmargin` and `\rightmargin` values.

**list** Thus we need to override the definition of the `\list` macro: when in RTL mode, the right margins are the beginning of the line.

```

60.353 \def\list#1#2{%
60.354   \ifnum \@listdepth >5\relax
60.355     \@toodeep
60.356   \else
60.357     \global\advance\@listdepth\@ne
60.358   \fi
60.359   \rightmargin\z@
60.360   \listparindent\z@
60.361   \itemindent\z@
60.362   \csname @list\romannumeral\the\@listdepth\endcsname
60.363   \def\@itemlabel{#1}%
60.364   \let\makelabel\@mklab
60.365   \@nmbrrlistfalse
60.366   #2\relax
60.367   \@trivlist
60.368   \parskip\parsep
60.369   \parindent\listparindent
60.370   \advance\linewidth -\rightmargin
60.371   \advance\linewidth -\leftmargin

```

The only change in the macro is the `\if@rl` case:

```

60.372   \if@rl
60.373     \advance\@totalleftmargin \rightmargin
60.374   \else
60.375     \advance\@totalleftmargin \leftmargin
60.376   \fi
60.377   \parshape \@ne \@totalleftmargin \linewidth
60.378   \ignorespaces}

```

`\labelenumii` The `\labelenumii` and `\p@enumiii` commands use *parentheses*. They are revised `\p@enumiii` to work Right-to-Left with the help of `\@brackets` macro defined above.

```

60.379 \def\labelenumii{\@brackets(\theenumii)}
60.380 \def\p@enumiii{\p@enumii\@brackets(\theenumii)}

```

#### 60.4.5 Tables of moving stuff

Tables of moving arguments: table of contents (`\toc`), list of figures (`\lof`) and list of tables (`\lot`) are handles here. These three default L<sup>A</sup>T<sub>E</sub>X tables will be used now exclusively for Left to Right stuff.

Three additional Right-to-Left tables: RL table of contents (`\cot`), RL list of figures (`\fol`), and RL list of tables (`\tol`) are added. These three tables will be used exclusively for Right to Left stuff.

`\@tableofcontents` We define 3 new macros similar to the standard L<sup>A</sup>T<sub>E</sub>X tables, but with one parameter — table file extension. These macros will help us to define our additional

`\@listoffigures`

`\@listoftables` tables below.

```

60.381 \ifclassloaded{letter}{}{% other
60.382 \ifclassloaded{slides}{}{% other
60.383 \ifclassloaded{article}{}{ article
60.384 \newcommand\@tableofcontents[1]{%
60.385 \section*{\contentsname\@mkboth%
60.386 {\MakeUppercase\contentsname}%
60.387 {\MakeUppercase\contentsname}}%
60.388 \@starttoc{#1}}
60.389 \newcommand\@listoffigures[1]{%
60.390 \section*{\listfigurename\@mkboth%
60.391 {\MakeUppercase\listfigurename}%
60.392 {\MakeUppercase\listfigurename}}%
60.393 \@starttoc{#1}}
60.394 \newcommand\@listoftables[1]{%
60.395 \section*{\listtablename\@mkboth%
60.396 {\MakeUppercase\listtablename}%
60.397 {\MakeUppercase\listtablename}}%
60.398 \@starttoc{#1}}}%
60.399 {% else report or book
60.400 \newcommand\@tableofcontents[1]{%
60.401 \@restonecolfalse\if@twocolumn\@restonecoltrue\onecolumn%
60.402 \fi\chapter*{\contentsname\@mkboth%
60.403 {\MakeUppercase\contentsname}%
60.404 {\MakeUppercase\contentsname}}%
60.405 \@starttoc{#1}\if@restonecol\twocolumn\fi}
60.406 \newcommand\@listoffigures[1]{%
60.407 \@restonecolfalse\if@twocolumn\@restonecoltrue\onecolumn%
60.408 \fi\chapter*{\listfigurename\@mkboth%
60.409 {\MakeUppercase\listfigurename}%
60.410 {\MakeUppercase\listfigurename}}%
60.411 \@starttoc{#1}\if@restonecol\twocolumn\fi}
60.412 \newcommand\@listoftables[1]{%
60.413 \if@twocolumn\@restonecoltrue\onecolumn\else\@restonecolfalse\fi%
60.414 \chapter*{\listtablename\@mkboth%
60.415 {\MakeUppercase\listtablename}%
60.416 {\MakeUppercase\listtablename}}%
60.417 \@starttoc{#1}\if@restonecol\twocolumn\fi}}%

```

`\lrrtableofcontents` Left-to-Right tables are called now `\lrrxxx` and defined with the aid of three macros

`\lrrlistoffigures` defined above (extensions `toc`, `lof`, and `lot`).

```

\lrrlistoftables 60.418 \newcommand\lrrtableofcontents{\@tableofcontents{toc}}%
60.419 \newcommand\lrrlistoffigures{\@listoffigures{lof}}%
60.420 \newcommand\lrrlistoftables{\@listoftables{lot}}%

```

`\rltableofcontents` Right-to-Left tables will be called `\rlxxx` and defined with the aid of three macros

`\rllistoffigures` defined above (extensions `cot`, `fol`, and `tol`).

```

\rltableofcontents 60.421 \newcommand\rltableofcontents{\@tableofcontents{cot}}%
60.422 \newcommand\rllistoffigures{\@listoffigures{fol}}%
60.423 \newcommand\rllistoftables{\@listoftables{tol}}%

```

`\tableofcontents` Let `\xxx` be `\rlxxx` if the current direction is Right-to-Left and `\lrx` if it is Left-to-Right.

```

\listoftables 60.424 \renewcommand\tableofcontents{\if@rl\rltableofcontents%
60.425 \else\ltableofcontents\fi}
60.426 \renewcommand\listoffigures{\if@rl\rl\listoffigures%
60.427 \else\l\listoffigures\fi}
60.428 \renewcommand\listoftables{\if@rl\rl\listoftables%
60.429 \else\l\listoftables\fi}}

```

`\@dottedtocline` The following makes problems when making a Right-to-Left tables, since it uses `\leftskip` and `\rightskip` which are both mode dependent.

```

60.430 \def\@dottedtocline#1#2#3#4#5{%
60.431 \ifnum #1>\c@tocdepth \else
60.432 \vskip \z@ \@plus.2\p@
60.433 {\if@rl\rightskip\else\leftskip\fi #2\relax
60.434 \if@rl\leftskip\else\rightskip\fi \@tocrmarg \parfillskip
60.435 -\if@rl\leftskip\else\rightskip\fi
60.436 \parindent #2\relax\@afterindenttrue
60.437 \interlinepenalty\@M
60.438 \leavevmode
60.439 \@tempdima #3\relax
60.440 \advance\if@rl\rightskip\else\leftskip\fi \@tempdima
60.441 \null\nobreak\hskip -\if@rl\rightskip\else\leftskip\fi
60.442 {#4}\nobreak
60.443 \leaders\hbox{$\m@th
60.444 \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
60.445 mu$}\hfill
60.446 \nobreak
60.447 \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor \beginL#5\endL}%
60.448 \par}%
60.449 \fi}

```

`\l@part` This standard macro was redefined for table of contents since it uses `\rightskip` which is mode dependent.

```

60.450 \@ifclassloaded{letter}{}{% other
60.451 \@ifclassloaded{slides}{}{% other
60.452 \renewcommand*\l@part[2]{%
60.453 \ifnum \c@tocdepth >-2\relax
60.454 \addpenalty{-\@highpenalty}%
60.455 \addvspace{2.25em \@plus\p@}%
60.456 \begingroup
60.457 \setlength\@tempdima{3em}%
60.458 \parindent \z@ \if@rl\leftskip\else\rightskip\fi \@pnumwidth
60.459 \parfillskip -\@pnumwidth
60.460 {\leavevmode
60.461 \large \bfseries #1\hfil \hb@xt@\@pnumwidth{\hss#2}}\par
60.462 \nobreak
60.463 \global\@nobreaktrue
60.464 \everypar{\global\@nobreakfalse\everypar{}}%
60.465 \endgroup
60.466 \fi}}

```

`\@part` Part is redefined to support new Right-to-Left table of contents (cot) as well as the Left-to-Right one (toc).

```

60.467 \@ifclassloaded{article}{% article class
60.468   \def\@part[#1]#2{%
60.469     \ifnum \c@secnumdepth >\m@ne
60.470       \refstepcounter{part}%
60.471       \addcontentsline{toc}{part}{\thepart\hspace{1em}#1}%
60.472       \addcontentsline{cot}{part}{\thepart\hspace{1em}#1}%
60.473     \else
60.474       \addcontentsline{toc}{part}{#1}%
60.475       \addcontentsline{cot}{part}{#1}%
60.476     \fi
60.477     {\parindent \z@ \raggedright
60.478       \interlinepenalty \@M
60.479       \normalfont
60.480       \ifnum \c@secnumdepth >\m@ne
60.481         \Large\bfseries \partname~\thepart
60.482         \par\nobreak
60.483       \fi
60.484       \huge \bfseries #2%
60.485       \markboth{}{}\par}%
60.486     \nobreak
60.487     \vskip 3ex
60.488     \@afterheading}%
60.489 }{% report and book classes
60.490   \def\@part[#1]#2{%
60.491     \ifnum \c@secnumdepth >-2\relax
60.492       \refstepcounter{part}%
60.493       \addcontentsline{toc}{part}{\thepart\hspace{1em}#1}%
60.494       \addcontentsline{cot}{part}{\thepart\hspace{1em}#1}%
60.495     \else
60.496       \addcontentsline{toc}{part}{#1}%
60.497       \addcontentsline{cot}{part}{#1}%
60.498     \fi
60.499     \markboth{}{}%
60.500     {\centering
60.501       \interlinepenalty \@M
60.502       \normalfont
60.503       \ifnum \c@secnumdepth >-2\relax
60.504         \huge\bfseries \partname~\thepart
60.505         \par
60.506         \vskip 20\p@
60.507       \fi
60.508       \Huge \bfseries #2\par}%
60.509     \@endpart}}

```

`\@sect` Section was redefined from the `latex.ltx` file. It is changed to support both Left-to-Right (toc) and Right-to-Left (cot) table of contents simultaneously.

```

60.510 \def\@sect#1#2#3#4#5#6[#7]#8{%
60.511   \ifnum #2>\c@secnumdepth
60.512     \let\@svsec\@empty
60.513   \else
60.514     \refstepcounter{#1}%
60.515     \protected@edef\@svsec{\@secntformat{#1}\relax}%
60.516   \fi
60.517   \@tempskipa #5\relax

```

```

60.518 \ifdim \@tempskipa>\z@
60.519 \begingroup
60.520 #6{%
60.521 \@hangfrom{\hskip #3\relax\@svsec}%
60.522 \interlinepenalty \@M #8\@par}%
60.523 \endgroup
60.524 \csname #1mark\endcsname{#7}%
60.525 \addcontentsline{toc}{#1}{%
60.526 \ifnum #2>\c@secnumdepth \else
60.527 \protect\numberline{\csname the#1\endcsname}%
60.528 \fi
60.529 #7}%
60.530 \addcontentsline{cot}{#1}{%
60.531 \ifnum #2>\c@secnumdepth \else
60.532 \protect\numberline{\csname the#1\endcsname}%
60.533 \fi
60.534 #7}%
60.535 \else
60.536 \def\@svsechd{%
60.537 #6{\hskip #3\relax
60.538 \@svsec #8}%
60.539 \csname #1mark\endcsname{#7}%
60.540 \addcontentsline{toc}{#1}{%
60.541 \ifnum #2>\c@secnumdepth \else
60.542 \protect\numberline{\csname the#1\endcsname}%
60.543 \fi
60.544 #7}%
60.545 \addcontentsline{cot}{#1}{%
60.546 \ifnum #2>\c@secnumdepth \else
60.547 \protect\numberline{\csname the#1\endcsname}%
60.548 \fi
60.549 #7}}%
60.550 \fi
60.551 \@xsect{#5}}

```

`\@caption` Caption was redefined from the `latex.ltx` file. It is changed to support Left-to-Right list of figures and list of tables (`lof` and `lot`) as well as new Right-to-Left lists (`fol` and `tol`) simultaneously.

```

60.552 \long\def\@caption#1[#2]#3{%
60.553 \par
60.554 \addcontentsline{\csname ext@#1\endcsname}{#1}%
60.555 {\protect\numberline{\csname the#1\endcsname}%
60.556 {\ignorespaces #2}}%
60.557 \def\@fignm{figure}
60.558 \ifx#1\@fignm\addcontentsline{fol}{#1}%
60.559 {\protect\numberline{\csname the#1\endcsname}%
60.560 {\ignorespaces #2}}\fi%
60.561 \def\@tblnm{table}
60.562 \ifx#1\@tblnm\addcontentsline{tol}{#1}%
60.563 {\protect\numberline{\csname the#1\endcsname}%
60.564 {\ignorespaces #2}}\fi%
60.565 \begingroup
60.566 \@parboxrestore
60.567 \if@minipage

```

```

60.568      \@setminipage
60.569      \fi
60.570      \normalsize
60.571      \@makecaption{\csname fnum#1\endcsname}{\ignorespaces #3}\par
60.572      \endgroup}

```

`\l@chapter` This standard macro was redefined for table of contents since it uses `\rightskip` which is mode dependent.

```

60.573 \ifclassloaded{letter}{\}%
60.574 \ifclassloaded{slides}{\}%
60.575   \@ifclassloaded{article}{\}%
60.576   \renewcommand*\l@chapter[2]{\%
60.577     \ifnum \c@tocdepth > \m@ne
60.578     \addpenalty{-\@highpenalty}%
60.579     \vskip 1.0em \@plus\p@
60.580     \setlength\@tempdima{1.5em}%
60.581     \begingroup
60.582       \parindent \z@ \if@rl\leftskip\else\rightskip\fi \@pnumwidth
60.583       \parfillskip -\@pnumwidth
60.584       \leavevmode \bfseries
60.585       \advance\if@rl\rightskip\else\leftskip\fi\@tempdima
60.586       \hskip -\if@rl\rightskip\else\leftskip\fi
60.587       #1\nobreak\hfil \nobreak\hb@xt@\@pnumwidth{\hss#2}\par
60.588       \penalty\@highpenalty
60.589     \endgroup
60.590     \fi}}

```

`\l@section` The toc entry for section did not work in article style. Also it does not print dots, `\l@subsection` which is funny when most of your work is divided into sections.

`\l@subsubsection` It was revised to use `\@dottedtocline` as in `report.sty` (by Yaniv Bargury) `\l@paragraph` and was updated later for all kinds of sections (by Boris Lavva).

```

\l@subparagraph 60.591 \@ifclassloaded{article}{\%
60.592 \renewcommand*\l@section{\@dottedtocline{1}{1.5em}{2.3em}}
60.593 \renewcommand*\l@subsection{\@dottedtocline{2}{3.8em}{3.2em}}
60.594 \renewcommand*\l@subsubsection{\@dottedtocline{3}{7.0em}{4.1em}}
60.595 \renewcommand*\l@paragraph{\@dottedtocline{4}{10em}{5em}}
60.596 \renewcommand*\l@subparagraph{\@dottedtocline{5}{12em}{6em}}{\%

```

#### 60.4.6 Two-column mode

This is the support of `twocolumn` option for the standard  $\text{\LaTeX} 2_{\epsilon}$  classes. The following code was originally borrowed from the `ArabTeX` package, file `latexext.sty`, copyright by Klaus Lagally, Institut fuer Informatik, Universitaet Stuttgart. It was updated for this package by Boris Lavva.

```

\@outputdblcol First column is \leftcolumn will be shown at the right side, Second column is
\set@outputdblcol \@outputbox will be shown at the left side.
  rl@outputdblcol \set@outputdblcol IS CURRENTLY DISABLED. TODO: REMOVE IT
                  [tzafrir]
60.597 \let\@@outputdblcol\@outputdblcol
60.598 %\def\set@outputdblcol{\%
60.599 %  \if@rl\renewcommand{\@outputdblcol}{\rl@outputdblcol}\%
60.600 %  \else\renewcommand{\@outputdblcol}{\@@outputdblcol}\fi}

```

```

60.601 \renewcommand{\@outputdblcol}{%
60.602   \if@rlmain%
60.603     \rl@outputdblcol%
60.604   \else%
60.605     \@@outputdblcol%
60.606   \fi%
60.607 }
60.608 \newcommand{\rl@outputdblcol}{%
60.609   \if@firstcolumn
60.610     \global \@firstcolumnfalse
60.611     \global \setbox\@leftcolumn \box\@outputbox
60.612   \else
60.613     \global \@firstcolumntrue
60.614     \setbox\@outputbox \vbox {\hb@xt@\textwidth {%
60.615                                   \hskip\columnwidth%
60.616                                   \hfil\vrule\@width\columnseprule\hfil
60.617                                   \hb@xt@\columnwidth {%
60.618                                     \box\@leftcolumn \hss}%
60.619                                   \hb@xt@\columnwidth {%
60.620                                     \hskip-\textwidth%
60.621                                     \box\@outputbox \hss}%
60.622                                   \hskip\columnsep%
60.623                                   \hskip\columnwidth}}}%
60.624     \@combinedblfloats
60.625     \@outputpage
60.626     \begingroup
60.627       \@dblfloatplacement
60.628       \@startdblcolumn
60.629       \@whiles\if@fcolmade \fi
60.630       {\@outputpage
60.631        \@startdblcolumn}%
60.632     \endgroup
60.633 \fi}

```

#### 60.4.7 Footnotes

**\footnoterule** The Right-to-Left footnote rule is simply reversed default Left-to-Right one. Footnotes can be used in RL or LR main modes, but changing mode while a footnote is pending is still unsolved.

```

60.634 \let\@@footnoterule=\footnoterule
60.635 \def\footnoterule{\if@rl\hb@xt@\hsize{\hss\vbox{\@@footnoterule}}%
60.636               \else\@@footnoterule\fi}

```

#### 60.4.8 Headings and two-side support

When using **headings** or **myheadings** modes, we have to ensure that the language and direction of heading is the same as the whole chapter/part of the document. This is implementing by setting special variable **\headlanguage** when starting new chapter/part.

In addition, when selecting the **twoside** option (default in **book** document class), the LR and RL modes need to be set properly for things on the heading and footing. This is done here too.

```

ps@headings First, we will support the standard letter class:
ps@myheadings\@ifclassloaded{letter}{%
headeven\def\headodd{\protect\if@rl\beginR\fi\headtoname{
headodd\ignorespaces\toname
60.640 \hfil \@date
60.641 \hfil \pagename{} \thepage\protect\if@rl\endR\fi}
60.642 \if@twoside
60.643 \def\ps@headings{%
60.644 \let\@oddfoot\@empty\let\@evenfoot\@empty
60.645 \def\@oddhead{\select@language{\headlanguage}\headodd}
60.646 \let\@evenhead\@oddhead}
60.647 \else
60.648 \def\ps@headings{%
60.649 \let\@oddfoot\@empty
60.650 \def\@oddhead{\select@language{\headlanguage}\headodd}}
60.651 \fi
60.652 \def\headfirst{\protect\if@rl\beginR\fi\fromlocation \hfill %
60.653 \telephonenumber\protect\if@rl\endR\fi}
60.654 \def\ps@firstpage{%
60.655 \let\@oddhead\@empty
60.656 \def\@oddfoot{\raisebox{-45\p@}{\z@}{%
60.657 \hb@xt@{\textwidth}{\hspace*{100\p@}%
60.658 \ifcase \@ptsize\relax
60.659 \normalsize
60.660 \or
60.661 \small
60.662 \or
60.663 \footnotesize
60.664 \fi
60.665 \select@language{\headlanguage}\headfirst}}\hss}}
60.666 %
60.667 \renewcommand{\opening}[1]{%
60.668 \let\headlanguage=\language%
60.669 \ifx\@empty\fromaddress%
60.670 \thispagestyle{firstpage}%
60.671 {\raggedleft\@date\par}%
60.672 \else % home address
60.673 \thispagestyle{empty}%
60.674 {\raggedleft
60.675 \if@rl\begin{tabular}{@{\beginR\csize%
60.676 to\@rllanguagename\endcsname}r@{\endR}}\ignorespaces
60.677 \fromaddress \*[2\parskip]%
60.678 \@date \end{tabular}\par%
60.679 \else\begin{tabular}{l}\ignorespaces
60.680 \fromaddress \*[2\parskip]%
60.681 \@date \end{tabular}\par%
60.682 \fi}%
60.683 \fi
60.684 \vspace{2\parskip}%
60.685 {\raggedright \toname \ \ \toaddress \par}%
60.686 \vspace{2\parskip}%
60.687 #1\par\nobreak}
60.688 }

```

Then, the article, report and book document classes are supported. Note, that



in one-sided mode `\markright` was changed to `\markboth`.

```

60.689 {% article, report, book
60.690   \def\headeven{\protect\if@rl\beginR\thepage\hfil\rightmark\endR
60.691             \protect\else\thepage\hfil{\slshape\leftmark}
60.692             \protect\fi}
60.693   \def\headodd{\protect\if@rl\beginR\leftmark\hfil\thepage\endR
60.694             \protect\else{\slshape\rightmark}\hfil\thepage
60.695             \protect\fi}
60.696   \@ifclassloaded{article}{% article
60.697     \if@twoside % two-sided
60.698       \def\ps@headings{%
60.699         \let\@oddfoot\@empty\let\@evenfoot\@empty
60.700         \def\@evenhead{\select@language{\headlanguage}\headeven}%
60.701         \def\@oddhead{\select@language{\headlanguage}\headodd}%
60.702         \let\@mkboth\markboth
60.703         \def\sectionmark##1{%
60.704           \markboth {\MakeUppercase{%
60.705             \ifnum \c@secnumdepth >\z@
60.706               \thesection\quad
60.707             \fi
60.708             ##1}}{}}%
60.709         \def\subsectionmark##1{%
60.710           \markright{%
60.711             \ifnum \c@secnumdepth >\@ne
60.712               \thesubsection\quad
60.713             \fi
60.714             ##1}}}
60.715       \else % one-sided
60.716         \def\ps@headings{%
60.717           \let\@oddfoot\@empty
60.718           \def\@oddhead{\headodd}%
60.719           \let\@mkboth\markboth
60.720           \def\sectionmark##1{%
60.721             \markboth{\MakeUppercase{%
60.722               \ifnum \c@secnumdepth >\m@ne
60.723                 \thesection\quad
60.724               \fi
60.725               ##1}}{\MakeUppercase{%
60.726                 \ifnum \c@secnumdepth >\m@ne
60.727                   \thesubsection\quad
60.728                 \fi
60.729                 ##1}}}}
60.730         \fi
60.731 %
60.732   \def\ps@myheadings{%
60.733     \let\@oddfoot\@empty\let\@evenfoot\@empty
60.734     \def\@evenhead{\select@language{\headlanguage}\headeven}%
60.735     \def\@oddhead{\select@language{\headlanguage}\headodd}%
60.736     \let\@mkboth\@gobbletwo
60.737     \let\sectionmark\@gobble
60.738     \let\subsectionmark\@gobble
60.739   }}{% report and book
60.740   \if@twoside % two-sided
60.741     \def\ps@headings{%

```

```

60.742      \let\@oddfoot\@empty\let\@evenfoot\@empty
60.743      \def\@evenhead{\select@language{\headlanguage}\headeven}
60.744      \def\@oddhead{\select@language{\headlanguage}\headodd}
60.745      \let\@mkboth\markboth
60.746      \def\chaptermark##1{%
60.747          \markboth{\MakeUppercase{%
60.748              \ifnum \c@secnumdepth >\m@ne
60.749                  \@chapapp\ \thechapter. \ %
60.750              \fi
60.751              ##1}}{}}%
60.752      \def\sectionmark##1{%
60.753          \markright {\MakeUppercase{%
60.754              \ifnum \c@secnumdepth >\z@
60.755                  \thesection. \ %
60.756              \fi
60.757              ##1}}}}
60.758      \else % one-sided
60.759          \def\ps@headings{%
60.760              \let\@oddfoot\@empty
60.761              \def\@oddhead{\select@language{\headlanguage}\headodd}
60.762              \let\@mkboth\markboth
60.763              \def\chaptermark##1{%
60.764                  \markboth{\MakeUppercase{%
60.765                      \ifnum \c@secnumdepth >\m@ne
60.766                          \@chapapp\ \thechapter. \ %
60.767                      \fi
60.768                      ##1}}{\MakeUppercase{%
60.769                          \ifnum \c@secnumdepth >\m@ne
60.770                              \@chapapp\ \thechapter. \ %
60.771                          \fi
60.772                          ##1}}}}
60.773              \fi
60.774              \def\ps@myheadings{%
60.775                  \let\@oddfoot\@empty\let\@evenfoot\@empty
60.776                  \def\@evenhead{\select@language{\headlanguage}\headeven}%
60.777                  \def\@oddhead{\select@language{\headlanguage}\headodd}%
60.778                  \let\@mkboth\@gobbletwo
60.779                  \let\chaptermark\@gobble
60.780                  \let\sectionmark\@gobble
60.781              }}}}

```

#### 60.4.9 Postscript Problems

Any command that is implemented by PostScript directives, e.g. commands from the `ps-tricks` package, needs to be fixed, because the PostScript directives are being interpreted after the document has been converted by `TEXto` visual Hebrew (DVI, PostScript and PDF have visual Hebrew).

For instance: Suppose you wrote in your document:

```
\textcolor{cyan}{some ltr text}
```

This would be interpreted by `TEXto` something like:

```
[postscript:make color cyan]some LTR text[postscript:make color black]
```

However, with the bidirectionality support we get:

```
\textcolor{cyan}{\hebalef\hebbet}
```

Translated to:  
`[postscript:make color black]{bet}{alef}[postscript:make color cyan]`  
 While we want:  
`[postscript:make color cyan]{bet}{alef}[postscript:make color black]`  
 The following code will probably work at least with code that stays in the same line:

```
@textcolor
60.782 \AtBeginDocument{%
60.783 %I assume that \@textcolor is only defined by the package color
60.784 \ifx\@textcolor\undefined\else%
60.785 % If that macro was defined before the beginning of the document,
60.786 % that is: the package was loaded: redefine it with bidi support
60.787 \def\@textcolor#1#2#3{%
60.788 \ifrl%
60.789 \beginL\protect\leavevmode{\color#1{#2}\beginR#3\endR}\endL%
60.790 \else%
60.791 \protect\leavevmode{\color#1{#2}#3}%
60.792 \fi%
60.793 }%
60.794 \fi%
60.795 }
60.796 % \end{macrocode}
60.797 % \end{macro}
60.798 % \begin{macro}{\thetrueSlideCounter}
60.799 % This macro probably needs to be overridden for when using |prosper|,
60.800 % (waiting for feedback. Tzafrir)
60.801 % \begin{macrocode}
60.802 \@ifclassloaded{prosper}{%
60.803 \def\thetrueSlideCounter{\arabicnorl{trueSlideCounter}}
60.804 }{}
```

#### 60.4.10 Miscellaneous internal L<sup>A</sup>T<sub>E</sub>X macros

`\raggedright` `\raggedright` was changed from latex.ltx file to support Right-to-Left mode,  
`\raggedleft` because of the bug in its implementation.

```
60.805 \def\raggedright{%
60.806 \let\\\@centercr
60.807 \leftskip\z@skip\rightskip\@flushglue
60.808 \parindent\z@\parfillskip\z@skip}
```

Swap meanings of `\raggedright` and `\raggedleft` in Right-to-Left mode.

```
60.809 \let\@raggedleft=\raggedleft
60.810 \let\@raggedright=\raggedright
60.811 \renewcommand\raggedleft{\ifrl\@raggedright%
60.812 \else\@raggedleft\fi}
60.813 \renewcommand\raggedright{\ifrl\@raggedleft%
60.814 \else\@raggedright\fi}
```

`\author` `\author` is inserted with `tabular` environment, and will be used in restricted horizontal mode. Therefore we have to add explicit direction change command when in Right-to-Left mode.

```
60.815 \let\@author=\author
60.816 \renewcommand{\author}[1]{\@author{\ifrl\beginR #1\endR\else #1\fi}}
```

`\MakeUppercase` There are no uppercase and lowercase letters in most Right-to-Left languages,  
`\MakeLowercase` therefore we should redefine `\MakeUppercase` and `\MakeLowercase` L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> com-  
mands.

```
60.817 \let\@@MakeUppercase=\MakeUppercase
60.818 \def\MakeUppercase#1{\if@rl#1\else\@@MakeUppercase{#1}\fi}
60.819 \let\@@MakeLowercase=\MakeLowercase
60.820 \def\MakeLowercase#1{\if@rl#1\else\@@MakeLowercase{#1}\fi}
```

`\underline` We should explicitly use `\L` and `\R` commands in `\underlined` text.

```
60.821 \let\@@@underline=\underline
60.822 \def\underline#1{\@@@underline{\if@rl\R{#1}\else #1\fi}}
```

`\undertext` was added for L<sup>A</sup>T<sub>E</sub>X 2.09 compatibility mode.

```
60.823 \if@compatibility
60.824 \let\underline=\underline
60.825 \fi
```

`\@xnthm` The following has been inserted to correct the appearance of the number in  
`\@opargbegintheorem` `\newtheorem` to reorder theorem number components. A similar correction in  
the definition of `\@opargbegintheorem` was added too.

```
60.826 \def\@xnthm#1#2[#3]{%
60.827 \expandafter\@ifdefinable\csname #1\endcsname
60.828 {\@definecounter{#1}\@addtoreset{#1}{#3}%
60.829 \expandafter\xdef\csname the#1\endcsname{\noexpand\@number
60.830 {\expandafter\noexpand\csname the#3\endcsname \@thmcountersep
60.831 \@thmcounter{#1}}}%
60.832 \global\@namedef{#1}{\@thm{#1}{#2}}%
60.833 \global\@namedef{end#1}{\@endtheorem}}
60.834 %
60.835 \def\@opargbegintheorem#1#2#3{%
60.836 \trivlist
60.837 \item[\hskip \labelsep{\bfseries #1\ #2\
60.838 \@brackets{#3}}]{\itshape}
```

`\@chapter` The following was added for pretty printing of the chapter numbers, for supporting  
`\@schapter` Right-to-Left tables (`cot`, `fol`, and `tol`), to save `\headlanguage` for use in running  
headers, and to start two-column mode depending on chapter's main language.

```
60.839 \@ifclassloaded{article}{}{%
60.840 % For pretty printing
60.841 \def\@chapapp{Chapter}
60.842 \def\@thechapter{\@@arabic\c@chapter}
60.843 \def\@chapter[#1]#2{%
60.844 \let\headlanguage=\language%
60.845 %\set@outputdblcol%
60.846 \ifnum \c@secnumdepth > \m@ne
60.847 \refstepcounter{chapter}%
60.848 \typeout{\@chapapp\space\@thechapter.}%
60.849 \addcontentsline{toc}{chapter}%
60.850 {\protect\numberline{\thechapter}#1}
60.851 \addcontentsline{cot}{chapter}%
60.852 {\protect\numberline{\thechapter}#1}
60.853 \else
60.854 \addcontentsline{toc}{chapter}{#1}%

```

```

60.855      \addcontentsline{cot}{chapter}{#1}%
60.856      \fi
60.857      \chaptermark{#1}
60.858      \addtocontents{lof}{\protect\addvspace{10\p@}}%
60.859      \addtocontents{fol}{\protect\addvspace{10\p@}}%
60.860      \addtocontents{lot}{\protect\addvspace{10\p@}}%
60.861      \addtocontents{tol}{\protect\addvspace{10\p@}}%
60.862      \if@twocolumn
60.863          \topnewpage[\@makechapterhead{#2}]%
60.864      \else
60.865          \@makechapterhead{#2}%
60.866          \@afterheading
60.867      \fi}
60.868      %
60.869      \def\@schapter#1{%
60.870          \let\headlanguage=\language%
60.871          %\set@outputdblcol%
60.872          \if@twocolumn
60.873              \topnewpage[\@makeschapterhead{#1}]%
60.874          \else
60.875              \@makeschapterhead{#1}%
60.876              \@afterheading
60.877          \fi}}

```

`\appendix` Changed mainly for pretty printing of appendix numbers, and to start two-column mode with the right language (if needed).

```

60.878 \@ifclassloaded{letter}{}{% other
60.879 \@ifclassloaded{slides}{}{% other
60.880     \@ifclassloaded{article}{% article
60.881         \renewcommand\appendix{\par
60.882             \setcounter{section}{0}%
60.883             \setcounter{subsection}{0}%
60.884             \renewcommand\thesection{\@Alph\c@section}}
60.885     }{% report and book
60.886         \renewcommand\appendix{\par
60.887             %\set@outputdblcol%
60.888             \setcounter{chapter}{0}%
60.889             \setcounter{section}{0}%
60.890             \renewcommand\@chapapp{\appendixname}%
60.891             % For pretty printing
60.892             \def\@chapapp{Appendix}%
60.893             \def\@thechapter{\@Alph\c@chapter}
60.894             \renewcommand\thechapter{\@Alph\c@chapter}}}}

```

#### 60.4.11 Bibliography and citations

`\@cite` Citations are produced by the macro `\@cite{LABEL}{NOTE}`. Both the citation label and the note is typeset in the current direction. We have to use `\@brackets` macro in `\@cite` and `\@biblabel` macros. In addition, when using *alpha* or similar bibliography style, the `\@lbibitem` is used and have to be update to support both Right-to-Left and Left-to-Right citations.

```

60.895 \def\@cite#1#2{\@brackets[#{1}\if@tempswa , #2\fi]}
60.896 \def\@biblabel#1{\@brackets[#{1}]}

```

```

60.897 \def\@bibitem[#1]#2{\item[\@biblabel{#1}\hfill]\if@filesw
60.898     {\let\protect\noexpand
60.899       \immediate
60.900       \if@rl\write\@auxout{\string\bibcite{#2}{\R{#1}}}%
60.901       \else\write\@auxout{\string\bibcite{#2}{\L{#1}}}\fi%
60.902     }\fi\ignorespaces}

```

**thebibliography** Use \rightmargin instead of \leftmargin when in RL mode.

```

60.903 \@ifclassloaded{letter}{\% other
60.904 \@ifclassloaded{slides}{\% other
60.905 \@ifclassloaded{article}{\%
60.906   \renewenvironment{thebibliography}[1]
60.907   {\section*\refname\mkboth%
60.908     {\MakeUppercase\refname}%
60.909     {\MakeUppercase\refname}}%
60.910   \list{\@biblabel{\@arabic\c@enumiv}}%
60.911   {\settowidth\labelwidth{\@biblabel{#1}}%
60.912     \if@rl\leftmargin\else\rightmargin\fi\labelwidth
60.913     \advance\if@rl\leftmargin\else\rightmargin\fi\labelsep
60.914     \@openbib@code
60.915     \usecounter{enumiv}%
60.916     \let\p@enumiv\@empty
60.917     \renewcommand\theenumiv{\@arabic\c@enumiv}}%
60.918   \sloppy
60.919   \clubpenalty4000
60.920   \@clubpenalty \clubpenalty
60.921   \widowpenalty4000%
60.922   \sfcode'\.\@m}
60.923 {\def\@noitemerr
60.924   {\@latex@warning{Empty 'thebibliography' environment}}%
60.925   \endlist}}%
60.926 {\renewenvironment{thebibliography}[1]{\%
60.927   \chapter*\bibname\mkboth%
60.928     {\MakeUppercase\bibname}%
60.929     {\MakeUppercase\bibname}}%
60.930   \list{\@biblabel{\@arabic\c@enumiv}}%
60.931   {\settowidth\labelwidth{\@biblabel{#1}}%
60.932     \if@rl\leftmargin\else\rightmargin\fi\labelwidth
60.933     \advance\if@rl\leftmargin\else\rightmargin\fi\labelsep
60.934     \@openbib@code
60.935     \usecounter{enumiv}%
60.936     \let\p@enumiv\@empty
60.937     \renewcommand\theenumiv{\@arabic\c@enumiv}}%
60.938   \sloppy
60.939   \clubpenalty4000
60.940   \@clubpenalty \clubpenalty
60.941   \widowpenalty4000%
60.942   \sfcode'\.\@m}
60.943 {\def\@noitemerr
60.944   {\@latex@warning{Empty 'thebibliography' environment}}%
60.945   \endlist}}

```

**\@verbatim** All kinds of verbs (\verb,\verb\*,verbatim and verbatim\*) now can be used in Right-to-Left mode. Errors in latin mode solved too.

```

60.946 \def\@verbatim{%
60.947   \let\do\@makeother \dospecials%
60.948   \obeylines \verbatim@font \@noligs}

```

`\@makecaption` Captions are set always centered. This allows us to use bilingual captions, for example: `\caption{\R{RLtext} \\\L{LRtext}}`, which will be formatted as:

Right to left caption here (RLtext)  
Left to right caption here (LRtext)

See also `\bcaption` command below.

```

60.949 \long\def\@makecaption#1#2{%
60.950   \vskip\abovecaptionskip%
60.951   \begin{center}%
60.952     #1: #2%
60.953   \end{center} \par%
60.954   \vskip\belowcaptionskip}

```

#### 60.4.12 Additional bidirectional commands

- Section headings are typeset with the default global direction.
- Text in section headings in the reverse language *do not* have to be protected for the reflection command, as in: `\protect\L{Latin Text}`, because `\L` and `\R` are robust now.
- Table of contents, list of figures and list of tables should be typeset with the `\tableofcontents`, `\listoffigures` and `\listoftables` commands respectively.
- The above tables will be typeset in the main direction (and language) in effect where the above commands are placed.
- Only 2 tables of each kind are supported: one for Right-to-Left and another for Left-to-Right directions.

How to include line to both tables? One has to use bidirectional sectioning commands as following:

1. Use the `\bxxx` version of the sectioning commands in the text instead of the `\xxx` version (`xxx` is one of: `part`, `chapter`, `section`, `subsection`, `subsubsection`, `caption`).
2. Syntax of the `\bxxx` command is `\bxxx{RL text}{LR text}`. Both arguments are typeset in proper direction by default (no need to change direction for the text inside).
3. The section header inside the document will be typeset in the global direction in effect at the time. i.e. The `{RL text}` will be typeset if Right-to-Left mode is in effect and `{LR text}` otherwise.

`\bpart`

```

60.955 \newcommand{\bpart}[2]{\part{\protect\if@r1%
60.956   #1 \protect\else #2 \protect\fi}}

```

```

\chapter
60.957 \newcommand{\bchapter}[2]{\chapter{\protect\if@rl%
60.958      #1 \protect\else #2 \protect\fi}}

\bsection
60.959 \newcommand{\bsection}[2]{\section{\protect\if@rl%
60.960      #1 \protect\else #2 \protect\fi}}

\bsubsection
60.961 \newcommand{\bsubsection}[2]{\subsection{\protect\if@rl%
60.962      #1 \protect\else #2 \protect\fi}}

\bsubsubsection
60.963 \newcommand{\bsubsubsection}[2]{\subsubsection{\protect\if@rl%
60.964      #1 \protect\else #2 \protect\fi}}

\bcaption
60.965 \newcommand{\bcaption}[2]{%
60.966   \caption[\protect\if@rl \R{#1}\protect\else \L{#2}\protect\fi]{%
60.967     \if@rl\R{#1}\protect\ \L{#2}
60.968     \else\L{#2}\protect\ \R{#1}\fi}}

```

The following definition is a modified version of `\bchapter`, meant as a bilingual twin for `\chapter*` and `\section*` (added by Irina Abramovici).

```

\bchapternn
60.969 \newcommand{\bchapternn}[2]{\chapter*{\protect\if@rl%
60.970      #1 \protect\else #2 \protect\fi}}

\bsectionnn
60.971 \newcommand{\bsectionnn}[2]{\section*{\protect\if@rl%
60.972      #1 \protect\else #2 \protect\fi}}

```

Finally, at end of `babel` package, the `\headlanguage` and two-column mode will be initialized according to the current language.

```

60.973 \AtEndOfPackage{\rlAtEndOfPackage}
60.974 %
60.975 \def\rlAtEndOfPackage{%
60.976   \global\let\headlanguage=\language\set@outputdblcol%
60.977 }
60.978 \leftmargin

```

## 60.5 Hebrew calendar

The original version of the package `hebcals.sty`<sup>70</sup> for  $\mathrm{T}_{\mathrm{E}}\mathrm{X}$  and  $\mathrm{L}^{\mathrm{A}}\mathrm{T}_{\mathrm{E}}\mathrm{X} 2.09$ , entitled “ $\mathrm{T}_{\mathrm{E}}\mathrm{X}$  &  $\mathrm{L}^{\mathrm{A}}\mathrm{T}_{\mathrm{E}}\mathrm{X}$  macros for computing Hebrew date from Gregorian one” was created by Michail Rozman, `misha@iop.tartu.ew.su`<sup>71</sup>

<sup>70</sup>The following description of `hebcals` package is based on the comments included with original source by the author, Michail Rozman.

<sup>71</sup>Please direct any comments, bug reports, questions, etc. about the package to this address.



Released: Tammuz 12, 5751–June 24, 1991  
 Corrected: Shebat 10, 5752–January 15, 1992 by Rama Porrat  
 Corrected: Adar II 5, 5752–March 10, 1992 by Misha  
 Corrected: Tebeth, 5756–January 1996 Dan Haran  
 (haran@math.tau.ac.il)

The package was adjusted for `babel` and  $\text{\LaTeX} 2_{\epsilon}$  by Boris Lavva.

Changes to the printing routine (only) by Ron Artstein, June 1, 2003.

This package should be included *after* the `babel` with `hebrew` option, as following:

```
\documentclass[...]{...}
\usepackage[hebrew,...,other languages,...]{babel}
\usepackage{hebcals}
```

Two main user-level commands are provided by this package:

`\Hebrewtoday` Computes today’s Hebrew date and prints it. If we are presently in Hebrew mode, the date will be printed in Hebrew, otherwise — in English (like Shebat 10, 5752).

`\Hebrewdate` Computes the Hebrew date from the given Gregorian date and prints it. If we are presently in Hebrew mode, the date will be printed in Hebrew, otherwise — in English (like Shebat 10, 5752). An example of usage is shown below:

```
\newcount\hd \newcount\hm \newcount\hy
\hd=10 \hm=3 \hy=1992
\Hebrewdate{\hd}{\hm}{\hy}
```

`full` The package option `full` sets the flag `\@full@hebrew@year`, which causes years from the current millenium to be printed with the thousands digit (hetav-shin-samekh-gimel). Without this option, thousands are not printed for the current millenium. NOTE: should this be a command option rather than a package option? –RA.

### 60.5.1 Introduction

The Hebrew calendar is inherently complicated: it is lunisolar – each year starts close to the autumn equinox, but each month must strictly start at a new moon. Thus Hebrew calendar must be harmonized simultaneously with both lunar and solar events. In addition, for reasons of the religious practice, the year cannot start on Sunday, Wednesday or Friday.

For the full description of Hebrew calendar and for the list of references see:

Nachum Dershowitz and Edward M. Reingold, “*Calendrical Calculations*”, Software–Pract.Exper., vol. 20 (9), pp.899–928 (September 1990).

C translation of LISP programs from the above article available from Mr. Wayne Geiser, [geiser%pictel@uunet.uu.net](mailto:geiser%pictel@uunet.uu.net).

The 4<sup>th</sup> distribution (July 1989) of `hdate/hcal` (Hebrew calendar programs similar to UNIX `date/cal`) by Mr. Amos Shapir, [amos@shum.huji.ac.il](mailto:amos@shum.huji.ac.il), contains short and very clear description of algorithms.

## 60.5.2 Registers, Commands, Formatting Macros

The command `\Hebrewtoday` produces today's date for Hebrew calendar. It is similar to the standard  $\text{\LaTeX 2}_{\epsilon}$  command `\today`. In addition three numerical registers `\Hebrewday`, `\Hebrewmonth` and `\Hebrewyear` are set. For setting this registers without producing of date string command `\Hebrewsetreg` can be used.

The command `\Hebrewdate{Gday}{Gmonth}{Gyear}` produces Hebrew calendar date corresponding to Gregorian date `Gday.Gmonth.Gyear`. Three numerical registers `\Hebrewday`, `\Hebrewmonth` and `\Hebrewyear` are set.

For converting arbitrary Gregorian date `Gday.Gmonth.Gyear` to Hebrew date `Hday.Hmonth.Hyear` without producing date string the command:

`\HebrewFromGregorian{Gday}{Gmonth}{Gyear}{Hday}{Hmonth}{Hyear}`

can be used.

```
60.979 <*calendar>
60.980 \newif\if@full@hebrew@year
60.981 \@full@hebrew@yearfalse
60.982 \DeclareOption{full}{\@full@hebrew@yeartrue}
60.983 \ProcessOptions
60.984 \newcount\Hebrewday \newcount\Hebrewmonth \newcount\Hebrewyear
```

`\Hebrewdate` Hebrew calendar date corresponding to Gregorian date `Gday.Gmonth.Gyear`. If Hebrew (right-to-left) fonts & macros are not loaded, we have to use English format.

```
60.985 \def\Hebrewdate#1#2#3{%
60.986     \HebrewFromGregorian{#1}{#2}{#3}
60.987         {\Hebrewday}{\Hebrewmonth}{\Hebrewyear}%
60.988     \ifundefined{if@rl}%
60.989         \FormatForEnglish{\Hebrewday}{\Hebrewmonth}{\Hebrewyear}%
60.990     \else%
60.991         \FormatDate{\Hebrewday}{\Hebrewmonth}{\Hebrewyear}%
60.992     \fi}
```

`\Hebrewtoday` Today's date in Hebrew calendar.

```
60.993 \def\Hebrewtoday{\Hebrewdate{\day}{\month}{\year}}
60.994 \let\hebrewtoday=\Hebrewtoday
```

`\Hebrewsetreg` Set registers: today's date in hebrew calendar.

```
60.995 \def\Hebrewsetreg{%
60.996     \HebrewFromGregorian{\day}{\month}{\year}
60.997         {\Hebrewday}{\Hebrewmonth}{\Hebrewyear}}
```

`\FormatDate` Prints a Hebrew calendar date `Hebrewday.Hebrewmonth.Hebrewyear`.

```
60.998 \def\FormatDate#1#2#3{%
60.999     \if@rl%
60.1000         \FormatForHebrew{#1}{#2}{#3}%
60.1001     \else%
60.1002         \FormatForEnglish{#1}{#2}{#3}
60.1003     \fi}
```

To prepare another language version of Hebrew calendar commands, one should change or add commands here.

We start with Hebrew language macros.

`\HebrewYearName` Prints Hebrew year as a Hebrew number. Disambiguates strings by adding lamed-pe-gimel to years of the first Jewish millenium and to years divisible by 1000. Suppresses the thousands digit in the current millenium unless the package option `full` is selected. NOTE: should this be provided as a command option rather than a package option? –RA.

```

60.1004 \def\HebrewYearName#1{%
60.1005   \@tempcnta=#1\divide\@tempcnta by 1000\multiply\@tempcnta by 1000
60.1006   \ifnum#1=\@tempcnta\relax % divisible by 1000: disambiguate
60.1007     \Hebrewnumeralfinal{#1}\ )\heblamed\hebpe"\hebgimel(
60.1008   \else % not divisible by 1000
60.1009     \ifnum#1<1000\relax % first millennium: disambiguate
60.1010       \Hebrewnumeralfinal{#1}\ )\heblamed\hebpe"\hebgimel(
60.1011     \else
60.1012       \ifnum#1<5000
60.1013         \Hebrewnumeralfinal{#1}%
60.1014       \else
60.1015         \ifnum#1<6000 % current millenium, print without thousands
60.1016           \@tempcnta=#1\relax
60.1017           \if@full@hebrew@year\else\advance\@tempcnta by -5000\fi
60.1018           \Hebrewnumeralfinal{\@tempcnta}%
60.1019         \else % #1>6000
60.1020           \Hebrewnumeralfinal{#1}%
60.1021         \fi
60.1022       \fi
60.1023     \fi
60.1024   \fi}}

```

`\HebrewMonthName` The macro `\HebrewMonthName{month}{year}` returns the name of month in the ‘year’.

```

60.1025 \def\HebrewMonthName#1#2{%
60.1026   \ifnum #1 = 7 %
60.1027     \CheckLeapHebrewYear{#2}%
60.1028     \if@HebrewLeap \hebalef\hebdalet\hebresh\ \hebbet'
60.1029     \else \hebalef\hebdalet\hebresh%
60.1030     \fi%
60.1031   \else%
60.1032     \ifcase#1%
60.1033       % nothing for 0
60.1034       \or\hebtav\hebshin\hebresh\hebyod%
60.1035       \or\hebbet\hebshin\hebvav\hebfinalnun%
60.1036       \or\hebkaf\hebsamekh\heblamed\hebvav%
60.1037       \or\hebtet\hebbet\hebtav%
60.1038       \or\hebshin\hebbet\hebtet%
60.1039       \or\hebalef\hebdalet\hebresh\ \hebalef'
60.1040       \or\hebalef\hebdalet\hebresh\ \hebbet'
60.1041       \or\hebnun\hebyod\hebsamekh\hebfinalnun%
60.1042       \or\hebalef\hebyod\hebyod\hebresh%
60.1043       \or\hebsamekh\hebyod\hebvav\hebfinalnun%
60.1044       \or\hebtav\hebmam\hebvav\hebzayin%
60.1045       \or\hebalef\hebbet%
60.1046       \or\hebalef\heblamed\hebvav\heblamed%
60.1047     \fi%
60.1048   \fi}

```

`\HebrewDayName` Name of day in Hebrew letters (gimatria).

```
60.1049 \def\HebrewDayName#1{\Hebrewnumeral{#1}}
```

`\FormatForHebrew` The macro `\FormatForHebrew{hday}{hmonth}{hyear}` returns the formatted Hebrew date in Hebrew language.

```
60.1050 \def\FormatForHebrew#1#2#3{%
```

```
60.1051   \HebrewDayName{#1}~\hebbet\HebrewMonthName{#2}{#3},~%
```

```
60.1052   \HebrewYearName{#3}}
```

We continue with two English language macros for Hebrew calendar.

`\HebrewMonthNameInEnglish` The macro `\HebrewMonthNameInEnglish{month}{year}` is similar to `\HebrewMonthName` described above. It returns the name of month in the Hebrew ‘year’ in English.

```
60.1053 \def\HebrewMonthNameInEnglish#1#2{%
```

```
60.1054   \ifnum #1 = 7%
```

```
60.1055   \CheckLeapHebrewYear{#2}%
```

```
60.1056   \if@HebrewLeap Adar II\else Adar\fi%
```

```
60.1057   \else%
```

```
60.1058   \ifcase #1%
```

```
60.1059       % nothing for 0
```

```
60.1060       \or Tishrei%
```

```
60.1061       \or Heshvan%
```

```
60.1062       \or Kislev%
```

```
60.1063       \or Tebeth%
```

```
60.1064       \or Shebat%
```

```
60.1065       \or Adar I%
```

```
60.1066       \or Adar II%
```

```
60.1067       \or Nisan%
```

```
60.1068       \or Iyar%
```

```
60.1069       \or Sivan%
```

```
60.1070       \or Tammuz%
```

```
60.1071       \or Av%
```

```
60.1072       \or Elul%
```

```
60.1073   \fi
```

```
60.1074 \fi}
```

`\FormatForEnglish` The macro `\FormatForEnglish{hday}{hmonth}{hyear}` is similar to `\FormatForHebrew` macro described above and returns the formatted Hebrew date in English.

```
60.1075 \def\FormatForEnglish#1#2#3{%
```

```
60.1076   \HebrewMonthNameInEnglish{#2}{#3} \number#1,\ \number#3}
```

### 60.5.3 Auxiliary Macros

```
60.1077 \newcount\@common
```

`\Remainder` `\Remainder{a}{b}{c}` calculates  $c = a \% b == a - b \times \frac{a}{b}$

```
60.1078 \def\Remainder#1#2#3{%
```

```
60.1079   #3 = #1%                                % c = a
```

```
60.1080   \divide #3 by #2%                        % c = a/b
```

```
60.1081   \multiply #3 by -#2%                     % c = -b(a/b)
```

```
60.1082   \advance #3 by #1}%                      % c = a - b(a/b)
```

```

60.1083 \newif\if@Divisible

\CheckIfDivisible \CheckIfDivisible{a}{b} sets \@Divisibletrue if  $a\%b == 0$ 

60.1084 \def\CheckIfDivisible#1#2{%
60.1085   {%
60.1086     \countdef\tmp = 0% \tmp == \count0 - temporary variable
60.1087     \Remainder{#1}{#2}{\tmp}%
60.1088     \ifnum \tmp = 0%
60.1089       \global\@Divisibletrue%
60.1090     \else%
60.1091       \global\@Divisiblefalse%
60.1092     \fi}}

```

\ifundefined From the T<sub>E</sub>Xbook, ex. 7.7:

```

\ifundefined{command}<true text>\else<false text>\fi

60.1093 \def\ifundefined#1{\expandafter\ifx\csname#1\endcsname\relax}

```

#### 60.5.4 Gregorian Part

```

60.1094 \newif\if@GregorianLeap

\IfGregorianLeap Conditional which is true if Gregorian ‘year’ is a leap year:  $((year\%4 == 0) \wedge$ 
 $(year\%100 \neq 0)) \vee (year\%400 == 0)$ 

60.1095 \def\IfGregorianLeap#1{%
60.1096   \CheckIfDivisible{#1}{4}%
60.1097   \if@Divisible%
60.1098     \CheckIfDivisible{#1}{100}%
60.1099     \if@Divisible%
60.1100       \CheckIfDivisible{#1}{400}%
60.1101       \if@Divisible%
60.1102         \@GregorianLeaptrue%
60.1103       \else%
60.1104         \@GregorianLeapfalse%
60.1105       \fi%
60.1106     \else%
60.1107       \@GregorianLeaptrue%
60.1108     \fi%
60.1109   \else%
60.1110     \@GregorianLeapfalse%
60.1111   \fi%
60.1112 \if@GregorianLeap}

```

\GregorianDaysInPriorMonths The macro \GregorianDaysInPriorMonths{month}{year}{days} calculates the number of days in months prior to ‘month’ in the ‘year’.

```

60.1113 \def\GregorianDaysInPriorMonths#1#2#3{%
60.1114   {%
60.1115     #3 = \ifcase #1%
60.1116       0 \or%           % no month number 0
60.1117       0 \or%
60.1118       31 \or%
60.1119       59 \or%
60.1120       90 \or%
60.1121       120 \or%

```

```

60.1122          151 \or%
60.1123          181 \or%
60.1124          212 \or%
60.1125          243 \or%
60.1126          273 \or%
60.1127          304 \or%
60.1128          334%
60.1129      \fi%
60.1130      \IfGregorianLeap{#2}%
60.1131          \ifnum #1 > 2%          % if month after February
60.1132              \advance #3 by 1% % add leap day
60.1133      \fi%
60.1134      \fi%
60.1135      \global\@common = #3}%
60.1136      #3 = \@common}

```

**\GregorianDaysInPriorYears** The macro `\GregorianDaysInPriorYears{year}{days}` calculates the number of days in years prior to the ‘year’.

```

60.1137 \def\GregorianDaysInPriorYears#1#2{%
60.1138     {%
60.1139         \countdef\tmpc = 4%          % \tmpc==\count4
60.1140         \countdef\tmpb = 2%          % \tmpb==\count2
60.1141         \tmpb = #1%                  %
60.1142         \advance \tmpb by -1%         %
60.1143         \tmpc = \tmpb%                % \tmpc = \tmpb = year-1
60.1144         \multiply \tmpc by 365%       % Days in prior years =
60.1145         #2 = \tmpc%                  % = 365*(year-1) ...
60.1146         \tmpc = \tmpb%                %
60.1147         \divide \tmpc by 4%           % \tmpc = (year-1)/4
60.1148         \advance #2 by \tmpc%         % ... plus Julian leap days ...
60.1149         \tmpc = \tmpb%                %
60.1150         \divide \tmpc by 100%          % \tmpc = (year-1)/100
60.1151         \advance #2 by -\tmpc%         % ... minus century years ...
60.1152         \tmpc = \tmpb%                %
60.1153         \divide \tmpc by 400%          % \tmpc = (year-1)/400
60.1154         \advance #2 by \tmpc%         % ... plus 4-century years.
60.1155         \global\@common = #2}%
60.1156     #2 = \@common}

```

**\AbsoluteFromGregorian** The macro `\AbsoluteFromGregorian{day}{month}{year}{absdate}` calculates the absolute date (days since 01.01.0001) from Gregorian date day.month.year.

```

60.1157 \def\AbsoluteFromGregorian#1#2#3#4{%
60.1158     {%
60.1159         \countdef\tmpd = 0%           % \tmpd==\count0
60.1160         #4 = #1%                      % days so far this month
60.1161         \GregorianDaysInPriorMonths{#2}{#3}{\tmpd}%
60.1162         \advance #4 by \tmpd%          % add days in prior months
60.1163         \GregorianDaysInPriorYears{#3}{\tmpd}%
60.1164         \advance #4 by \tmpd%          % add days in prior years
60.1165         \global\@common = #4}%
60.1166     #4 = \@common}

```

## 60.5.5 Hebrew Part

```

60.1167 \newif\if@HebrewLeap

\CheckLeapHebrewYear Set \@HebrewLeaptrue if Hebrew 'year' is a leap year, i.e. if  $(1 + 7 \times year) \% 19 < 7$ 
then true else false

60.1168 \def\CheckLeapHebrewYear#1{%
60.1169     {%
60.1170         \countdef\tmpa = 0%           % \tmpa==\count0
60.1171         \countdef\tmpb = 1%           % \tmpb==\count1
60.1172 %
60.1173         \tmpa = #1%
60.1174         \multiply \tmpa by 7%
60.1175         \advance \tmpa by 1%
60.1176         \Remainder{\tmpa}{19}{\tmpb}%
60.1177         \ifnum \tmpb < 7%               % \tmpb = (7*year+1)%19
60.1178             \global\@HebrewLeaptrue%
60.1179         \else%
60.1180             \global\@HebrewLeapfalse%
60.1181         \fi}}

\HebrewElapsedMonths The macro \HebrewElapsedMonths{year}{months} determines the number of
months elapsed from the Sunday prior to the start of the Hebrew calendar to
the mean conjunction of Tishri of Hebrew 'year'.

60.1182 \def\HebrewElapsedMonths#1#2{%
60.1183     {%
60.1184         \countdef\tmpa = 0%           % \tmpa==\count0
60.1185         \countdef\tmpb = 1%           % \tmpb==\count1
60.1186         \countdef\tmpc = 2%           % \tmpc==\count2
60.1187 %
60.1188         \tmpa = #1%                   %
60.1189         \advance \tmpa by -1%         %
60.1190         #2 = \tmpa%                   % #2 = \tmpa = year-1
60.1191         \divide #2 by 19%             % Number of complete Meton cycles
60.1192         \multiply #2 by 235%          % #2 = 235*((year-1)/19)
60.1193 %
60.1194         \Remainder{\tmpa}{19}{\tmpb}% \tmpa = years%19-years this cycle
60.1195         \tmpc = \tmpb%                 %
60.1196         \multiply \tmpb by 12%         %
60.1197         \advance #2 by \tmpb%          % add regular months this cycle
60.1198 %
60.1199         \multiply \tmpc by 7%          %
60.1200         \advance \tmpc by 1%          %
60.1201         \divide \tmpc by 19%         % \tmpc = (1+7*((year-1)%19))/19 -
60.1202 %                                 % number of leap months this cycle
60.1203         \advance #2 by \tmpc%          % add leap months
60.1204 %
60.1205         \global\@common = #2}%
60.1206     #2 = \@common}

\HebrewElapsedDays The macro \HebrewElapsedDays{year}{days} determines the number of days
elapsed from the Sunday prior to the start of the Hebrew calendar to the mean
conjunction of Tishri of Hebrew 'year'.

60.1207 \def\HebrewElapsedDays#1#2{%
60.1208     {%
60.1209         \countdef\tmpa = 0%           % \tmpa==\count0

```

```

60.1210      \countdef\tmpb = 1%          % \tmpb==\count1
60.1211      \countdef\tmpc = 2%          % \tmpc==\count2
60.1212 %
60.1213      \HebrewElapsedMonths{#1}{#2}%
60.1214      \tmpa = #2%                  %
60.1215      \multiply \tmpa by 13753% %
60.1216      \advance \tmpa by 5604%      % \tmpa=MonthsElapsed*13758 + 5604
60.1217      \Remainder{\tmpa}{25920}{\tmpc}% \tmpc == ConjunctionParts
60.1218      \divide \tmpa by 25920%
60.1219 %
60.1220      \multiply #2 by 29%
60.1221      \advance #2 by 1%
60.1222      \advance #2 by \tmpa%        % #2 = 1 + MonthsElapsed*29 +
60.1223 %                               % PartsElapsed/25920
60.1224      \Remainder{#2}{7}{\tmpa}% % \tmpa == DayOfWeek
60.1225      \ifnum \tmpc < 19440%
60.1226          \ifnum \tmpc < 9924%
60.1227              \else%                % New moon at 9 h. 204 p. or later
60.1228                  \ifnum \tmpa = 2% % on Tuesday ...
60.1229                      \CheckLeapHebrewYear{#1}% of a common year
60.1230                      \if@HebrewLeap%
60.1231                          \else%
60.1232                              \advance #2 by 1%
60.1233                              \fi%
60.1234                          \fi%
60.1235                      \fi%
60.1236                  \ifnum \tmpc < 16789%
60.1237                      \else%          % New moon at 15 h. 589 p. or later
60.1238                          \ifnum \tmpa = 1% % on Monday ...
60.1239                              \advance #1 by -1%
60.1240                              \CheckLeapHebrewYear{#1}% at the end of leap year
60.1241                              \if@HebrewLeap%
60.1242                                  \advance #2 by 1%
60.1243                                  \fi%
60.1244                              \fi%
60.1245                          \fi%
60.1246                      \else%
60.1247                          \advance #2 by 1%      % new moon at or after midday
60.1248                          \fi%
60.1249 %
60.1250      \Remainder{#2}{7}{\tmpa}% % \tmpa == DayOfWeek
60.1251      \ifnum \tmpa = 0%          % if Sunday ...
60.1252          \advance #2 by 1%
60.1253      \else%                      %
60.1254          \ifnum \tmpa = 3%        % Wednesday ...
60.1255              \advance #2 by 1%
60.1256          \else%
60.1257              \ifnum \tmpa = 5%    % or Friday
60.1258                  \advance #2 by 1%
60.1259                  \fi%
60.1260              \fi%
60.1261          \fi%
60.1262      \global\@common = #2}%
60.1263      #2 = \@common}

```



`\DaysInHebrewYear` The macro `\DaysInHebrewYear{year}{days}` calculates the number of days in Hebrew 'year'.

```

60.1264 \def\DaysInHebrewYear#1#2{%
60.1265     {%
60.1266         \countdef\tmpe = 12%    % \tmpe==\count12
60.1267 %
60.1268         \HebrewElapsedDays{#1}{\tmpe}%
60.1269         \advance #1 by 1%
60.1270         \HebrewElapsedDays{#1}{#2}%
60.1271         \advance #2 by -\tmpe%
60.1272         \global\@common = #2}%
60.1273     #2 = \@common}

```

`\HebrewDaysInPriorMonths` The macro `\HebrewDaysInPriorMonths{month}{year}{days}` calculates the number of days in months prior to 'month' in the 'year'.

```

60.1274 \def\HebrewDaysInPriorMonths#1#2#3{%
60.1275     {%
60.1276         \countdef\tmpf= 14%    % \tmpf==\count14
60.1277 %
60.1278         #3 = \ifcase #1%        % Days in prior month of regular year
60.1279             0 \or%            % no month number 0
60.1280             0 \or%            % Tishri
60.1281             30 \or%          % Heshvan
60.1282             59 \or%          % Kislev
60.1283             89 \or%          % Tebeth
60.1284             118 \or%         % Shebat
60.1285             148 \or%         % Adar I
60.1286             148 \or%         % Adar II
60.1287             177 \or%         % Nisan
60.1288             207 \or%         % Iyar
60.1289             236 \or%         % Sivan
60.1290             266 \or%         % Tammuz
60.1291             295 \or%         % Av
60.1292             325 \or%         % Elul
60.1293             400%            % Dummy
60.1294         \fi%
60.1295         \CheckLeapHebrewYear{#2}%
60.1296         \if@HebrewLeap%        % in leap year
60.1297             \ifnum #1 > 6%      % if month after Adar I
60.1298                 \advance #3 by 30% % add 30 days
60.1299             \fi%
60.1300         \fi%
60.1301         \DaysInHebrewYear{#2}{\tmpf}%
60.1302         \ifnum #1 > 3%
60.1303             \ifnum \tmpf = 353%    %
60.1304                 \advance #3 by -1% %
60.1305             \fi%                    % Short Kislev
60.1306             \ifnum \tmpf = 383%    %
60.1307                 \advance #3 by -1% %
60.1308             \fi%                    %
60.1309         \fi%
60.1310 %
60.1311         \ifnum #1 > 2%
60.1312             \ifnum \tmpf = 355%    %

```

```

60.1313          \advance #3 by 1% %
60.1314          \fi% % Long Heshvan
60.1315          \ifnum \tmpf = 385% %
60.1316          \advance #3 by 1% %
60.1317          \fi% %
60.1318          \fi%
60.1319          \global\@common = #3}%
60.1320          #3 = \@common}

```

**\AbsoluteFromHebrew** The macro `\AbsoluteFromHebrew{day}{month}{year}{absdate}` calculates the absolute date of Hebrew date day.month.year.

```

60.1321 \def\AbsoluteFromHebrew#1#2#3#4{%
60.1322   {%
60.1323     #4 = #1%
60.1324     \HebrewDaysInPriorMonths{#2}{#3}{#1}%
60.1325     \advance #4 by #1% % Add days in prior months this year
60.1326     \HebrewElapsedDays{#3}{#1}%
60.1327     \advance #4 by #1% % Add days in prior years
60.1328     \advance #4 by -1373429% % Subtract days before Gregorian
60.1329     \global\@common = #4}% % 01.01.0001
60.1330     #4 = \@common}

```

**\HebrewFromGregorian** The macro `\HebrewFromGregorian{Gday}{Gmonth}{Gyear}{Hday}{Hmonth}{Hyear}` evaluates Hebrew date Hday, Hmonth, Hyear from Gregorian date Gday, Gmonth, Gyear.

```

60.1331 \def\HebrewFromGregorian#1#2#3#4#5#6{%
60.1332   {%
60.1333     \countdef\tmpx= 17% % \tmpx==\count17
60.1334     \countdef\tmpy= 18% % \tmpy==\count18
60.1335     \countdef\tmpz= 19% % \tmpz==\count19
60.1336 %
60.1337     #6 = #3% %
60.1338     \global\advance #6 by 3761% approximation from above
60.1339     \AbsoluteFromGregorian{#1}{#2}{#3}{#4}%
60.1340     \tmpz = 1 \tmpy = 1%
60.1341     \AbsoluteFromHebrew{\tmpz}{\tmpy}{#6}{\tmpx}%
60.1342     \ifnum \tmpx > #4% %
60.1343       \global\advance #6 by -1% Hyear = Gyear + 3760
60.1344       \AbsoluteFromHebrew{\tmpz}{\tmpy}{#6}{\tmpx}%
60.1345     \fi% %
60.1346     \advance #4 by -\tmpx% % Days in this year
60.1347     \advance #4 by 1% %
60.1348     #5 = #4% %
60.1349     \divide #5 by 30% % Approximation for month from below
60.1350     \loop% % Search for month
60.1351       \HebrewDaysInPriorMonths{#5}{#6}{\tmpx}%
60.1352       \ifnum \tmpx < #4%
60.1353         \advance #5 by 1%
60.1354         \tmpy = \tmpx%
60.1355       \repeat%
60.1356       \global\advance #5 by -1%
60.1357       \global\advance #4 by -\tmpy}}
60.1358 \</calendar>

```

## 61 Hebrew input encodings

Hebrew input encodings defined in file `hebinp.dtx`<sup>72</sup> should be used with `inputenc` L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> package. This package allows the user to specify an input encoding from this file (for example, ISO Hebrew/Latin 8859-8, IBM Hebrew codepage 862 or MS Windows Hebrew codepage 1255) by saying:

```
\usepackage[encoding name]{inputenc}
```

The encoding can also be selected in the document with:

```
\inputencoding{encoding name}
```

The only practical use of this command within a document is when using text from several documents to build up a composite work such as a volume of journal articles. Therefore this command will be used only in vertical mode.

The encodings provided by this package are:

- **si960** 7-bit Hebrew encoding for the range 32–127. This encoding also known as “old-code” and defined by Israeli Standard SI-960.
- **8859-8** ISO 8859-8 Hebrew/Latin encoding commonly used in UNIX systems. This encoding also known as “new-code” and includes hebrew letters in positions starting from 224.
- **cp862** IBM 862 code page commonly used by DOS on IBM-compatible personal computers. This encoding also known as “pc-code” and includes hebrew letters in positions starting from 128.
- **cp1255** MS Windows 1255 (hebrew) code page which is similar to 8859-8. In addition to hebrew letters, this encoding contains also hebrew vowels and dots (nikud).

Each encoding has an associated `.def` file, for example `8859-8.def` which defines the behaviour of each input character, using the commands:

```
\DeclareInputText{slot}{text}  
\DeclareInputMath{slot}{math}
```

This defines the input character *slot* to be the *text* material or *math* material respectively. For example, `8859-8.def` defines slots "EA (letter hebalef) and "B5 ( $\mu$ ) by saying:

```
\DeclareInputText{224}{\hebalef}  
\DeclareInputMath{181}{\mu}
```

Note that the *commands* should be robust, and should not be dependent on the output encoding. The same *slot* should not have both a text and a math declaration for it. (This restriction may be removed in future releases of `inputenc`).

The `.def` file may also define commands using the declarations:

`\providecommand` or `\ProvideTextCommandDefault`. For example, `8859-8.def` defines:

```
\ProvideTextCommandDefault{\textonequarter}{\ensuremath{\frac{1}{4}}}  
\DeclareInputText{188}{\textonequarter}
```

---

<sup>72</sup>The files described in this section have version number v1.1b and were last revised on 2004/02/20.

The use of the ‘provide’ forms here will ensure that a better definition will not be over-written; their use is recommended since, in general, the best definition depends on the fonts available.

See the documentation in `inputenc.dtx` for details of how to declare input definitions for various encodings.

## 61.1 Default definitions for characters

First, we insert a `\makeatletter` at the beginning of all `.def` files to use `@` symbol in the macros’ names.

```
61.1 <--driver>\makeatletter
```

Some input characters map to internal functions which are not in either the T1 or OT1 font encoding. For this reason default definitions are provided in the encoding file: these will be used unless some other output encoding is used which supports those glyphs. In some cases this default definition has to be simply an error message.

Note that this works reasonably well only because the encoding files for both OT1 and T1 are loaded in the standard LaTeX format.

```
61.2 <*8859 - 8 | cp862 | cp1255>
61.3 \ProvideTextCommandDefault{\textdegree}{\ensuremath{{}^\circ}}
61.4 \ProvideTextCommandDefault{\textonehalf}{\ensuremath{\frac{1}{2}}}
61.5 \ProvideTextCommandDefault{\textonequarter}{\ensuremath{\frac{1}{4}}}
61.6 </8859 - 8 | cp862 | cp1255>
61.7 <*8859 - 8 | cp1255>
61.8 \ProvideTextCommandDefault{\textthreequarters}{\ensuremath{\frac{3}{4}}}
61.9 </8859 - 8 | cp1255>
61.10 <*cp862 | cp1255>
61.11 \ProvideTextCommandDefault{\textflorin}{\textit{f}}
61.12 </cp862 | cp1255>
61.13 <*cp862>
61.14 \ProvideTextCommandDefault{\textpeseta}{Pt}
61.15 </cp862>
```

The name `\textblacksquare` is derived from the AMS symbol name since Adobe seem not to want this symbol. The default definition, as a rule, makes no claim to being a good design.

```
61.16 <*cp862>
61.17 \ProvideTextCommandDefault{\textblacksquare}
61.18   {\vrule \@width .3em \@height .4em \@depth -.1em\relax}
61.19 </cp862>
```

Some commands can’t be faked, so we have them generate an error message.

```
61.20 <*8859 - 8 | cp862 | cp1255>
61.21 \ProvideTextCommandDefault{\textcent}
61.22   {\TextSymbolUnavailable\textcent}
61.23 \ProvideTextCommandDefault{\textyen}
61.24   {\TextSymbolUnavailable\textyen}
61.25 </8859 - 8 | cp862 | cp1255>
61.26 <*8859 - 8>
61.27 \ProvideTextCommandDefault{\textcurrency}
61.28   {\TextSymbolUnavailable\textcurrency}
61.29 </8859 - 8>
```

```

61.30 <*cp1255>
61.31 \ProvideTextCommandDefault{\newsheqel}
61.32   {\TextSymbolUnavailable\newsheqel}
61.33 </cp1255>
61.34 <*8859-8|cp1255>
61.35 \ProvideTextCommandDefault{\textbrokenbar}
61.36   {\TextSymbolUnavailable\textbrokenbar}
61.37 </8859-8|cp1255>
61.38 <*cp1255>
61.39 \ProvideTextCommandDefault{\textperthousand}
61.40   {\TextSymbolUnavailable\textperthousand}
61.41 </cp1255>

```

Characters that are supposed to be used only in math will be defined by `\providecommand` because L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> assumes that the font encoding for math fonts is static.

```

61.42 <*8859-8|cp1255>
61.43 \providecommand{\mathonesuperior}{\textsuperscript{1}}
61.44 \providecommand{\maththreesuperior}{\textsuperscript{3}}
61.45 </8859-8|cp1255>
61.46 <*8859-8|cp862|cp1255>
61.47 \providecommand{\mathtwosuperior}{\textsuperscript{2}}
61.48 </8859-8|cp862|cp1255>
61.49 <*cp862>
61.50 \providecommand{\mathordmasculine}{\textasciicircum{o}}
61.51 \providecommand{\mathordfeminine}{\textasciicircum{a}}
61.52 </cp862>

```

## 61.2 The SI-960 encoding

The SI-960 or “old-code” encoding only allows characters in the range 32–127, so we only need to provide an empty `si960.def` file.

## 61.3 The ISO 8859-8 encoding and the MS Windows cp1255 encoding

The `8859-8.def` encoding file defines the characters in the ISO 8859-8 encoding.

The MS Windows Hebrew character set incorporates the Hebrew letter repertoire of ISO 8859-8, and uses the same code points (starting from 224). It has also some important additions in the 128–159 and 190–224 ranges.

```

61.53 <*cp1255>
61.54 \DeclareInputText{130}{\quotesinglbase}
61.55 \DeclareInputText{131}{\textflorin}
61.56 \DeclareInputText{132}{\quotedblbase}
61.57 \DeclareInputText{133}{\dots}
61.58 \DeclareInputText{134}{\dag}
61.59 \DeclareInputText{135}{\ddag}
61.60 \DeclareInputText{136}{\textasciicircum{}}
61.61 \DeclareInputText{137}{\textperthousand}
61.62 \DeclareInputText{139}{\guilsinglleft}
61.63 \DeclareInputText{145}{\textquotelleft}
61.64 \DeclareInputText{146}{\textquoteright}
61.65 \DeclareInputText{147}{\textquotedblleft}

```

```

61.66 \DeclareInputText{148}{\textquotedblright}
61.67 \DeclareInputText{149}{\textbullet}
61.68 \DeclareInputText{150}{\textendash}
61.69 \DeclareInputText{151}{\textemdash}
61.70 \DeclareInputText{152}{\~{}}
61.71 \DeclareInputText{153}{\texttrademark}
61.72 \DeclareInputText{155}{\guilsinglright}
61.73 </cp1255>

61.74 <+8859 - 8 | cp1255>
61.75 \DeclareInputText{160}{\nobreakspace}
61.76 \DeclareInputText{162}{\textcent}
61.77 \DeclareInputText{163}{\pounds}
61.78 <+8859 - 8>\DeclareInputText{164}{\textcurrency}
61.79 <+cp1255>\DeclareInputText{164}{\newsheqel}
61.80 \DeclareInputText{165}{\textyen}
61.81 \DeclareInputText{166}{\textbrokenbar}
61.82 \DeclareInputText{167}{\S}
61.83 \DeclareInputText{168}{\{"{}}
61.84 \DeclareInputText{169}{\textcopyright}
61.85 <+8859 - 8>\DeclareInputMath{170}{\times}
61.86 \DeclareInputText{171}{\guillemotleft}
61.87 \DeclareInputMath{172}{\lnot}
61.88 \DeclareInputText{173}{\textasciitilde}
61.89 \DeclareInputText{174}{\textregistered}
61.90 \DeclareInputText{175}{\@tabacckludge={}}
61.91 \DeclareInputText{176}{\textdegree}
61.92 \DeclareInputMath{177}{\pm}
61.93 \DeclareInputMath{178}{\mathtwosuperior}
61.94 \DeclareInputMath{179}{\maththreesuperior}
61.95 \DeclareInputText{180}{\@tabacckludge'{}{}}
61.96 \DeclareInputMath{181}{\mu}
61.97 \DeclareInputText{182}{\P}
61.98 \DeclareInputText{183}{\textperiodcentered}
61.99 <+8859 - 8>\DeclareInputText{184}{\c\ }
61.100 \DeclareInputMath{185}{\mathonesuperior}
61.101 <+8859 - 8>\DeclareInputMath{186}{\div}
61.102 \DeclareInputText{187}{\guillemotright}
61.103 \DeclareInputText{188}{\textonequarter}
61.104 \DeclareInputText{189}{\textonehalf}
61.105 \DeclareInputText{190}{\textthreequarters}
61.106 </8859 - 8 | cp1255>

```

Hebrew vowels and dots (nikud) are included only to MS Windows cp1255 page and start from the position 192.

```

61.107 <+cp1255>
61.108 \DeclareInputText{192}{\hebsheva}
61.109 \DeclareInputText{193}{\hebhatafsegol}
61.110 \DeclareInputText{194}{\hebhatafpatah}
61.111 \DeclareInputText{195}{\hebhatafqamats}
61.112 \DeclareInputText{196}{\hebhiriq}
61.113 \DeclareInputText{197}{\hebtseret}
61.114 \DeclareInputText{198}{\hebsegol}
61.115 \DeclareInputText{199}{\hebpatah}
61.116 \DeclareInputText{200}{\hebqamats}

```

```

61.117 \DeclareInputText{201}{\hebbholam}
61.118 \DeclareInputText{203}{\hebqubuts}
61.119 \DeclareInputText{204}{\hebdagesh}
61.120 \DeclareInputText{205}{\hebmeteg}
61.121 \DeclareInputText{206}{\hebmaqaf}
61.122 \DeclareInputText{207}{\hebrafe}
61.123 \DeclareInputText{208}{\hebpaseq}
61.124 \DeclareInputText{209}{\hebshindot}
61.125 \DeclareInputText{210}{\hebsindot}
61.126 \DeclareInputText{211}{\hebsofpasuq}
61.127 \DeclareInputText{212}{\hebdoublevav}
61.128 \DeclareInputText{213}{\hebvavyod}
61.129 \DeclareInputText{214}{\hebdoubleyod}
61.130 </cp1255>

```

Hebrew letters start from the position 224 in both encodings.

```

61.131 < *8859 - 8 | cp1255 >
61.132 \DeclareInputText{224}{\hebalef}
61.133 \DeclareInputText{225}{\hebbet}
61.134 \DeclareInputText{226}{\hebgimel}
61.135 \DeclareInputText{227}{\hebdalet}
61.136 \DeclareInputText{228}{\hebhe}
61.137 \DeclareInputText{229}{\hebvav}
61.138 \DeclareInputText{230}{\hebzayin}
61.139 \DeclareInputText{231}{\hebhet}
61.140 \DeclareInputText{232}{\hebtet}
61.141 \DeclareInputText{233}{\hebyod}
61.142 \DeclareInputText{234}{\hebfinalkaf}
61.143 \DeclareInputText{235}{\hebkafe}
61.144 \DeclareInputText{236}{\heblamed}
61.145 \DeclareInputText{237}{\hebfinalmem}
61.146 \DeclareInputText{238}{\hebmem}
61.147 \DeclareInputText{239}{\hebfinalnun}
61.148 \DeclareInputText{240}{\hebnun}
61.149 \DeclareInputText{241}{\hebsamekh}
61.150 \DeclareInputText{242}{\hebayin}
61.151 \DeclareInputText{243}{\hebfinalpe}
61.152 \DeclareInputText{244}{\hebpe}
61.153 \DeclareInputText{245}{\hebfinaltsadi}
61.154 \DeclareInputText{246}{\hebtsadi}
61.155 \DeclareInputText{247}{\hebqof}
61.156 \DeclareInputText{248}{\hebresh}
61.157 \DeclareInputText{249}{\hebshin}
61.158 \DeclareInputText{250}{\hebtav}
61.159 < /8859 - 8 | cp1255 >

```

Special symbols which define the direction of symbols explicitly. Currently, they are not used in L<sup>A</sup>T<sub>E</sub>X.

```

61.160 < *cp1255 >
61.161 \DeclareInputText{253}{\lefttorightmark}
61.162 \DeclareInputText{254}{\righttoleftmark}
61.163 < /cp1255 >

```

## 61.4 The IBM code page 862

The `cp862.def` encoding file defines the characters in the IBM codepage 862 encoding. The DOS graphics ‘letters’ and a few other positions are ignored (left undefined).

Hebrew letters start from the position 128.

```
61.164 (*cp862)
61.165 \DeclareInputText{128}{\hebalef}
61.166 \DeclareInputText{129}{\hebbet}
61.167 \DeclareInputText{130}{\hebgimel}
61.168 \DeclareInputText{131}{\hebdalet}
61.169 \DeclareInputText{132}{\hebhe}
61.170 \DeclareInputText{133}{\hebvav}
61.171 \DeclareInputText{134}{\hebzayin}
61.172 \DeclareInputText{135}{\hebhet}
61.173 \DeclareInputText{136}{\hebtet}
61.174 \DeclareInputText{137}{\hebyod}
61.175 \DeclareInputText{138}{\hebfinalkaf}
61.176 \DeclareInputText{139}{\hebkafe}
61.177 \DeclareInputText{140}{\heblamed}
61.178 \DeclareInputText{141}{\hebfinalmem}
61.179 \DeclareInputText{142}{\hebmeme}
61.180 \DeclareInputText{143}{\hebfinalnun}
61.181 \DeclareInputText{144}{\hebnun}
61.182 \DeclareInputText{145}{\hebsamekh}
61.183 \DeclareInputText{146}{\hebayin}
61.184 \DeclareInputText{147}{\hebfinalpe}
61.185 \DeclareInputText{148}{\hebpe}
61.186 \DeclareInputText{149}{\hebfinaltsadi}
61.187 \DeclareInputText{150}{\hebtsadi}
61.188 \DeclareInputText{151}{\hebqof}
61.189 \DeclareInputText{152}{\hebreish}
61.190 \DeclareInputText{153}{\hebshin}
61.191 \DeclareInputText{154}{\hebtav}

61.192 \DeclareInputText{155}{\textcent}
61.193 \DeclareInputText{156}{\pounds}
61.194 \DeclareInputText{157}{\textyen}
61.195 \DeclareInputText{158}{\textpeseta}
61.196 \DeclareInputText{159}{\textflorin}
61.197 \DeclareInputText{160}{\@tabacckludge'a}
61.198 \DeclareInputText{161}{\@tabacckludge'i}
61.199 \DeclareInputText{162}{\@tabacckludge'o}
61.200 \DeclareInputText{163}{\@tabacckludge'u}
61.201 \DeclareInputText{164}{\~n}
61.202 \DeclareInputText{165}{\~N}
61.203 \DeclareInputMath{166}{\mathordfeminine}
61.204 \DeclareInputMath{167}{\mathordmasculine}
61.205 \DeclareInputText{168}{\textquestiondown}
61.206 \DeclareInputMath{170}{\lnot}
61.207 \DeclareInputText{171}{\textonehalf}
61.208 \DeclareInputText{172}{\textonequarter}
61.209 \DeclareInputText{173}{\textexclamdown}
61.210 \DeclareInputText{174}{\guillemotleft}
61.211 \DeclareInputText{175}{\guillemotright}
```



```

61.212 \DeclareInputMath{224}{\alpha}
61.213 \DeclareInputText{225}{\ss}
61.214 \DeclareInputMath{226}{\Gamma}
61.215 \DeclareInputMath{227}{\pi}
61.216 \DeclareInputMath{228}{\Sigma}
61.217 \DeclareInputMath{229}{\sigma}
61.218 \DeclareInputMath{230}{\mu}
61.219 \DeclareInputMath{231}{\tau}
61.220 \DeclareInputMath{232}{\Phi}
61.221 \DeclareInputMath{233}{\Theta}
61.222 \DeclareInputMath{234}{\Omega}
61.223 \DeclareInputMath{235}{\delta}
61.224 \DeclareInputMath{236}{\infty}
61.225 \DeclareInputMath{237}{\phi}
61.226 \DeclareInputMath{238}{\varepsilon}
61.227 \DeclareInputMath{239}{\cap}
61.228 \DeclareInputMath{240}{\equiv}
61.229 \DeclareInputMath{241}{\pm}
61.230 \DeclareInputMath{242}{\geq}
61.231 \DeclareInputMath{243}{\leq}
61.232 \DeclareInputMath{246}{\div}
61.233 \DeclareInputMath{247}{\approx}
61.234 \DeclareInputText{248}{\textdegree}
61.235 \DeclareInputText{249}{\textperiodcentered}
61.236 \DeclareInputText{250}{\textbullet}
61.237 \DeclareInputMath{251}{\surd}
61.238 \DeclareInputMath{252}{\mathnsuperior}
61.239 \DeclareInputMath{253}{\mathtwosuperior}
61.240 \DeclareInputText{254}{\textblacksquare}
61.241 \DeclareInputText{255}{\nobreakspace}
61.242 \end{cp862}

```

**\DisableNikud** A utility macro to ignore any nikud character that may appear in the input. This allows you to ignore cp1255 nikud characters that happened to appear in the input.

```

61.243 (*8859 – 8)
61.244 \newcommand{\DisableNikud}{%
61.245   \DeclareInputText{192}{}%
61.246   \DeclareInputText{193}{}%
61.247   \DeclareInputText{194}{}%
61.248   \DeclareInputText{195}{}%
61.249   \DeclareInputText{196}{}%
61.250   \DeclareInputText{197}{}%
61.251   \DeclareInputText{198}{}%
61.252   \DeclareInputText{199}{}%
61.253   \DeclareInputText{200}{}%
61.254   \DeclareInputText{201}{}%
61.255   \DeclareInputText{203}{}%
61.256   \DeclareInputText{204}{}%
61.257   \DeclareInputText{205}{}%
61.258   \DeclareInputText{206}{}%
61.259   \DeclareInputText{207}{}%
61.260   \DeclareInputText{208}{}%
61.261   \DeclareInputText{209}{}%
61.262   \DeclareInputText{210}{}%

```

```

61.263 \DeclareInputText{211}{}%
61.264 \DeclareInputText{212}{}%
61.265 \DeclareInputText{213}{}%
61.266 \DeclareInputText{214}{}%
61.267 }
61.268 </8859 - 8>

```

Finally, we reset the category code of the @ sign at the end of all .def files.

```

61.269 <-driver>\makeatother

```

## 62 Hebrew font encodings

Don't forget to update the docs...

### 62.1 THIS SECTION IS OUT OF DATE. UPDATE DOCS TO MATCH HE8 ENCODING

The file `hebrew.fdd`<sup>73</sup> contains the Local Hebrew Encoding (LHE) definition, the external font information needed to use the Hebrew 7-bit fonts (old code fonts) and `hebfont` package that provides Hebrew font switching commands.

Using this file as an input, `lheenc.def` encoding definition file, all .fd files (font definition files) and font switching package for available Hebrew fonts are generated. We chose to use 7-bit encoding as default font encoding, because:

1. There are many 7-bit encoded Hebrew fonts available, more then for any other encoding.
2. Available T<sub>E</sub>X Hebrew fonts do not include latin alphabet, and we can safely map Hebrew glyphs to the ASCII positions (0 – 127).

Current definition of the LHE encoding supports only Hebrew letters (`\hebalef`–`\hebtav`), but not Hebrew points, such as `\hebdagesh`, `\hebqamats`, `\hebpatah`, `\hebshindot`, etc. We are working now on such addition.

### 62.2 The DOCSTRIP modules

The following modules are used in the implementation to direct DOCSTRIP in generating external files:

---

<sup>73</sup>The files described in this section have version number v1.2b and were last revised on 2004/02/20.

driver	produce a documentation driver file
HE8enc	produce the encoding definition for CodePage 1255 ( <b>HE8</b> )
HE8cmr	make Hebrew default font in <b>HE8</b>
HE8cmss	make Hebrew sans-serif font in <b>HE8</b>
HE8cmtt	make Hebrew typewriter font in <b>HE8</b>
HE8OmegaHebrew	Hebrew font from the Omega project (by ???)
HE8aharoni	Hebrew sans-serif font (Culmus)
HE8david	Hebrew serif font (Culmus)
HE8drugulin	Hebrew old serif font (Culmus)
HE8ellinia	Hebrew isans-serif font (Culmus)
HE8frank	Hebrew serif font (Culmus)
HE8KtavYad	Hebrew handwriting font (Culmus)
HE8MiriamMono	Hebrew monospaced font
HE8Nahlieli	Hebrew sans-serif font (Culmus)
HE8CourierShalom	Hebrew Shalom (Courier) font (by IBM)
HE8HelveticaNarkissTam	Hebrew NarkisTam (Helvetica) (by Zvi Narkis)
HE8TimesNarkissim	Hebrew Narkissim (Times) (by Zvi Narkis)
HE8mfdavid	Hebrew David font (by ???)
HE8mf frank	Hebrew Frank-Ruehl font (by ??)
HE8mf frankthick	Hebrew Frank-Ruehl (thick) font (by ??)
HE8mf frankthin	Hebrew Frank-Ruehl (thin) font (by ??)
HE8mf miriam	Hebrew Miriam font (by ???)
HE8mf miriamwide	Hebrew Miriam (wide) font (by ???)
HE8mf narkistam	Hebrew Narkis Tam font (by ???)
LHEenc	produce the encoding definition for Local Hebrew Encoding ( <b>LHE</b> )
LHEcmr	make Hebrew default font in <b>LHE</b>
LHEcmss	make Hebrew sans-serif font in <b>LHE</b>
LHEcmtt	make Hebrew typewriter font in <b>LHE</b>
LHEclas	make Hebrew classic font (by Joel M. Hoffman) in <b>LHE</b>
LHEshold	make Hebrew shalom old font (by Jonathan Brecher) in <b>LHE</b>
LHEshscr	make Hebrew shalom script font (by Jonathan Brecher) in <b>LHE</b>
LHEshstk	make Hebrew shalom stick font (by Jonathan Brecher) in <b>LHE</b>
LHEfr	make Hebrew frank-ruehl font in <b>LHE</b>
LHEcrlml	make Hebrew carmel font (by Dr. Samy Zafrany) in <b>LHE</b>
LHEredis	make Hebrew redis font (by Prof. Jacques J. Goldberg) in <b>LHE</b>
nowarn	option for font definition files, that used to produce “silent” font substitutions without giving warnings
hebfont	create Hebrew font switching commands package

A typical DOCSTRIP command file would then have entries like:

```
\generateFile{lhecmr.fd}{t}{\from{hebrew.fdd}{LHEcmr,nowarn}}
```

### 62.3 The LHEencoding definition file

The Hebrew font encoding **LHE** is based upon the old-code encoding also known as the Israeli Standard SI-960. Many Hebrew  $\TeX$  fonts from the Hebrew University of Jerusalem are encoded in this encoding. It only uses the lower 128 positions of the font table. As local encoding its name start with the letter ‘L’.

First we define the Local Hebrew Encoding; specify a default for the font substitution process for the LHE encoding and supply a font to be used when all else fails.

```
62.1 \*LHEenc
62.2 \DeclareFontEncoding{LHE}{-}{-}
62.3 \DeclareFontSubstitution{LHE}{cmr}{m}{n}
62.4 \DeclareErrorFont{LHE}{cmr}{m}{n}{10}
62.5 \*LHEenc
```

Then we define a few commands in the LHE encoding.

```
62.6 \*LHEenc
62.7 \ProvideTextCommand{\textcopyright}{LHE}{\textcircled{\@latin{c}}}
62.8 \ProvideTextCommand{\textregistered}{LHE}{\textcircled{\scshape%
62.9 \@latin{r}}}
62.10 \ProvideTextCommand{\texttrademark}{LHE}{\textsuperscript{\@latin{TM}}}
62.11 \*LHEenc
```

Because not everyone can input Hebrew input text directly from the keyboard we need to define control sequences for all the Hebrew glyphs in the fonts. In addition, we want to support many input encodings for Hebrew and to keep the language definition file (`hebrew.ldf`) independent of the encoding. Therefore, we exploit the standard  $\text{\LaTeX}$  2<sub>ε</sub> font encoding mechanism to define control sequences for all the Hebrew glyphs in the fonts in encoding-specific way. The language definition file uses only the control sequences and doesn't need to check the current font or input encoding.

In the LHE encoding (7-bit encoding) all the Hebrew glyphs reside in the *lower* half of the font. Currently, only the Hebrew letters are supported. They use the same positions as the latin small letters in ASCII encoding and the position of ‘.

The symbol ‘ (glyph 96) is used by Hebrew letter *Alef*, so we need to define its `\lccode` to allow hyphenation. All other letters retain the same `\lccodes` as their latin counterparts.

```
62.12 \*LHEenc\lccode‘=‘‘
```

Hebrew letters occupy the positions 96–122 in LHE encoding:

```
62.13 \*LHEenc
62.14 \DeclareTextSymbol{\hebalef}{LHE}{96}
62.15 \DeclareTextSymbol{\hebbet}{LHE}{97}
62.16 \DeclareTextSymbol{\hebgimel}{LHE}{98}
62.17 \DeclareTextSymbol{\hebdalet}{LHE}{99}
62.18 \DeclareTextSymbol{\hebhe}{LHE}{100}
62.19 \DeclareTextSymbol{\hebvav}{LHE}{101}
62.20 \DeclareTextSymbol{\hebzayin}{LHE}{102}
62.21 \DeclareTextSymbol{\hebheth}{LHE}{103}
62.22 \DeclareTextSymbol{\hebtet}{LHE}{104}
62.23 \DeclareTextSymbol{\hebyod}{LHE}{105}
62.24 \DeclareTextSymbol{\hebfinalkaf}{LHE}{106}
62.25 \DeclareTextSymbol{\hebkaf}{LHE}{107}
62.26 \DeclareTextSymbol{\heblamed}{LHE}{108}
62.27 \DeclareTextSymbol{\hebfinalmem}{LHE}{109}
62.28 \DeclareTextSymbol{\hebmeme}{LHE}{110}
62.29 \DeclareTextSymbol{\hebfinalnun}{LHE}{111}
62.30 \DeclareTextSymbol{\hebnun}{LHE}{112}
62.31 \DeclareTextSymbol{\hebsamekh}{LHE}{113}
```

```

62.32 \DeclareTextSymbol{\hebayin}{LHE}{114}
62.33 \DeclareTextSymbol{\hebfinalpe}{LHE}{115}
62.34 \DeclareTextSymbol{\hebpe}{LHE}{116}
62.35 \DeclareTextSymbol{\hebfinaltsadi}{LHE}{117}
62.36 \DeclareTextSymbol{\hebtsadi}{LHE}{118}
62.37 \DeclareTextSymbol{\hebqof}{LHE}{119}
62.38 \DeclareTextSymbol{\hebresh}{LHE}{120}
62.39 \DeclareTextSymbol{\hebshin}{LHE}{121}
62.40 \DeclareTextSymbol{\hebtav}{LHE}{122}
62.41 \LHEenc

```

Letter `\hebsin` is defined as a synonym of `\hebshin`:

```

62.42 \LHEenc\let\hebsin=\hebshin

```

## 62.4 The font definition files (in LHE encoding)

### 62.4.1 Hebrew default font

It uses *Jerusalem* font for regular font, *Old Jaffa* font for italic shape and small-caps, *Dead Sea* font for bold face, and *Tel-Aviv* for bold-italic

```

62.43 (*LHEcmr)
62.44 \DeclareFontFamily{LHE}{cmr}{\hyphenchar\font45}
62.45 \DeclareFontShape{LHE}{cmr}{m}{n}
62.46     {<-> jerus10 }{}
62.47 %%%%%%%%% Italicized shape
62.48 \DeclareFontShape{LHE}{cmr}{m}{it}
62.49     {<-> oldjaf10 }{}
62.50 \DeclareFontShape{LHE}{cmr}{m}{sl}
62.51     {<-> oldjaf10 }{}
62.52 \DeclareFontShape{LHE}{cmr}{m}{sc}
62.53     {<-> oldjaf10 }{}
62.54 %%%%%%%%% Bold extended series
62.55 \DeclareFontShape{LHE}{cmr}{bx}{n}
62.56     {<-> deads10 }{}
62.57 \DeclareFontShape{LHE}{cmr}{b}{n}
62.58     {<-> deads10 }{}
62.59 %%%%%%%%% Bold extended (Italic) series
62.60 \DeclareFontShape{LHE}{cmr}{bx}{sl}
62.61     {<-> telav10 }{}
62.62 \DeclareFontShape{LHE}{cmr}{bx}{it}
62.63     {<-> telav10 }{}
62.64 \LHEcmr

```

### 62.4.2 Hebrew sans-serif font

We use *Tel Aviv* font for the Sans family. *Old Jaffa* font is used for italic shape and *Dead Sea* used for bold face.

```

62.65 (*LHEcmss)
62.66 \DeclareFontFamily{LHE}{cmss}{\hyphenchar\font45}
62.67 \DeclareFontShape{LHE}{cmss}{m}{n}
62.68     {<-> telav10 }{}
62.69 %%%%%%%%% Font/shape undefined, therefore substituted
62.70 \DeclareFontShape{LHE}{cmss}{m}{sc}
62.71 \LHEcmss

```

```

62.72 <+nowarn> {<->ssub * cmss/m/n}{ }
62.73 %%%%%%%%% Italicized shape
62.74 \DeclareFontShape{LHE}{cmss}{m}{it}{
62.75     {<-> oldjaf10 }{ }
62.76 %%%%%%%%% Font/shape undefined, therefore substituted
62.77 \DeclareFontShape{LHE}{cmss}{m}{sl}{
62.78 <-nowarn> {<->sub * cmss/m/it}{ }
62.79 <+nowarn> {<->ssub * cmss/m/it}{ }
62.80 %%%%%%%%% Bold extended series
62.81 \DeclareFontShape{LHE}{cmss}{bx}{n}{
62.82     {<-> deads10 }{ }
62.83 %%%%%%%%% Font/shape undefined, therefore substituted
62.84 \DeclareFontShape{LHE}{cmss}{b}{n}{
62.85 <-nowarn> {<->sub * cmss/bx/n}{ }
62.86 <+nowarn> {<->ssub * cmss/bx/n}{ }
62.87 %%%%%%%%% Font/shape undefined, therefore substituted
62.88 \DeclareFontShape{LHE}{cmss}{bx}{sl}{
62.89 <-nowarn> {<->sub * cmss/bx/n}{ }
62.90 <+nowarn> {<->ssub * cmss/bx/n}{ }
62.91 %%%%%%%%% Font/shape undefined, therefore substituted
62.92 \DeclareFontShape{LHE}{cmss}{bx}{it}{
62.93 <-nowarn> {<->sub * cmss/bx/n}{ }
62.94 <+nowarn> {<->ssub * cmss/bx/n}{ }
62.95 </LHEcmss>

```

### 62.4.3 Hebrew typewriter font

We use *Tel Aviv* font as the typewriter font. *Old Jaffa* font is used for italic shape and *Dead Sea* used for bold face.

```

62.96 <*LHEcmtt>
62.97 \DeclareFontFamily{LHE}{cmtt}{\hyphenchar \font\m@ne}
62.98 \DeclareFontShape{LHE}{cmtt}{m}{n}{
62.99     {<-> telav10 }{ }
62.100 %%%%%%%%% Font/shape undefined, therefore substituted
62.101 \DeclareFontShape{LHE}{cmtt}{m}{sc}{
62.102 <-nowarn> {<->sub * cmtt/m/n}{ }
62.103 <+nowarn> {<->ssub * cmtt/m/n}{ }
62.104 %%%%%%%%% Italicized shape
62.105 \DeclareFontShape{LHE}{cmtt}{m}{it}{
62.106     {<-> oldjaf10 }{ }
62.107 %%%%%%%%% Font/shape undefined, therefore substituted
62.108 \DeclareFontShape{LHE}{cmtt}{m}{sl}{
62.109 <-nowarn> {<->sub * cmtt/m/it}{ }
62.110 <+nowarn> {<->ssub * cmtt/m/it}{ }
62.111 %%%%%%%%% Bold extended series
62.112 \DeclareFontShape{LHE}{cmtt}{bx}{n}{
62.113     {<-> deads10 }{ }
62.114 %%%%%%%%% Font/shape undefined, therefore substituted
62.115 \DeclareFontShape{LHE}{cmtt}{bx}{it}{
62.116 <-nowarn> {<->sub * cmtt/bx/n}{ }
62.117 <+nowarn> {<->ssub * cmtt/bx/n}{ }
62.118 </LHEcmtt>

```

#### 62.4.4 Hebrew classic font

*Hclassic* and *hcaption* fonts are distributed freely from CTAN sites and copyrighted by Joel M. Hoffman, of 19 Hillcrest Lane, Rye, NY 10580 USA, e-mail: 72700.402@compuserve.com.

Hclassic is a modernized Classical Hebrew font (in the same way that Knuth's *cmr* family is a modernized Roman font — but his fonts are much nicer). Hcaption is a slanted version of hclassic font. Both fonts contain all of the Hebrew consonants, the (rarely used) ligature *alef-lamed* and two versions of the letter *ayin* for use with and without vowels. Hclassic also contains all of the vowels found in Hebrew, a symbol for *meteg*, and dots for use as a *dagesh* and for differentiating *shin* and *sin* letters.

Currently, only the Hebrew consonants (*hebalef* – *hebtav*) from these fonts are supported by L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, however one can use vowels and dots directly with P<sub>L</sub>A<sub>I</sub>N T<sub>E</sub>X macros. We are working on generic vowels and dots support for L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>.

```

62.119 \*LHEclas
62.120 \DeclareFontFamily{LHE}{clas}{}
62.121 \DeclareFontShape{LHE}{clas}{m}{n}
62.122      {<-> s * [0.83345] hclassic }{}
62.123 %%%%%%%%% Font/shape undefined, therefore substituted
62.124 \DeclareFontShape{LHE}{clas}{m}{sc}
62.125 (<-nowarn) {<->sub * clas/m/n}{}
62.126 (<+nowarn) {<->ssub * clas/m/n}{}
62.127 %%%%%%%%% Slanted shape
62.128 \DeclareFontShape{LHE}{clas}{m}{sl}
62.129      {<-> s * [0.69389] hcaption }{}
62.130 %%%%%%%%% Font/shape undefined, therefore substituted
62.131 \DeclareFontShape{LHE}{clas}{m}{it}
62.132 (<-nowarn) {<->sub * clas/m/sl}{}
62.133 (<+nowarn) {<->ssub * clas/m/sl}{}
62.134 \*LHEclas

```

#### 62.4.5 Hebrew shalom fonts

All three shalom fonts (*ShalomScript10*, *ShalomStick10* and *ShalomOldStyle10*) have been created by Jonathan Brecher, of 9 Skyview Road, Lexington, MA 02173-1112 USA, e-mail: brecher@husc.harvard.edu.

All shalom fonts have been written in POSTSCRIPT via Fontographer on a Mac. The fonts have been converted to METAFONT by Rama Porrat (e-mail: rama@cc.huji.ac.il), using the utility *typo*, a font editor + converter between font formats (a commercial product). *ShalomScript10.mf* is the METAFONT equivalent of *ShalomScript.ps*, *ShalomStick10.mf* came from *ShalomStick.ps* and *ShalomOldStyle10.mf* originated in *ShalomOldStyle.ps*.

The fonts differ in the letters' style. *ShalomScript10* contains hand writing Hebrew letters; *ShalomStick10* contains sans-serif letters, and *ShalomOldStyle10* contains old style letters. All three fonts contain vowels and dots (nikud). While converting to METAFONT, letters and symbols within the fonts have been arranged so as to get a usable font for writing Hebrew documents in T<sub>E</sub>X or L<sup>A</sup>T<sub>E</sub>X, with as well as without vowels.

Currently, only the Hebrew consonants (*hebalef* – *hebtav*) from these fonts

are supported by L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, however one can use vowels and dots directly with P<sub>L</sub>A<sub>I</sub>N T<sub>E</sub>X macros. We are working on generic vowels and dots support for L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>.

```

62.135 ⟨*LHEshold⟩
62.136 \DeclareFontFamily{LHE}{shold}{}
62.137 \DeclareFontShape{LHE}{shold}{m}{n}
62.138     {<-> shold10 }{}
62.139 ⟨/LHEshold⟩
62.140 ⟨*LHEshscr⟩
62.141 \DeclareFontFamily{LHE}{shscr}{}
62.142 \DeclareFontShape{LHE}{shscr}{m}{n}
62.143     {<-> shscr10 }{}
62.144 ⟨/LHEshscr⟩
62.145 ⟨*LHEshstk⟩
62.146 \DeclareFontFamily{LHE}{shstk}{}
62.147 \DeclareFontShape{LHE}{shstk}{m}{n}
62.148     {<-> shstk10 }{}
62.149 ⟨/LHEshstk⟩

```

#### 62.4.6 Hebrew frank-ruehl font

*Frank Ruehl* font was written in METAFONT and includes three shapes: regular, bold extaneded and slanted.

```

62.150 ⟨*LHEfr⟩
62.151 \DeclareFontFamily{LHE}{fr}{}
62.152 \DeclareFontShape{LHE}{fr}{m}{n}
62.153     {<-> fr }{}
62.154 %%%%%%%%% Font/shape undefined, therefore substituted
62.155 \DeclareFontShape{LHE}{fr}{m}{sc}
62.156 ⟨-nowarn⟩ {<->sub * fr/m/n}{}
62.157 ⟨+nowarn⟩ {<->ssub * fr/m/n}{}
62.158 %%%%%%%%% Slanted shape
62.159 \DeclareFontShape{LHE}{fr}{m}{sl}
62.160     {<-> frsl }{}
62.161 %%%%%%%%% Font/shape undefined, therefore substituted
62.162 \DeclareFontShape{LHE}{fr}{m}{it}
62.163 ⟨-nowarn⟩ {<->sub * fr/m/sl}{}
62.164 ⟨+nowarn⟩ {<->ssub * fr/m/sl}{}
62.165 %%%%%%%%% Bold extended series
62.166 \DeclareFontShape{LHE}{fr}{bx}{n}
62.167     {<-> frbx }{}
62.168 %%%%%%%%% Font/shape undefined, therefore substituted
62.169 \DeclareFontShape{LHE}{fr}{b}{n}
62.170 ⟨-nowarn⟩ {<->sub * fr/bx/n}{}
62.171 ⟨+nowarn⟩ {<->ssub * fr/bx/n}{}
62.172 %%%%%%%%% Font/shape undefined, therefore substituted
62.173 \DeclareFontShape{LHE}{fr}{bx}{sl}
62.174 ⟨-nowarn⟩ {<->sub * fr/bx/n}{}
62.175 ⟨+nowarn⟩ {<->ssub * fr/bx/n}{}
62.176 %%%%%%%%% Font/shape undefined, therefore substituted
62.177 \DeclareFontShape{LHE}{fr}{bx}{it}
62.178 ⟨-nowarn⟩ {<->sub * fr/bx/n}{}
62.179 ⟨+nowarn⟩ {<->ssub * fr/bx/n}{}

```



62.180  $\langle$ /LHEfr $\rangle$

#### 62.4.7 Hebrew carmel font

*Carmel* font includes regular and slanted shapes. It was created by Dr. Samy Zafrany of the Technion, Haifa, Israel with the intention of making nice fonts for headers and emphasized text.

```

62.181  $\langle$ *LHEcrml $\rangle$ 
62.182 \DeclareFontFamily{LHE}{crml}{}
62.183 \DeclareFontShape{LHE}{crml}{m}{n}{
62.184     {<-> crml10 }{}
62.185 %%%%%%%%% Font/shape undefined, therefore substituted
62.186 \DeclareFontShape{LHE}{crml}{m}{sc}{
62.187     {<-nowarn> {<->sub * crml/m/n}{}
62.188     {<-nowarn> {<->ssub * crml/m/n}{}
62.189 %%%%%%%%% Slanted shape
62.190 \DeclareFontShape{LHE}{crml}{m}{sl}{
62.191     {<-> crmlsl10 }{}
62.192 %%%%%%%%% Font/shape undefined, therefore substituted
62.193 \DeclareFontShape{LHE}{crml}{m}{it}{
62.194     {<-nowarn> {<->sub * crml/m/sl}{}
62.195     {<-nowarn> {<->ssub * crml/m/sl}{}
62.196  $\langle$ /LHEcrml $\rangle$ 

```

#### 62.4.8 Hebrew redis font

*Redis* font has been created by Prof. Jacques J. Goldberg of the Technion. Haifa, Israel. The font is available in regular, slanted and bold extended shapes. This font contains a full set of Hebrew letters in a “sans-serif vectorized” style, and selected punctuation.

```

62.197  $\langle$ *LHEredis $\rangle$ 
62.198 \DeclareFontFamily{LHE}{redis}{}
62.199 \DeclareFontShape{LHE}{redis}{m}{n}{%
62.200     <5> <6> redis7
62.201     <7> <8> <9> <10> <12> gen * redis
62.202     <10.95> redis10
62.203     <14.4> redis12
62.204     <17.28> <20.74> <24.88> redis17}{}
62.205 %%%%%%%%% Font/shape undefined, therefore substituted
62.206 \DeclareFontShape{LHE}{redis}{m}{sc}{
62.207     {<-nowarn> {<->sub * redis/m/n}{}
62.208     {<-nowarn> {<->ssub * redis/m/n}{}
62.209 %%%%%%%%% Slanted shape
62.210 \DeclareFontShape{LHE}{redis}{m}{sl}{%
62.211     <5> <6> <7> rediss8
62.212     <8> <9> <10> <12> gen * rediss
62.213     <10.95> rediss10
62.214     <14.4> <17.28> <20.74> <24.88> rediss12}{}
62.215 %%%%%%%%% Font/shape undefined, therefore substituted
62.216 \DeclareFontShape{LHE}{redis}{m}{it}{
62.217     {<-nowarn> {<->sub * redis/m/sl}{}
62.218     {<-nowarn> {<->ssub * redis/m/sl}{}
62.219 %%%%%%%%% Bold extended series

```

```

62.220 \DeclareFontShape{LHE}{redis}{bx}{n}{%
62.221   <5> <6> <7> <8> <9> <10> <10.95> <12>
62.222   <14.4> <17.28> <20.74> <24.88> redisb10}{%
62.223   %%%%%%%%% Font/shape undefined, therefore substituted
62.224   \DeclareFontShape{LHE}{redis}{b}{n}
62.225   <-nowarn> {<->sub * redis/bx/n}{%
62.226   <+nowarn> {<->ssub * redis/bx/n}{%
62.227   %%%%%%%%% Font/shape undefined, therefore substituted
62.228   \DeclareFontShape{LHE}{redis}{bx}{sl}
62.229   <-nowarn> {<->sub * redis/bx/n}{%
62.230   <+nowarn> {<->ssub * redis/bx/n}{%
62.231   %%%%%%%%% Font/shape undefined, therefore substituted
62.232   \DeclareFontShape{LHE}{redis}{bx}{it}
62.233   <-nowarn> {<->sub * redis/bx/n}{%
62.234   <+nowarn> {<->ssub * redis/bx/n}{%
62.235   /LHEredis}

```

## 62.5 The HE8encoding definition file

The Hebrew font encoding HE8 is based upon an extension by Microsoft to the ISO-8859-8 standard. This is an 8bit encoding. The extensions include hebrew points (“Nikud”).

First we define the Codepage 1255; specify a default for the font substitution process for the HE8 encoding and supply a font to be used when all else fails.

```

62.236 (*HE8enc)
62.237 \DeclareFontEncoding{HE8}{}{}
62.238 \DeclareFontSubstitution{HE8}{cmr}{m}{n}
62.239 \DeclareErrorFont{HE8}{cmr}{m}{n}{10}
62.240 /HE8enc)

```

Then we define a few commands in the HE8 encoding.

```

62.241 (*HE8enc)
62.242 \ProvideTextCommand{\textcopyright}{HE8}{\textcircled{\@latin{c}}}
62.243 \ProvideTextCommand{\textregistered}{HE8}{\textcircled{\scshape%
62.244   \@latin{r}}}
62.245 \ProvideTextCommand{\texttrademark}{HE8}{\textsuperscript{\@latin{TM}}}
62.246 /HE8enc)

```

### 62.5.1 CHECK HERE FOR HE8 UPDATES

Because not everyone can input Hebrew input text directly from the keyboard we need to define control sequences for all the Hebrew glyphs in the fonts. In addition, we want to support many input encodings for Hebrew and to keep the language definition file (`hebrew.ldf`) independent of the encoding. Therefore, we exploit the standard L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> font encoding mechanism to define control sequences for all the Hebrew glyphs in the fonts in encoding-specific way. The language definition file uses only the control sequences and doesn’t need to check the current font or input encoding.

In the LHE encoding (7-bit encoding) all the Hebrew glyphs reside in the *lower* half of the font. Currently, only the Hebrew letters are supported. They use the same positions as the latin small letters in ASCII encoding and the position of ‘.

Some general symbols:

```

62.247 (*HE8enc)
62.248 \ProvideTextCommand{\textcopyright}{HE8}{\textcircled{\@latin{c}}}
62.249 \ProvideTextCommand{\textregistered}{HE8}{\textcircled{\scshape%
62.250 \@latin{r}}}}
62.251 \ProvideTextCommand{\texttrademark}{HE8}{\textsuperscript{\@latin{TM}}}
62.252 (/HE8enc)

```

The hebrew points:

```

62.253 (*HE8enc)
62.254 \DeclareTextSymbol{\sheva}{HE8}{192}
62.255 \DeclareTextSymbol{\hatafsegol}{HE8}{193}
62.256 \DeclareTextSymbol{\hatafpatah}{HE8}{194}
62.257 \DeclareTextSymbol{\hatafqamats}{HE8}{195}
62.258 \DeclareTextSymbol{\hiriq}{HE8}{196}
62.259 \DeclareTextSymbol{\tsere}{HE8}{197}
62.260 \DeclareTextSymbol{\segol}{HE8}{198}
62.261 \DeclareTextSymbol{\patah}{HE8}{199}
62.262 \DeclareTextSymbol{\qamats}{HE8}{200}
62.263 \DeclareTextSymbol{\holam}{HE8}{201}
62.264 \DeclareTextSymbol{\qubuts}{HE8}{203}
62.265 \DeclareTextSymbol{\dagesh}{HE8}{204}
62.266 \DeclareTextSymbol{\meteg}{HE8}{205}
62.267 \DeclareTextSymbol{\maqaf}{HE8}{206}
62.268 \DeclareTextSymbol{\rafe}{HE8}{207}
62.269 \DeclareTextSymbol{\paseq}{HE8}{208}
62.270 \DeclareTextSymbol{\shindot}{HE8}{209}
62.271 \DeclareTextSymbol{\sindot}{HE8}{210}
62.272 \DeclareTextSymbol{\sofpasuq}{HE8}{211}
62.273 \DeclareTextSymbol{\doublevav}{HE8}{212}
62.274 \DeclareTextSymbol{\vavyod}{HE8}{213}
62.275 \DeclareTextSymbol{\doubleyod}{HE8}{214}
62.276 (/HE8enc)

```

Hebrew letters occupy the positions 224–250 in HE8 encoding [WHAT ABOUT OTHER MARKS]:

```

62.277 (*HE8enc)
62.278 % \lccode‘‘‘ % probably not needed (Tzafrir)
62.279 \DeclareTextSymbol{\hebalef}{HE8}{224}
62.280 \DeclareTextSymbol{\hebbet}{HE8}{225}
62.281 \DeclareTextSymbol{\hebgimel}{HE8}{226}
62.282 \DeclareTextSymbol{\hebdalet}{HE8}{227}
62.283 \DeclareTextSymbol{\hebhe}{HE8}{228}
62.284 \DeclareTextSymbol{\hebvav}{HE8}{229}
62.285 \DeclareTextSymbol{\hebzayin}{HE8}{230}
62.286 \DeclareTextSymbol{\hebbhet}{HE8}{231}
62.287 \DeclareTextSymbol{\hebtet}{HE8}{232}
62.288 \DeclareTextSymbol{\hebyod}{HE8}{233}
62.289 \DeclareTextSymbol{\hebfinalkaf}{HE8}{234}
62.290 \DeclareTextSymbol{\hebkaf}{HE8}{235}
62.291 \DeclareTextSymbol{\heblamed}{HE8}{236}
62.292 \DeclareTextSymbol{\hebfinalmem}{HE8}{237}
62.293 \DeclareTextSymbol{\hebmeme}{HE8}{238}
62.294 \DeclareTextSymbol{\hebfinalnun}{HE8}{239}
62.295 \DeclareTextSymbol{\hebnun}{HE8}{240}
62.296 \DeclareTextSymbol{\hebsamekh}{HE8}{241}

```

```

62.297 \DeclareTextSymbol{\hebayin}{HE8}{242}
62.298 \DeclareTextSymbol{\hebfinalpe}{HE8}{243}
62.299 \DeclareTextSymbol{\hebpe}{HE8}{244}
62.300 \DeclareTextSymbol{\hebfinaltsadi}{HE8}{245}
62.301 \DeclareTextSymbol{\hebtsadi}{HE8}{246}
62.302 \DeclareTextSymbol{\hebqof}{HE8}{247}
62.303 \DeclareTextSymbol{\hebresh}{HE8}{248}
62.304 \DeclareTextSymbol{\hebshin}{HE8}{249}
62.305 \DeclareTextSymbol{\hebtav}{HE8}{250}
62.306 \end{HE8enc}

```

Letter `\hebsin` is defined as a synonym of `\hebshin`:

```

62.307 \let\hebsin=\hebshin

```

## 62.6 The font definition files (in HE8 encoding)

### 62.6.1 Hebrew default font

It uses *OmegaHebrew* font for regular font, *Old Jaffa* font for italic shape and small-caps, *Dead Sea* font for bold face, and *Tel-Aviv* for bold-italic

```

62.308 \begin{HE8cmr}
62.309 \DeclareFontFamily{HE8}{cmr}{\hyphenchar\font45}
62.310 \DeclareFontShape{HE8}{cmr}{m}{n}
62.311     {<-> david }{}
62.312 %%%%%%%%% Italicized shape
62.313 \DeclareFontShape{HE8}{cmr}{m}{it}
62.314     {<-> davidi }{}
62.315 \DeclareFontShape{HE8}{cmr}{m}{sl}
62.316     {<-> davidi }{}
62.317 \DeclareFontShape{HE8}{cmr}{m}{sc}
62.318     {<-> david }{}
62.319 %%%%%%%%% Bold extended series
62.320 \DeclareFontShape{HE8}{cmr}{bx}{n}
62.321     {<-> davidb }{}
62.322 \DeclareFontShape{HE8}{cmr}{b}{n}
62.323     {<-> davidb }{}
62.324 %%%%%%%%% Bold extended (Italic) series
62.325 \DeclareFontShape{HE8}{cmr}{bx}{sl}
62.326     {<-> davidbi }{}
62.327 \DeclareFontShape{HE8}{cmr}{bx}{it}
62.328     {<-> davidbi }{}
62.329 \end{HE8cmr}

```

### 62.6.2 Hebrew sans-serif font

Until we have a real sans-serif font in this distribution, this file will remain a copy of the roman fonts definitions above.

```

62.330 \begin{HE8cmss}
62.331 \DeclareFontFamily{HE8}{cmss}{\hyphenchar\font45}
62.332 \DeclareFontShape{HE8}{cmss}{m}{n}
62.333     {<-> nachlieli }{}
62.334 %%%%%%%%% Italicized shape
62.335 \DeclareFontShape{HE8}{cmss}{m}{it}
62.336     {<-> nachlieli }{}

```

```

62.337 \DeclareFontShape{HE8}{cmss}{m}{sl}
62.338     {<-> nachlieli }{}
62.339 \DeclareFontShape{HE8}{cmss}{m}{sc}
62.340     {<-> nachlieli }{}
62.341 %%%%%%%%% Bold extended series
62.342 \DeclareFontShape{HE8}{cmss}{bx}{n}
62.343     {<-> nachlieli }{}
62.344 \DeclareFontShape{HE8}{cmss}{b}{n}
62.345     {<-> nachlieli }{}
62.346 %%%%%%%%% Bold extended (Italic) series
62.347 \DeclareFontShape{HE8}{cmss}{bx}{sl}
62.348     {<-> nachlieli }{}
62.349 \DeclareFontShape{HE8}{cmss}{bx}{it}
62.350     {<-> nachlieli }{}
62.351 </HE8cmss>

```

### 62.6.3 Hebrew typewriter font

Until we have a real sans-serif font in this distribution, this file will remain a copy of the roman fonts definitions above.

```

62.352 <*HE8cmtt>
62.353 \DeclareFontFamily{HE8}{cmtt}{\hyphenchar\font45}
62.354 \DeclareFontShape{HE8}{cmtt}{m}{n}
62.355     {<-> miriam }{}
62.356 %%%%%%%%% Italicized shape
62.357 \DeclareFontShape{HE8}{cmtt}{m}{it}
62.358     {<-> miriam }{}
62.359 \DeclareFontShape{HE8}{cmtt}{m}{sl}
62.360     {<-> miriam }{}
62.361 \DeclareFontShape{HE8}{cmtt}{m}{sc}
62.362     {<-> miriam }{}
62.363 %%%%%%%%% Bold extended series
62.364 \DeclareFontShape{HE8}{cmtt}{bx}{n}
62.365     {<-> miriam }{}
62.366 \DeclareFontShape{HE8}{cmtt}{b}{n}
62.367     {<-> miriam }{}
62.368 %%%%%%%%% Bold extended (Italic) series
62.369 \DeclareFontShape{HE8}{cmtt}{bx}{sl}
62.370     {<-> miriam }{}
62.371 \DeclareFontShape{HE8}{cmtt}{bx}{it}
62.372     {<-> miriam }{}
62.373 </HE8cmtt>

```

### 62.6.4 8Bit OmegaHebrew font

*OmegaHebrew* is a serif hebrew font created by the omega project [FILL IN CREDITS] [FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```

62.374 <*HE8OmegaHebrew>
62.375 \def\OmegaHebrewscale{0.9}
62.376 \DeclareFontFamily{HE8}{OmegaHebrew}{\hyphenchar\font45}
62.377 \DeclareFontShape{HE8}{OmegaHebrew}{m}{n}{<-> [\OmegaHebrewscale] OmegaHebrew }{}
62.378 %\endinput % is it needed [tzafrir]
62.379 </HE8OmegaHebrew>

```

### 62.6.5 8Bit Aharoni font

*Aharoni* is a serif hebrew font created by the omega project [FILL IN CREDITS]  
[FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```
62.380 (*HE8aharoni)
62.381 \def\Aharoniscale{1.0}
62.382 \DeclareFontFamily{HE8}{aharoni}{\hyphenchar\font45}
62.383 \DeclareFontShape{HE8}{aharoni}{m}{n}    {<-> [\Aharoniscale] aharoni}{}
62.384 \DeclareFontShape{HE8}{aharoni}{m}{it}   {<-> [\Aharoniscale] aharonii}{}
62.385 \DeclareFontShape{HE8}{aharoni}{m}{sl}   {<-> [\Aharoniscale] aharonii}{}
62.386 \DeclareFontShape{HE8}{aharoni}{b}{n}    {<-> [\Aharoniscale] aharonib}{}
62.387 \DeclareFontShape{HE8}{aharoni}{b}{x}{n} {<-> [\Aharoniscale] aharonib}{}
62.388 \DeclareFontShape{HE8}{aharoni}{b}{x}{it} {<-> [\Aharoniscale] aharonibi}{}
62.389
62.390 %\endinput % is it needed [tzafrir]
62.391 \end{HE8aharoni}
```

### 62.6.6 8Bit David font

*David* is a serif hebrew font created by the omega project [FILL IN CREDITS]  
[FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```
62.392 (*HE8david)
62.393 \def\Davidscale{1.0}
62.394 \DeclareFontFamily{HE8}{david}{\hyphenchar\font45}
62.395
62.396 \DeclareFontShape{HE8}{david}{m}{n}    {<-> [\Davidscale] david}{}
62.397 \DeclareFontShape{HE8}{david}{m}{it}   {<-> [\Davidscale] davidi}{}
62.398 \DeclareFontShape{HE8}{david}{m}{sl}   {<-> [\Davidscale] davidi}{}
62.399 \DeclareFontShape{HE8}{david}{b}{n}    {<-> [\Davidscale] davidb}{}
62.400 \DeclareFontShape{HE8}{david}{b}{x}{n} {<-> [\Davidscale] davidb}{}
62.401 \DeclareFontShape{HE8}{david}{b}{x}{it} {<-> [\Davidscale] davidbi}{}
62.402
62.403
62.404 %\endinput % is it needed [tzafrir]
62.405 \end{HE8david}
```

### 62.6.7 8Bit Drugulin font

*Drugulin* is a serif hebrew font created by the omega project [FILL IN CREDITS]  
[FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```
62.406 (*HE8drugulin)
62.407 \def\Drugulinscale{1.0}
62.408 \DeclareFontFamily{HE8}{drugulin}{\hyphenchar\font45}
62.409 \DeclareFontShape{HE8}{drugulin}{m}{n}    {<-> [\Drugulinscale] drugulinb}{}
62.410 \DeclareFontShape{HE8}{drugulin}{m}{it}   {<-> [\Drugulinscale] drugulinbi}{}
62.411 \DeclareFontShape{HE8}{drugulin}{m}{sl}   {<-> [\Drugulinscale] drugulinbi}{}
62.412 \DeclareFontShape{HE8}{drugulin}{b}{n}    {<-> [\Drugulinscale] drugulinb}{}
62.413 \DeclareFontShape{HE8}{drugulin}{b}{x}{n} {<-> [\Drugulinscale] drugulinb}{}
62.414 \DeclareFontShape{HE8}{drugulin}{b}{x}{it} {<-> [\Drugulinscale] drugulinbi}{}
62.415 %\endinput % is it needed [tzafrir]
62.416 \end{HE8drugulin}
```

### 62.6.8 8Bit Ellinia font

*Ellinia* is a sans-serif hebrew font created by the omega project [FILL IN CREDITS] [FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```
62.417 (*HE8ellinia)
62.418 \def\Elliniascale{1.0}
62.419 \DeclareFontFamily{HE8}{ellinia}{\hyphenchar\font45}
62.420 \DeclareFontShape{HE8}{ellinia}{m}{n}    {<-> [\Elliniascale] ellinia}{ }
62.421 \DeclareFontShape{HE8}{ellinia}{m}{it}   {<-> [\Elliniascale] ellinia_i}{ }
62.422 \DeclareFontShape{HE8}{ellinia}{m}{sl}   {<-> [\Elliniascale] ellinia_i}{ }
62.423 \DeclareFontShape{HE8}{ellinia}{b}{n}    {<-> [\Elliniascale] elliniab}{ }
62.424 \DeclareFontShape{HE8}{ellinia}{bx}{n}   {<-> [\Elliniascale] elliniab}{ }
62.425 \DeclareFontShape{HE8}{ellinia}{bx}{it}  {<-> [\Elliniascale] elliniabi}{ }
62.426 %\endinput % is it needed [tzafrir]
62.427 \</HE8ellinia>
```

### 62.6.9 8Bit FrankRuehl font

*FrankRuehl* is a serif hebrew font created by the omega project [FILL IN CREDITS] [FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```
62.428 (*HE8frank)
62.429 \def\FrankRuehlscale{1.0}
62.430 \DeclareFontFamily{HE8}{frank}{\hyphenchar\font45}
62.431 \DeclareFontShape{HE8}{frank}{m}{n}    {<-> [\FrankRuehlscale] frank}{ }
62.432 \DeclareFontShape{HE8}{frank}{m}{it}   {<-> [\FrankRuehlscale] frank_i}{ }
62.433 \DeclareFontShape{HE8}{frank}{m}{sl}   {<-> [\FrankRuehlscale] frank_i}{ }
62.434 \DeclareFontShape{HE8}{frank}{b}{n}    {<-> [\FrankRuehlscale] frankb}{ }
62.435 \DeclareFontShape{HE8}{frank}{bx}{n}   {<-> [\FrankRuehlscale] frankb}{ }
62.436 \DeclareFontShape{HE8}{frank}{bx}{it}  {<-> [\FrankRuehlscale] frankbi}{ }
62.437 %\endinput % is it needed [tzafrir]
62.438 \</HE8frank>
```

### 62.6.10 8Bit KtavYad font

*KtavYad* is a serif hebrew font created by the omega project [FILL IN CREDITS] [FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```
62.439 (*HE8yad)
62.440 \def\KtavYadscale{1.0}
62.441 \DeclareFontFamily{HE8}{yad}{\hyphenchar\font45}
62.442 \DeclareFontShape{HE8}{yad}{m}{n}    {<-> [\KtavYadscale] yadi}{ }
62.443 \DeclareFontShape{HE8}{yad}{m}{it}   {<-> [\KtavYadscale] yadi}{ }
62.444 \DeclareFontShape{HE8}{yad}{m}{sl}   {<-> [\KtavYadscale] yadi}{ }
62.445 \DeclareFontShape{HE8}{yad}{b}{n}    {<-> [\KtavYadscale] yadbi}{ }
62.446 \DeclareFontShape{HE8}{yad}{bx}{n}   {<-> [\KtavYadscale] yadbi}{ }
62.447 \DeclareFontShape{HE8}{yad}{bx}{it}  {<-> [\KtavYadscale] yadbi}{ }
62.448 %\endinput % is it needed [tzafrir]
62.449 \</HE8yad>
```

### 62.6.11 8Bit MiriamMono font

*MiriamMono* is a serif hebrew font created by the omega project [FILL IN CREDITS] [FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```

62.450 ⟨*HE8miriam⟩
62.451 \def\MiriamMonoscale{1.0}
62.452 \DeclareFontFamily{HE8}{miriam}{\hyphenchar\font45}
62.453 \DeclareFontShape{HE8}{miriam}{m}{n}    {<-> [\MiriamMonoscale] miriam}{ }
62.454 \DeclareFontShape{HE8}{miriam}{m}{it}   {<-> [\MiriamMonoscale] miriami}{ }
62.455 \DeclareFontShape{HE8}{miriam}{m}{sl}   {<-> [\MiriamMonoscale] miriami}{ }
62.456 \DeclareFontShape{HE8}{miriam}{b}{n}    {<-> [\MiriamMonoscale] miriamb}{ }
62.457 \DeclareFontShape{HE8}{miriam}{bx}{n}   {<-> [\MiriamMonoscale] miriamb}{ }
62.458 \DeclareFontShape{HE8}{miriam}{bx}{it}  {<-> [\MiriamMonoscale] miriambi}{ }
62.459
62.460 %\endinput % is it needed [tzafrir]
62.461 ⟨/HE8miriam⟩

```

### 62.6.12 8Bit Nachlieli font

*Nachlieli* is a serif hebrew font created by the omega project [FILL IN CREDITS]  
[FILL IN GENERAL SHAPE DESCRIPTION] shapes: [FILL IN]

```

62.462 ⟨*HE8nachlieli⟩
62.463 \def\Nachlieliscscale{1.0}
62.464 \DeclareFontFamily{HE8}{nachlieli}{\hyphenchar\font45}
62.465 \DeclareFontShape{HE8}{nachlieli}{m}{n}    {<-> [\Nachlieliscscale] nachlieli}{ }
62.466 \DeclareFontShape{HE8}{nachlieli}{m}{it}   {<-> [\Nachlieliscscale] nachlielii}{ }
62.467 \DeclareFontShape{HE8}{nachlieli}{m}{sl}   {<-> [\Nachlieliscscale] nachlielii}{ }
62.468 \DeclareFontShape{HE8}{nachlieli}{b}{n}    {<-> [\Nachlieliscscale] nachlielib}{ }
62.469 \DeclareFontShape{HE8}{nachlieli}{bx}{n}   {<-> [\Nachlieliscscale] nachlielib}{ }
62.470 \DeclareFontShape{HE8}{nachlieli}{bx}{it}  {<-> [\Nachlieliscscale] nachlielibii}{ }
62.471 %\endinput % is it needed [tzafrir]
62.472 ⟨/HE8nachlieli⟩

```

### 62.6.13 Hebrew font switching commands

The `hebrew` package defines a number of high-level commands (all starting with `\text..` similar to the standard  $\text{\LaTeX 2}_{\epsilon}$  font-change commands, for example `\textbf`) that have one argument and typeset this argument in the requested way. These commands are defined for all available Hebrew fonts defined above and change only font parameters but not direction.

For example, to use Hebrew Classic font family, the following sequence of commands should be included in a  $\text{\LaTeX 2}_{\epsilon}$  document:

```

\sethebrew
\textclas{Hebrew text printed with Classic fonts}

```

or to use Hebrew with Classic fonts locally:

```

\R{\textclas{Hebrew text printed with Classic fonts}}

```

We declare  $\text{\LaTeX 2}_{\epsilon}$  font commands, e.g. `\textjm{...}` for all available fonts. Table 33 shows the meanings of all these new high-level commands.

`\textjm` Switches to *Jerusalem* font which is default regular Hebrew font (“roman” family).  
Commands `\textrm{...}` and old-style `\rm ...` will produce the same result.

```

62.473 ⟨*hebrew⟩
62.474 \def\ivritex@tmp{HE8}

```



<i>Command</i>	<i>Corresponds to</i>	<i>Font family</i>
<code>\textjm{..}</code>	<code>\rmfamily</code>	Jerusalem font
<code>\textds{..}</code>	<code>\bfseries</code>	Dead Sea font
<code>\textoj{..}</code>	<code>\itshape</code> <code>\slshape</code> <code>\emph</code>	Old Jaffa font
<code>\textta{..}</code>	<code>\sffamily</code> <code>\ttfamily</code>	Tel-Aviv font
<code>\textcrml{..}</code>	<code>\fontfamily{crml}</code>	Carmel fonts
<code>\textfr{..}</code>	<code>\fontfamily{fr}</code>	Frank-Ruehl fonts
<code>\textredis{..}</code>	<code>\fontfamily{redis}</code>	Redis fonts
<code>\textclas{..}</code>	<code>\fontfamily{redis}</code>	Classic fonts
<code>\textshold{..}</code>	<code>\fontfamily{shold}</code>	Shalom Old Style font
<code>\textshscr{..}</code>	<code>\fontfamily{shscr}</code>	Shalom Script font
<code>\textshstk{..}</code>	<code>\fontfamily{shstk}</code>	Shalom Stick font

Table 33: Hebrew font-change commands with arguments

The font change commands provided here all start with `\text..` to emphasize that they are for use in normal text and to be easily memorable.

```

62.475 \ifx\ivritex@tmp\HeblatexEncoding %
62.476 % compatibility with hebfnts:
62.477 \DeclareTextFontCommand{\textjm}{\rmfamily\selectfont}
62.478 \DeclareTextFontCommand{\textds}{\bfseries\selectfont}
62.479 \DeclareTextFontCommand{\textoj}{\itshape\selectfont}
62.480 \DeclareTextFontCommand{\textta}{\sffamily\selectfont}
62.481
62.482 % an attempt to give some replacements to the original hebfnts:
62.483 %
62.484 \DeclareTextFontCommand{\textcrml}{\fontfamily{david}\selectfont}
62.485 \DeclareTextFontCommand{\textfr}{\fontfamily{frank}\selectfont}
62.486 \DeclareTextFontCommand{\textredis}{\fontfamily{aharoni}\selectfont}
62.487 \DeclareTextFontCommand{\textclas}{\fontfamily{drugulin}\selectfont}
62.488 \DeclareTextFontCommand{\textshold}{\fontfamily{frank}\selectfont}
62.489 \DeclareTextFontCommand{\textshscr}{\fontfamily{yad}\selectfont}
62.490 \DeclareTextFontCommand{\textshstk}{\fontfamily{aharoni}\selectfont}
62.491 % note that redis is larger than shstk
62.492
62.493
62.494 \DeclareTextFontCommand{\textaha}{\fontfamily{aharoni}\selectfont}
62.495 \DeclareTextFontCommand{\textdav}{\fontfamily{david}\selectfont}
62.496 \DeclareTextFontCommand{\textdru}{\fontfamily{drugulin}\selectfont}
62.497 \DeclareTextFontCommand{\textel}{\fontfamily{ellinia}\selectfont}
62.498 % \textfr is already declared above
62.499 \DeclareTextFontCommand{\textmir}{\fontfamily{miriam}\selectfont}
62.500 \DeclareTextFontCommand{\textna}{\fontfamily{nachlieli}\selectfont}
62.501 % is this necessary:

```

```

62.502 \DeclareTextFontCommand{\textyad}{\fontfamily{yad}\selectfont}
62.503
62.504 \else%
62.505 \DeclareTextFontCommand{\textjm}{\rmfamily\selectfont}

\textds Switches to Dead Sea font which is default bold font in Hebrew. Commands
\textbf{...} and old-style {\bf ...} will produce the same result.
62.506 \DeclareTextFontCommand{\textds}{\bfseries\selectfont}

\textoj Switches to Old Jaffa font which is default italic font in Hebrew. Commands
\textit{...}, \textsl{...}, \emph{...} and old-style {\it ...} or {\em ...}
will produce the same result.
62.507 \DeclareTextFontCommand{\textoj}{\itshape\selectfont}

\textta Switches to Tel-Aviv font which is default sans-serif font in Hebrew. Commands
\textsf{...}, \texttt{...} and old-style {\sf ...} or {\tt ...} will produce
the same result (because sans-serif is used as typewriter font when in Hebrew
mode).
62.508 \DeclareTextFontCommand{\textta}{\sfseries\selectfont}

\textcrml Switches to Carmel font. Regular and slanted variants of carmel font will be used..
62.509 \DeclareTextFontCommand{\textcrml}{\fontfamily{crml}\selectfont}

\textfr Switches to Frank-Ruehl font family. Regular, bold and slanted frank ruehl fonts
will be used.
62.510 \DeclareTextFontCommand{\textfr}{\fontfamily{fr}\selectfont}

\textredis Switches to Redis font family. Regular, bold and slanted redis fonts of various
sizes will be used.
62.511 \DeclareTextFontCommand{\textredis}{\fontfamily{redis}\selectfont}

\textclas Switches to Classic font family. The normal font will be hclassic and slanted —
hcaption.
62.512 \DeclareTextFontCommand{\textclas}{\fontfamily{clas}\selectfont}

\textshold Switches to Shalom Old Style font.
62.513 \DeclareTextFontCommand{\textshold}{\fontfamily{shold}\selectfont}

\textshscr Switches to Shalom Script font.
62.514 \DeclareTextFontCommand{\textshscr}{\fontfamily{shscr}\selectfont}

\textshstk Switches to Shalom Stick font.
62.515 \DeclareTextFontCommand{\textshstk}{\fontfamily{shstk}\selectfont}
62.516 \fi

```

Finally, for backward compatibility with L<sup>A</sup>T<sub>E</sub>X 2.09, four old font commands, e.g. {\jm ...} are defined too (see Table 34).

```

62.517 \if@compatibility
62.518 \DeclareOldFontCommand{\jm}{\normalfont\rmfamily\selectfont}%
62.519 {\@nomath\jm}
62.520 \DeclareOldFontCommand{\ds}{\normalfont\bfseries\selectfont}%
62.521 {\@nomath\ds}

```

<i>Old font command</i>	<i>Font name</i>	<i>Comment</i>
<code>{\jm ..}</code>	Jerusalem	default regular (roman) font
<code>{\ds ..}</code>	Dead Sea	default bold font
<code>{\oj ..}</code>	Old Jaffa	default italic and slanted font used also to emphasize text
<code>{\ta ..}</code>	Tel-Aviv	default sans-serif and typewriter font

Table 34: Hebrew old font-change commands for compatibility mode

```

62.522 \DeclareOldFontCommand{\oj}{\normalfont\itshape\selectfont}%
62.523         {\@nomath\oj}
62.524 \DeclareOldFontCommand{\ta}{\normalfont\sffamily\selectfont}%
62.525         {\@nomath\ta}
62.526 \fi
62.527 </hebfont>

```

## 63 Hebrew in L<sup>A</sup>T<sub>E</sub>X 2.09 compatibility mode

`\documentstyle` command in the preamble of L<sup>A</sup>T<sub>E</sub>X document indicates that it is a L<sup>A</sup>T<sub>E</sub>X 2.09 document, and should be processed in *compatibility mode*. In such documents, one of the following three Hebrew style options can be included:

1. **hebrew\_newcode** indicates that document will use UNIX ISO 8859-8 or Windows cp1255 input encoding, i.e. *Alef* letter will be represented as 224.
2. **hebrew\_p** indicates that document is encoded with IBM PC cp862 encoding, i.e. *Alef* letter will be represented as 128.
3. **hebrew\_oldcode** indicates that document uses old 7-bit encoding, as defined in Israeli Standard 960, i.e. *Alef* is character number 96.

Note, that other hebrew-related styles, such as **hebcal** can be included *after* the abovenamed Hebrew style option, for example:

```
\documentstyle[12pt,hebrew_p,hebcal]{report}.
```

Any Hebrew document which compiled under L<sup>A</sup>T<sub>E</sub>X 2.09 should compile under compatibility mode, unless it uses low-level commands such as `\tenrm`.

### 63.1 The DOCSTRIP modules

The following modules are used in the implementation to direct DOCSTRIP in generating the external files:

```

newcode  produce hebrew_newcode.sty
pccode   produce hebrew_p.sty
oldcode  produce hebrew_oldcode.sty

```

## 63.2 Obsolete style files

For each of the Hebrew L<sup>A</sup>T<sub>E</sub>X 2.09 Hebrew styles, we produce a file which uses correct input encoding and calls `babel` with Hebrew and English language options. This means that any styles which say `\input hebrew_newcode.sty` or `\documentstyle[...hebrew_newcode...]{...}` should still work.

```
63.1 <*newcode | pccode | oldcode>
63.2 \NeedsTeXFormat{LaTeX2e}
63.3 </newcode | pccode | oldcode>

63.4 <*newcode>
63.5 \@obsoletetfile{hebrew.sty}{hebrew_newcode.sty}
63.6 \RequirePackage[8859-8]{inputenc}
63.7 </newcode>
63.8 <*pccode>
63.9 \@obsoletetfile{hebrew.sty}{hebrew_p.sty}
63.10 \RequirePackage[cp862]{inputenc}
63.11 </pccode>
63.12 <*oldcode>
63.13 \@obsoletetfile{hebrew.sty}{hebrew_oldcode.sty}
63.14 \RequirePackage[si960]{inputenc}
63.15 </oldcode>

63.16 <*newcode | pccode | oldcode>
63.17 \RequirePackage[english,hebrew]{babel}
63.18 </newcode | pccode | oldcode>
```

## 64 The Bahasa language

The file `bahasa.dtx`<sup>74</sup> defines all the language definition macros for the bahasa indonesia / bahasa melayu language. Bahasa just means ‘language’ in bahasa indonesia / bahasa melayu. Since both national versions of the language use the same writing, although differing in pronunciation, this file can be used for both languages.

For this language currently no special definitions are needed or available.

The macro `\LdfInit` takes care of preventing that this file is loaded more than once, checking the category code of the `@` sign, etc.

```
64.1 (*code)
64.2 \LdfInit{bahasa}\captionsbahasa
```

When this file is read as an option, i.e. by the `\usepackage` command, `bahasa` could be an ‘unknown’ language in which case we have to make it known. So we check for the existence of `\l@bahasa` to see whether we have to do something here.

```
64.3 \ifx\l@bahasa\@undefined
64.4 \@nopatterns{Bahasa}
64.5 \adddialect\l@bahasa0\fi
```

The next step consists of defining commands to switch to (and from) the Bahasa language.

`\captionsbahasa` The macro `\captionsbahasa` defines all strings used in the four standard documentclasses provided with L<sup>A</sup>T<sub>E</sub>X.

```
64.6 \addto\captionsbahasa{%
64.7   \def\prefacename{Pendahuluan}%
64.8   \def\refname{Pustaka}%
64.9   \def\abstractname{Ringkasan}% (sometime it's called 'intisari'
64.10                                % or 'ikhtisar')
64.11   \def\bibname{Bibliografi}%
64.12   \def\chaptername{Bab}%
64.13   \def\appendixname{Lampiran}%
64.14   \def\contentsname{Daftar Isi}%
64.15   \def\listfigurename{Daftar Gambar}%
64.16   \def\listtablename{Daftar Tabel}%
64.17   \def\indexname{Indeks}%
64.18   \def\figurename{Gambar}%
64.19   \def\tablename{Tabel}%
64.20   \def\partname{Bagian}%
64.21 % Subject: Subyek
64.22 % From: Dari
64.23   \def\enclname{Lampiran}%
64.24   \def\ccname{cc}%
64.25   \def\headtoname{Kepada}%
64.26   \def\pagename{Halaman}%
64.27 % Notes (Endnotes): Catatan
64.28   \def\seename{lihat}%
64.29   \def\alsoname{lihat juga}%
64.30   \def\proofname{Bukti}%
64.31   \def\glossaryname{Daftar Istilah}%
64.32 }
```

---

<sup>74</sup>The file described in this section has version number v1.0i and was last revised on 2005/03/29.

`\datebahasa` The macro `\datebahasa` redefines the command `\today` to produce Bahasa dates.

```
64.33 \def\datebahasa{%
64.34   \def\today{\number\day~\ifcase\month\or
64.35     Januari\or Pebruari\or Maret\or April\or Mei\or Juni\or
64.36     Juli\or Agustus\or September\or Oktober\or Nopember\or Desember\fi
64.37     \space \number\year}}
```

`\extrasbahasa` The macro `\extrasbahasa` will perform all the extra definitions needed for the Bahasa language. The macro `\extrasbahasa` is used to cancel the actions of `\extrasbahasa`. For the moment these macros are empty but they are defined for compatibility with the other language definition files.

```
64.38 \addto\extrasbahasa{}
64.39 \addto\noextrasbahasa{}
```

`\bahasahyphenmins` The bahasa hyphenation patterns should be used with `\lefthyphenmin` set to 2 and `\righthyphenmin` set to 2.

```
64.40 \providehyphenmins{\CurrentOption}{\tw@\tw@}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
64.41 \ldf@finish{bahasa}
64.42 \code
```

## 65 Not renaming hyphen.tex

As Don Knuth has declared that the filename `hyphen.tex` may only be used to designate *his* version of the american English hyphenation patterns, a new solution has to be found in order to be able to load hyphenation patterns for other languages in a plain-based T<sub>E</sub>X-format. When asked he responded:

That file name is "sacred", and if anybody changes it they will cause severe upward/downward compatibility headaches.

People can have a file `locallyhyphen.tex` or whatever they like, but they mustn't diddle with `hyphen.tex` (or `plain.tex` except to preload additional fonts).

The files `bplain.tex` and `blplain.tex` can be used as replacement wrappers around `plain.tex` and `lplain.tex` to achieve the desired effect, based on the `babel` package. If you load each of them with `iniTEX`, you will get a file called either `bplain.fmt` or `blplain.fmt`, which you can use as replacements for `plain.fmt` and `lplain.fmt`.

As these files are going to be read as the first thing `iniTEX` sees, we need to set some category codes just to be able to change the definition of `\input`

```
65.1 <(*bplain | blplain)>
65.2 \catcode'\{=1 % left brace is begin-group character
65.3 \catcode'\}=2 % right brace is end-group character
65.4 \catcode'\#=6 % hash mark is macro parameter character
```

Now let's see if a file called `hyphen.cfg` can be found somewhere on T<sub>E</sub>X's input path by trying to open it for reading...

```
65.5 \openin 0 hyphen.cfg
```

If the file wasn't found the following test turns out true.

```
65.6 \ifeof0
65.7 \else
```

When `hyphen.cfg` could be opened we make sure that *it* will be read instead of the file `hyphen.tex` which should (according to Don Knuth's ruling) contain the american English hyphenation patterns and nothing else.

We do this by first saving the original meaning of `\input` (and I use a one letter control sequence for that so as not to waste multi-letter control sequence on this in the format).

```
65.8 \let\input
```

Then `\input` is defined to forget about its argument and load `hyphen.cfg` instead.

```
65.9 \def\input #1 {%
65.10 \let\input\input
65.11 \input hyphen.cfg
```

Once that's done the original meaning of `\input` can be restored and the definition of `\input` can be forgotten.

```
65.12 \let\input\undefined
65.13 }
65.14 \fi
65.15 </bplain | blplain>
```

Now that we have made sure that `hyphen.cfg` will be loaded at the right moment it is time to load `plain.tex`.

```
65.16 <bplain>\a plain.tex
65.17 <bplain>\a lplain.tex
```

Finally we change the contents of `\fmtname` to indicate that this is *not* the plain format, but a format based on plain with the `babel` package preloaded.

```
65.18 <bplain>\def\fmtname{babel-plain}
65.19 <bplain>\def\fmtname{babel-lplain}
```

When you are using a different format, based on `plain.tex` you can make a copy of `blplain.tex`, rename it and replace `plain.tex` with the name of your format file.

## 66 Support for formats based on PLAIN<sub>T</sub><sub>E</sub><sub>X</sub>

The following code duplicates or emulates parts of L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> that are needed for `babel`.

```
66.1 <*code>
66.2 \ifx\adddialect\@undefined
```

When `\adddialect` is still undefined we are making a format. In that case only the first part of this file is needed.

```
66.3 \def\@empty{}
```

We need to define `\loadlocalcfg` for plain users as the L<sup>A</sup>T<sub>E</sub>X definition uses `\InputIfFileExists`.

```
66.4 \def\loadlocalcfg#1{%
66.5 \openin0#1.cfg
66.6 \ifeof0
66.7 \closein0
66.8 \else
66.9 \closein0
66.10 {\immediate\write16{*****}%
66.11 \immediate\write16{* Local config file #1.cfg used}%
66.12 \immediate\write16{*}%
66.13 }
66.14 \input #1.cfg\relax
66.15 \fi
```

We have to execute `\@endofldf` in this case

```
66.16 \@endofldf
66.17 }
```

We want to add a message to the message L<sup>A</sup>T<sub>E</sub>X 2.09 puts in the `\everyjob` register. This could be done by the following code:

```
\let\orgeveryjob\everyjob
\def\everyjob#1{%
\orgeveryjob{#1}%
\orgeveryjob\expandafter{\the\orgeveryjob\immediate\write16{%
hyphenation patterns for \the\loaded@patterns loaded.}}%
\let\everyjob\orgeveryjob\let\orgeveryjob\@undefined}
```



The code above redefines the control sequence `\everyjob` in order to be able to add something to the current contents of the register. This is necessary because the processing of hyphenation patterns happens long before  $\text{\LaTeX}$  fills the register.

There are some problems with this approach though.

- When someone wants to use several hyphenation patterns with  $\text{\LaTeX}$  the above scheme won't work. The reason is that  $\text{\LaTeX}$  overwrites the contents of the `\everyjob` register with its own message.
- Plain  $\text{\TeX}$  does not use the `\everyjob` register so the message would not be displayed.

To circumvent this a 'dirty trick' can be used. As this code is only processed when creating a new format file there is one command that is sure to be used, `\dump`. Therefore the original `\dump` is saved in `\orig@dump` and a new definition is supplied.

```
66.18 \let\orig@dump=\dump
66.19 \def\dump{%
```

To make sure that  $\text{\LaTeX}$  2.09 executes the `\@begindocumenthook` we would want to alter `\begin{document}`, but as this done too often already, we add the new code at the front of `\@preamblecmds`. But we can only do that after it has been defined, so we add this piece of code to `\dump`.

```
66.20 \ifx\@ztryfc\undefined
66.21 \else
66.22 \toks0=\expandafter{\@preamblecmds}
66.23 \edef\@preamblecmds{\noexpand\@begindocumenthook\the\toks0}
66.24 \def\@begindocumenthook{}
66.25 \fi
```

This new definition starts by adding an instruction to write a message on the terminal and in the transcript file to inform the user of the preloaded hyphenation patterns.

```
66.26 \everyjob\expandafter{\the\everyjob%
66.27 \immediate\write16{\the\toks8 loaded.}}%
```

Then everything is restored to the old situation and the format is dumped.

```
66.28 \let\dump\orig@dump\let\orig@dump\@undefined\dump}
66.29 \expandafter\endinput
66.30 \fi
```

The rest of this file is not processed by  $\text{\LaTeX}$  but during the normal document run. A number of  $\text{\LaTeX}$  macro's that are needed later on.

```
66.31 \long\def\@firstofone#1{#1}
66.32 \long\def\@firstoftwo#1#2{#1}
66.33 \long\def\@secondoftwo#1#2{#2}
66.34 \def\@ifstar#1{\@ifnextchar *{\@firstoftwo{#1}}}
66.35 \def\@star@or@long#1{%
66.36 \@ifstar
66.37 {\let\l@ngrel@x\relax#1}%
66.38 {\let\l@ngrel@x\long#1}}
66.39 \let\l@ngrel@x\relax
66.40 \def\@car#1#2\@nil{#1}
66.41 \def\@cdr#1#2\@nil{#2}
66.42 \let\@typeset@protect\relax
```

```

66.43 \long\def\@gobble#1{}
66.44 \edef\@backslashchar{\expandafter\@gobble\string\\}
66.45 \def\strip@prefix#1>{}
66.46 \def\g@addto@macro#1#2{%
66.47     \toks@\expandafter{#1#2}%
66.48     \xdef#1{\the\toks@}}
66.49 \def\@namedef#1{\expandafter\def\csname #1\endcsname}
66.50 \def\@ifundefined#1{%
66.51     \expandafter\ifx\csname#1\endcsname\relax
66.52     \expandafter\@firstoftwo
66.53     \else
66.54     \expandafter\@secondoftwo
66.55     \fi}

```

L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> has the command `\@onlypreamble` which adds commands to a list of commands that are no longer needed after `\begin{document}`.

```

66.56 \ifx\@preamblecmds\@undefined
66.57     \def\@preamblecmds{}
66.58 \fi
66.59 \def\@onlypreamble#1{%
66.60     \expandafter\gdef\expandafter\@preamblecmds\expandafter{%
66.61         \@preamblecmds\do#1}}
66.62 \@onlypreamble\@onlypreamble

```

Mimick L<sup>A</sup>T<sub>E</sub>X's `\AtBeginDocument`; for this to work the user needs to add `\begin{document}` to his file.

```

66.63 \def\begin{document}{%
66.64     \@begin{document}hook
66.65     \global\let\@begin{document}hook\@undefined
66.66     \def\do##1{\global\let ##1\@undefined}%
66.67     \@preamblecmds
66.68     \global\let\do\noexpand
66.69 }

66.70 \ifx\@begin{document}hook\@undefined
66.71     \def\@begin{document}hook{}
66.72 \fi
66.73 \@onlypreamble\@begin{document}hook
66.74 \def\AtBeginDocument{\g@addto@macro\@begin{document}hook}

```

We also have to mimick L<sup>A</sup>T<sub>E</sub>X's `\AtEndOfPackage`. Our replacement macro is much simpler; it stores its argument in `\@endoflfd`.

```

66.75 \def\AtEndOfPackage#1{\g@addto@macro\@endoflfd{#1}}
66.76 \@onlypreamble\AtEndOfPackage
66.77 \def\@endoflfd{}
66.78 \@onlypreamble\@endoflfd

```

L<sup>A</sup>T<sub>E</sub>X needs to be able to switch off writing to its auxiliary files; plain doesn't have them by default.

```

66.79 \ifx\if@filesw\@undefined
66.80     \expandafter\let\csname if@filesw\expandafter\endcsname
66.81         \csname iffalse\endcsname
66.82 \fi

```

Mimick L<sup>A</sup>T<sub>E</sub>X's commands to define control sequences.

```

66.83 \def\newcommand{\@star@or@long\new@command}

```

```

66.84 \def\new@command#1{%
66.85   \@testopt{\@newcommand#1}0}
66.86 \def\@newcommand#1[#2]{%
66.87   \@ifnextchar [{\@xargdef#1[#2]}%
66.88     {\@argdef#1[#2]}}
66.89 \long\def\@argdef#1[#2]#3{%
66.90   \@yargdef#1\@ne{#2}{#3}}
66.91 \long\def\@xargdef#1[#2][#3]#4{%
66.92   \expandafter\def\expandafter#1\expandafter{%
66.93     \expandafter\@protected@testopt\expandafter #1%
66.94     \csname\string#1\expandafter\endcsname{#3}}%
66.95   \expandafter\@yargdef \csname\string#1\endcsname
66.96   \tw@{#2}{#4}}
66.97 \long\def\@yargdef#1#2#3{%
66.98   \@tempcnta#3\relax
66.99   \advance \@tempcnta \@ne
67.00   \let\@hash@\relax
67.01   \edef\reserved@a{\ifx#2\tw@ [\@hash@1]\fi}%
67.02   \@tempcntb #2%
67.03   \@whilenum \@tempcntb < \@tempcnta
67.04   \do{%
67.05     \edef\reserved@a{\reserved@a\@hash@\the\@tempcntb}%
67.06     \advance\@tempcntb \@ne}%
67.07   \let\@hash@##%
67.08   \l@ngrel@x\expandafter\def\expandafter#1\reserved@a}
67.09 \let\providecommand\newcommand

67.10 \def\DeclareRobustCommand{\@star@or@long\declare@robustcommand}
67.11 \def\declare@robustcommand#1{%
67.12   \edef\reserved@a{\string#1}%
67.13   \def\reserved@b{#1}%
67.14   \edef\reserved@b{\expandafter\strip@prefix\meaning\reserved@b}%
67.15   \edef#1{%
67.16     \ifx\reserved@a\reserved@b
67.17       \noexpand\x@protect
67.18       \noexpand#1%
67.19     \fi
67.20     \noexpand\protect
67.21     \expandafter\noexpand\csname
67.22       \expandafter\@gobble\string#1 \endcsname
67.23   }%
67.24   \expandafter\new@command\csname
67.25     \expandafter\@gobble\string#1 \endcsname
67.26 }
67.27 \def\x@protect#1{%
67.28   \ifx\protect\@typeset@protect\else
67.29     \@x@protect#1%
67.30   \fi
67.31 }
67.32 \def\@x@protect#1\fi#2#3{%
67.33   \fi\protect#1%
67.34 }

```

The following little macro `\in@` is taken from `latex.ltx`; it checks whether its first argument is part of its second argument. It uses the boolean `\in@`; allocating a

new boolean inside conditionally executed code is not possible, hence the construct with the temporary definition of `\bbl@tempa`.

```
66.135 \def\bbl@tempa{\csname newif\endcsname\ifin@}
66.136 \ifx\in@\undefined
66.137   \def\in@#1#2{%
66.138     \def\in@##1#1##2##3\in@{%
66.139       \ifx\in@##2\in@false\else\in@true\fi}%
66.140     \in@##2#1\in@\in@}
66.141 \else
66.142   \let\bbl@tempa\empty
66.143 \fi
66.144 \bbl@tempa
```

L<sup>A</sup>T<sub>E</sub>X has a macro to check whether a certain package was loaded with specific options. The command has two extra arguments which are code to be executed in either the true or false case. This is used to detect whether the document needs one of the accents to be activated (`activegrave` and `activeacute`). For plain T<sub>E</sub>X we assume that the user wants them to be active by default. Therefore the only thing we do is execute the third argument (the code for the true case).

```
66.145 \def\@ifpackagewith#1#2#3#4{%
66.146   #3}
```

The L<sup>A</sup>T<sub>E</sub>X macro `\@ifl@aded` checks whether a file was loaded. This functionality is not needed for plain T<sub>E</sub>X but we need the macro to be defined as a no-op.

```
66.147 \def\@ifl@aded#1#2#3#4{}
```

For the following code we need to make sure that the commands `\newcommand` and `\providecommand` exist with some sensible definition. They are not fully equivalent to their L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> versions; just enough to make things work in plain T<sub>E</sub>X environments.

```
66.148 \ifx\@tempcnta\undefined
66.149   \csname newcount\endcsname\@tempcnta\relax
66.150 \fi
66.151 \ifx\@tempcntb\undefined
66.152   \csname newcount\endcsname\@tempcntb\relax
66.153 \fi
```

To prevent wasting two counters in L<sup>A</sup>T<sub>E</sub>X 2.09 (because counters with the same name are allocated later by it) we reset the counter that holds the next free counter (`\count10`).

```
66.154 \ifx\bye\undefined
66.155   \advance\count10 by -2\relax
66.156 \fi
66.157 \ifx\@ifnextchar\undefined
66.158   \def\@ifnextchar#1#2#3{%
66.159     \let\reserved@d=#1%
66.160     \def\reserved@a{#2}\def\reserved@b{#3}%
66.161     \futurelet\@let@token\@ifnch}
66.162   \def\@ifnch{%
66.163     \ifx\@let@token\@sptoken
66.164       \let\reserved@c\@xifnch
66.165     \else
66.166       \ifx\@let@token\reserved@d
66.167         \let\reserved@c\reserved@a
```

```

66.168      \else
66.169      \let\reserved@c\reserved@b
66.170      \fi
66.171  \fi
66.172  \reserved@c}
66.173  \def\:{\let\@sptoken= } \: % this makes \@sptoken a space token
66.174  \def\:{\@xifnch} \expandafter\def\:{\futurelet\@let@token\@ifnch}
66.175 \fi
66.176 \def\@testopt#1#2{%
66.177   \@ifnextchar[#{#1}{#1[#2]}}
66.178 \def\@protected@testopt#1{%
66.179   \ifx\protect\@typeset@protect
66.180     \expandafter\@testopt
66.181   \else
66.182     \@x@protect#1%
66.183   \fi}
66.184 \long\def\@whilenum#1\do #2{\ifnum #1\relax #2\relax\@iwhilenum{#1\relax
66.185   #2\relax}\fi}
66.186 \long\def\@iwhilenum#1{\ifnum #1\expandafter\@iwhilenum
66.187   \else\expandafter\@gobble\fi{#1}}

```

Code from ltoutenc.dtx, adapted for use in the plain  $\mathrm{T}_{\mathrm{E}}\mathrm{X}$  environment.

```

66.188 \def\DeclareTextCommand{%
66.189   \@dec@text@cmd\providecommand
66.190 }
66.191 \def\ProvideTextCommand{%
66.192   \@dec@text@cmd\providecommand
66.193 }
66.194 \def\DeclareTextSymbol#1#2#3{%
66.195   \@dec@text@cmd\chardef#1{#2}#3\relax
66.196 }
66.197 \def\@dec@text@cmd#1#2#3{%
66.198   \expandafter\def\expandafter#2%
66.199     \expandafter{%
66.200       \csname#3-cmd\expandafter\endcsname
66.201       \expandafter#2%
66.202       \csname#3\string#2\endcsname
66.203     }%
66.204 %   \let\@ifdefinable\@rc@ifdefinable
66.205   \expandafter#1\csname#3\string#2\endcsname
66.206 }
66.207 \def\@current@cmd#1{%
66.208   \ifx\protect\@typeset@protect\else
66.209     \noexpand#1\expandafter\@gobble
66.210   \fi
66.211 }
66.212 \def\@changed@cmd#1#2{%
66.213   \ifx\protect\@typeset@protect
66.214     \expandafter\ifx\csname\cf@encoding\string#1\endcsname\relax
66.215       \expandafter\ifx\csname ?\string#1\endcsname\relax
66.216         \expandafter\def\csname ?\string#1\endcsname{%
66.217           \@changed@x@err{#1}%
66.218         }%
66.219       \fi
66.220     \global\expandafter\let

```

```

66.221         \csname\cf@encoding \string#1\expandafter\endcsname
66.222         \csname ?\string#1\endcsname
66.223     \fi
66.224         \csname\cf@encoding\string#1%
66.225         \expandafter\endcsname
66.226     \else
66.227         \noexpand#1%
66.228     \fi
66.229 }
66.230 \def\@changed@x@err#1{%
66.231     \errhelp{Your command will be ignored, type <return> to proceed}%
66.232     \errmessage{Command \protect#1 undefined in encoding \cf@encoding}}
66.233 \def\DeclareTextCommandDefault#1{%
66.234     \DeclareTextCommand#1?%
66.235 }
66.236 \def\ProvideTextCommandDefault#1{%
66.237     \ProvideTextCommand#1?%
66.238 }
66.239 \expandafter\let\csname OT1-cmd\endcsname\@current@cmd
66.240 \expandafter\let\csname?-cmd\endcsname\@changed@cmd
66.241 \def\DeclareTextAccent#1#2#3{%
66.242     \DeclareTextCommand#1{#2}[1]{\accent#3 ##1}
66.243 }
66.244 \def\DeclareTextCompositeCommand#1#2#3#4{%
66.245     \expandafter\let\expandafter\reserved@a\csname#2\string#1\endcsname
66.246     \edef\reserved@b{\string##1}%
66.247     \edef\reserved@c{%
66.248         \expandafter\@strip@args\meaning\reserved@a:-\@strip@args}%
66.249     \ifx\reserved@b\reserved@c
66.250         \expandafter\expandafter\expandafter\ifx
66.251             \expandafter\@car\reserved@a\relax\relax\@nil
66.252             \@text@composite
66.253         \else
66.254             \edef\reserved@b##1{%
66.255                 \def\expandafter\noexpand
66.256                     \csname#2\string#1\endcsname####1{%
66.257                     \noexpand\@text@composite
66.258                         \expandafter\noexpand\csname#2\string#1\endcsname
66.259                         ####1\noexpand\@empty\noexpand\@text@composite
66.260                         {##1}%
66.261                     }%
66.262                 }%
66.263             \expandafter\reserved@b\expandafter{\reserved@a{##1}}%
66.264         \fi
66.265         \expandafter\def\csname\expandafter\string\csname
66.266             #2\endcsname\string#1-\string#3\endcsname{#4}
66.267     \else
66.268         \errhelp{Your command will be ignored, type <return> to proceed}%
66.269         \errmessage{\string\DeclareTextCompositeCommand\space used on
66.270             inappropriate command \protect#1}
66.271     \fi
66.272 }
66.273 \def\@text@composite#1#2#3\@text@composite{%
66.274     \expandafter\@text@composite@x

```

```

66.275      \csname\string#1-\string#2\endcsname
66.276 }
66.277 \def\@text@composite#1#2{%
66.278     \ifx#1\relax
66.279         #2%
66.280     \else
66.281         #1%
66.282     \fi
66.283 }
66.284 %
66.285 \def\@strip@args#1:#2-#3\@strip@args{#2}
66.286 \def\DeclareTextComposite#1#2#3#4{%
66.287     \def\reserved@a{\DeclareTextCompositeCommand#1{#2}{#3}}%
66.288     \bgroup
66.289         \lccode'\@=#4%
66.290         \lowercase{%
66.291     \egroup
66.292     \reserved@a \@%
66.293 }%
66.294 }
66.295 %
66.296 \def\UseTextSymbol#1#2{%
66.297 %     \let\@curr@enc\cf@encoding
66.298 %     \@use@text@encoding{#1}%
66.299 %     #2%
66.300 %     \@use@text@encoding\@curr@enc
66.301 }
66.302 \def\UseTextAccent#1#2#3{%
66.303 %     \let\@curr@enc\cf@encoding
66.304 %     \@use@text@encoding{#1}%
66.305 %     #2{\@use@text@encoding\@curr@enc\selectfont#3}%
66.306 %     \@use@text@encoding\@curr@enc
66.307 }
66.308 \def\@use@text@encoding#1{%
66.309 %     \edef\f@encoding{#1}%
66.310 %     \xdef\font@name{%
66.311 %         \csname\curr@fontshape/\f@size\endcsname
66.312 %     }%
66.313 %     \pickup@font
66.314 %     \font@name
66.315 %     \@@enc@update
66.316 }
66.317 \def\DeclareTextSymbolDefault#1#2{%
66.318     \DeclareTextCommandDefault#1{\UseTextSymbol{#2}#1}%
66.319 }
66.320 \def\DeclareTextAccentDefault#1#2{%
66.321     \DeclareTextCommandDefault#1{\UseTextAccent{#2}#1}%
66.322 }
66.323 \def\cf@encoding{OT1}

```

Currently we only use the  $\text{\LaTeX} 2_{\epsilon}$  method for accents for those that are known to be made active in *some* language definition file.

```

66.324 \DeclareTextAccent{"}{OT1}{127}
66.325 \DeclareTextAccent{'}{OT1}{19}

```

```

66.326 \DeclareTextAccent{\~}{OT1}{94}
66.327 \DeclareTextAccent{\'}{OT1}{18}
66.328 \DeclareTextAccent{\~}{OT1}{126}

```

The following control sequences are used in `babel.def` but are not defined for PLAIN  $\text{\TeX}$ .

```

66.329 \DeclareTextSymbol{\textquotedblleft}{OT1}{92}
66.330 \DeclareTextSymbol{\textquotedblright}{OT1}{'\'}
66.331 \DeclareTextSymbol{\textquoteleft}{OT1}{'\'}
66.332 \DeclareTextSymbol{\textquoteright}{OT1}{'\'}
66.333 \DeclareTextSymbol{\i}{OT1}{16}
66.334 \DeclareTextSymbol{\ss}{OT1}{25}

```

For a couple of languages we need the  $\text{\LaTeX}$ -control sequence `\scriptsize` to be available. Because plain  $\text{\TeX}$  doesn't have such a sophisticated font mechanism as  $\text{\LaTeX}$  has, we just `\let` it to `\sevenrm`.

```

66.335 \ifx\scriptsize\@undefined
66.336   \let\scriptsize\sevenrm
66.337 \fi
66.338 \</code>

```



# Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

Symbols		
\- . . . . .	<u>19.123</u> ,	\@nopatterns . . . <u>12.249</u>
<u>34.110</u> ,	<u>36.144</u> ,	\@notshorthand . . <u>12.638</u>
<u>37.88</u> ,	<u>43.92</u> ,	\@number . . . . . <u>60.317</u>
<u>45.63</u>		\@opargbegintheorem
\@az . . . . .	<u>46.493</u>	. . . <u>46.147</u> , <u>60.826</u>
\@az@string . . .	<u>46.457</u>	\@outputdblcol . . <u>60.597</u>
\@azc . . . . .	<u>46.440</u>	\@part . . . <u>46.192</u> , <u>60.467</u>
\@selectlanguage	<u>60.267</u>	\@roman . . . . . <u>60.326</u>
\@vpageref . . . .	<u>12.1321</u>	\@schapter . . . . <u>60.839</u>
\@Alph . . . . .	<u>60.102</u>	\@secntformat . . <u>46.96</u>
\@Alph@bul . . . .	<u>55.254</u>	\@sect . . . . <u>46.99</u> , <u>60.510</u>
\@Alphfinal . . . .	<u>60.102</u>	\@ssect . . . . . <u>46.133</u>
\@Roman . . . . .	<u>60.326</u>	\@tableofcontents <u>60.381</u>
\@acute . . . <u>36.77</u> ,	<u>37.58</u>	\@testdef . . . . <u>12.1211</u>
\@alph . . . . .	<u>60.102</u>	\@textcolor . . . . <u>60.782</u>
\@alph@bul . . . .	<u>55.273</u>	\@tilde . . . <u>37.58</u> , <u>38.52</u>
\@arabic . . . . .	<u>60.326</u>	\@torl . . . . . <u>60.246</u>
\@az . . . . .	<u>46.377</u>	\@trema . . . . . <u>19.102</u>
\@azc . . . . .	<u>46.439</u>	\@umlaut . . . . .
\@azp . . . . .	<u>46.423</u>	<u>36.77</u> , <u>37.58</u> , <u>38.52</u>
\@azr . . . . .	<u>46.410</u>	\@verbatim . . . . <u>60.946</u>
\@begintheorem . .	<u>46.147</u>	\@xnthm . . . . . <u>60.826</u>
\@bibitem . . . . .	<u>12.1263</u>	
\@biblabel . . . .	<u>60.895</u>	<b>A</b>
\@brackets . . . .	<u>60.315</u>	\AbsoluteFromGregorian
\@caption . <u>46.81</u> ,	<u>60.552</u>	. . . . . <u>60.1157</u>
\@chapter . . <u>46.212</u> ,	<u>46.286</u> ,	\AbsoluteFromHebrew
<u>60.839</u>	<u>60.895</u>	. . . . . <u>60.1321</u>
\@cite . . . . .	<u>60.895</u>	\Acite . . . . . <u>46.432</u> , <u>237</u>
\@citex . . . . .	<u>12.1235</u>	\acite . . . . . <u>46.431</u>
\@dottedtocline	<u>60.430</u>	\active@prefix . . <u>12.571</u>
\@ensure@L . . . .	<u>60.308</u>	\adddialect . . . <u>11</u> , <u>12.57</u>
\@ensure@R . . . .	<u>60.308</u>	\addlanguage . . <u>11</u> , <u>12.45</u>
\@fromrl . . . . .	<u>60.255</u>	\AddThinSpaceBeforeFootnote
\@grave . . . . .	<u>36.77</u>	. . . . . <u>29.378</u>
\@hebrew . . . . .	<u>60.92</u>	\addto . . . . . <u>12.811</u> , <u>14</u>
\@hebrew@numeral	<u>60.141</u>	\afrikaanshyphenmins
\@latin . . . . .	<u>60.317</u>	. . . . . <u>19.101</u>
\@lbibitem . . . .	<u>60.895</u>	\aliasshorthand <u>5</u> , <u>12.625</u>
\@listoffigures	<u>60.381</u>	\allowhyphens <u>12.823</u> , <u>14</u>
\@listoftables . .	<u>60.381</u>	\Alph . . . . . <u>60.102</u>
\@makecaption . . . .		\alph . . . . . <u>60.102</u>
. . . . <u>46.69</u> ,	<u>60.949</u>	\Alphfinal . . . . <u>60.102</u>
\@makechapterhead .		\anw@false . . . . <u>27.84</u>
. . . <u>46.235</u> ,	<u>46.305</u>	\anw@print . . . . <u>27.84</u>
\@newl@bel . . . .	<u>12.1198</u>	\anw@true . . . . . <u>27.84</u>
\@nolanerr . . . .	<u>12.249</u>	\Aob . . . . . <u>50.51</u>
\@noopterr . . . .	<u>12.249</u>	\aob . . . . . <u>50.51</u>
		\ap . . . . . <u>30.82</u>
		\Apageref . . <u>46.419</u> , <u>237</u>
		\apageref . . . . . <u>46.418</u>
		\appendix <u>60.129</u> , <u>60.878</u>
		\arabicnorl . . . . <u>60.329</u>
		\Aref . . . . . <u>46.404</u> , <u>236</u>
		\aref . . . . . <u>46.403</u>
		\Asbuk . . . <u>54.340</u> , <u>56.319</u>
		\asbuk . . . <u>54.347</u> , <u>56.326</u>
		\author . . . . . <u>60.815</u>
		\AutoSpaceBeforeFDP
		. . . . . <u>29.222</u> ,
		<u>54.268</u> ,
		<u>56.247</u>
		\Az . . . . . <u>46.375</u> , <u>236</u>
		\az . . . . . <u>46.374</u>
		\az@ . . . . . <u>46.376</u>
		\Azc . . . . . <u>46.434</u> , <u>237</u>
		\azc . . . . . <u>46.433</u>
		\azc@ . . . . . <u>46.435</u>
		\azc@@ . . . . . <u>46.436</u>
		\Azp . . . . . <u>46.421</u> , <u>237</u>
		\azp . . . . . <u>46.420</u>
		\azp@ . . . . . <u>46.422</u>
		\Azr . . . . . <u>46.406</u> , <u>236</u>
		\azr . . . . . <u>46.405</u>
		\azr@ . . . . . <u>46.407</u>
		\azr@@ . . . . . <u>46.408</u>
		\azr@@@ . . . . . <u>46.409</u>
		<b>B</b>
		\babel@beginsave <u>12.786</u>
		\babel@save . . <u>12.789</u> , <u>13</u>
		\babel@savecnt . <u>12.786</u>
		\babel@savevariable
		. . . . . <u>12.798</u> , <u>13</u>
		\bahasahyphenmins <u>64.40</u>
		\basquehyphenmins <u>38.49</u>
		\bbl@activate <u>12.583</u> , <u>13</u>
		\bbl@add@list . . <u>12.754</u>
		\bbl@add@special . .
		. . . . . <u>12.389</u> , <u>13</u>
		\bbl@afterelse . <u>12.410</u>
		\bbl@afterfi . . . <u>12.410</u>
		\bbl@bibcite . . . <u>12.1254</u>
		\bbl@cite@choice <u>12.1256</u>
		\bbl@clear@ttrbts <u>12.775</u>
		\bbl@deactivate . . .
		. . . . . <u>12.589</u> , <u>13</u>

<code>\bbl@declare@ttribute</code>	<code>\bbl@switch@sh@off</code>	<code>\captionssynorsk</code>
..... 12, <a href="#">12.736</a>	..... <a href="#">12.659</a>	<a href="#">42.35</a>
<code>\bbl@disc</code>	<code>\bbl@switch@sh@on</code>	<code>\captionsspolish</code>
..... <a href="#">12.835</a>	<a href="#">12.660</a>	.. <a href="#">50.6</a>
<code>\bbl@firstcs</code>	<code>\bbl@test@token</code>	<code>\captionsspolutonikogreek</code>
... <a href="#">12.595</a>	<a href="#">12.417</a>	..... <a href="#">27.55</a>
<code>\bbl@frenchguillemets</code>	<code>\bcaption</code>	<code>\captionssportuges</code>
..... <a href="#">29.243</a>	..... <a href="#">60.965</a>	<a href="#">34.34</a>
<code>\bbl@frenchindent</code>	<code>\bchapter</code>	<code>\captionssromanian</code>
.	..... <a href="#">60.957</a>	<a href="#">39.6</a>
.... <a href="#">29.367</a> , <a href="#">51.58</a>	<code>\bchaptermn</code>	<code>\captionssrussian</code>
<code>\bbl@frenchitemize</code>	..... <a href="#">60.969</a>	<a href="#">54.121</a>
.	<code>\bibcite</code>	<code>\captionsssamin</code>
..... <a href="#">29.311</a>	..... <a href="#">12.1251</a>	... <a href="#">44.7</a>
<code>\bbl@frenchlistspacing</code>	<code>\bpart</code>	<code>\captionssscottish</code>
..... <a href="#">29.285</a>	..... <a href="#">60.955</a>	<a href="#">26.6</a>
<code>\bbl@frenchspacing</code>	<code>\breton@sh@:</code>	<code>\captionssserbian</code>
.	... <a href="#">23.59</a>	.. <a href="#">51.6</a>
..... <a href="#">12.803</a> , <a href="#">14</a>	<code>\breton@sh@;</code>	<code>\captionsslovak</code>
<code>\bbl@get@enc</code>	... <a href="#">23.48</a>	.. <a href="#">52.6</a>
... <a href="#">12.343</a>	<code>\breton@sh@?</code>	<code>\captionsslovene</code>
<code>\bbl@hyph@enc</code>	... <a href="#">23.75</a>	.. <a href="#">53.6</a>
.. <a href="#">12.343</a>	<code>\breton@sh@@</code>	<code>\captionssswedish</code>
<code>\bbl@ifattributeset</code>	... <a href="#">23.59</a>	.. <a href="#">43.6</a>
..... <a href="#">12.740</a>	<code>\bsc</code>	<code>\captionsturkish</code>
<code>\bbl@ifknown@ttrib</code>	..... <a href="#">29.596</a>	<a href="#">59.6</a>
.	<code>\bsection</code>	<code>\captionssukrainian</code>
..... <a href="#">12.765</a>	..... <a href="#">60.959</a>	.
<code>\bbl@language@stack</code>	<code>\bsectionnn</code>	..... <a href="#">56.121</a>
..... <a href="#">12.80</a>	... <a href="#">60.971</a>	<code>\captionssusorbian</code>
<code>\bbl@main@language</code>	<code>\bsubsection</code>	<a href="#">58.6</a>
.	... <a href="#">60.961</a>	<code>\captionsswelsh</code>
..... <a href="#">12.234</a>	<code>\bsubsubsection</code>	... <a href="#">24.7</a>
<code>\bbl@nonfrenchguillemets</code>	<a href="#">60.963</a>	<code>\catalanhypenmins</code>
..... <a href="#">29.243</a>		<a href="#">36.7</a>
<code>\bbl@nonfrenchindent</code>		<code>\cdash</code>
.... <a href="#">29.367</a> , <a href="#">51.58</a>		..... <a href="#">54.311</a> ,
<code>\bbl@nonfrenchitemize</code>		<a href="#">55.216</a> , <a href="#">56.290</a>
..... <a href="#">29.311</a>		<code>\CheckIfDivisible</code>
<code>\bbl@nonfrenchlistspacing</code>		.
..... <a href="#">29.285</a>		..... <a href="#">60.1084</a>
<code>\bbl@nonfrenchspacing</code>		<code>\CheckLeapHebrewYear</code>
..... <a href="#">12.803</a> , <a href="#">14</a>		..... <a href="#">60.1168</a>
<code>\bbl@pop@lang</code>		<code>\ck</code>
... <a href="#">12.84</a>		..... <a href="#">21.113</a> , <a href="#">58.95</a>
<code>\bbl@pop@language</code>		<code>\cyrdash</code>
.		... <a href="#">54.326</a> ,
..... <a href="#">12.80</a> , <a href="#">12.81</a>		<a href="#">55.231</a> , <a href="#">56.305</a>
<code>\bbl@pr@m@s</code>		<code>\CyrillicGuillemets</code>
.... <a href="#">12.677</a>		..... <a href="#">29.243</a>
<code>\bbl@prim@s</code>		<code>\cyrillictext</code>
.... <a href="#">12.677</a>		<a href="#">54.111</a> ,
<code>\bbl@push@language</code>		<a href="#">55.111</a> , <a href="#">56.111</a>
<a href="#">12.81</a>		
<code>\bbl@redefine</code>		
.. <a href="#">12.1173</a>		
<code>\bbl@redefine@long</code>		
.		
..... <a href="#">12.1179</a>		
<code>\bbl@redefineroobust</code>		
..... <a href="#">12.1184</a>		
<code>\bbl@remove@special</code>		
..... <a href="#">12.399</a> , <a href="#">13</a>		
<code>\bbl@restore@actives</code>		
..... <a href="#">12.582</a>		
<code>\bbl@scndcs</code>		
.... <a href="#">12.595</a>		
<code>\bbl@set@language</code>		
<a href="#">12.96</a>		
<code>\bbl@sh@select</code>		
.. <a href="#">12.564</a>		
<code>\bbl@switch@sh</code>		
.. <a href="#">12.648</a>		

<code>\dategalician</code> . . .	<u>37.29</u>	<code>\embox</code> . . . . .	<u>60.313</u>	<code>\extrasnorsk</code> . . . .	<u>42.66</u>
<code>\dategerman</code> . . . .	<u>21.35</u>	<code>\englishhyphenmins</code> .		<code>\extrasnynorsk</code> . .	<u>42.66</u>
<code>\dategreek</code> . . . . .	<u>27.64</u>	. . . . .	<u>20.65, 40.6</u>	<code>\extraspolsish</code> . . .	<u>50.35</u>
<code>\datehebrew</code> . . . . .	<u>60.77</u>	environments:		<code>\extrasportuges</code> .	<u>34.97</u>
<code>\dateicelandic</code> . .	<u>41.48</u>	hyphenrules .	<u>12.173</u>	<code>\extrasromanian</code> .	<u>39.36</u>
<code>\dateinterlingua</code>	<u>18.30</u>	otherlanguage	<u>12.134</u>	<code>\extrasrussian</code> .	<u>54.200</u>
<code>\dateirish</code> . . . . .	<u>25.30</u>	otherlanguage*	<u>12.142</u>	<code>\extrassamin</code> . . . .	<u>44.46</u>
<code>\dateitalian</code> . . . .	<u>30.29</u>	thebibliography		<code>\extrasscottish</code> .	<u>26.37</u>
<code>\datelang</code> . . . . .	<u>12</u>	. . . . .	<u>60.903</u>	<code>\extrasserbian</code> . .	<u>51.34</u>
<code>\datelatin</code> . . . . .	<u>31.39</u>	environments:hyphenrules		<code>\extrasslovak</code> . . .	<u>52.35</u>
<code>\datemagyar</code> . . . .	<u>46.37</u>	hyphenrules . . . . .	<u>5</u>	<code>\extrasslovene</code> . .	<u>53.34</u>
<code>\datengerman</code> . . . .	<u>22.35</u>	environments:otherlanguage		<code>\extrasswedish</code> . .	<u>43.43</u>
<code>\datenorsk</code> . . . . .	<u>42.60</u>	otherlanguage . . . .	<u>4</u>	<code>\extrasturkish</code> . .	<u>59.36</u>
<code>\datepolish</code> . . . . .	<u>50.29</u>	environments:otherlanguage*		<code>\extrasukrainian</code>	<u>56.177</u>
<code>\dateportuges</code> . . .	<u>34.57</u>	otherlanguage* . . .	<u>5</u>	<code>\extrasusorbian</code> .	<u>58.42</u>
<code>\dateromanian</code> . . .	<u>39.30</u>			<code>\extraswelsh</code> . . . .	<u>24.38</u>
<code>\daterussian</code> . . . .	<u>54.185</u>				
<code>\datesamin</code> . . . . .	<u>44.30</u>				
<code>\datescottish</code> . . .	<u>26.29</u>				
<code>\datesdmy</code> . . . . .	<u>43.39</u>	<code>\Eob</code> . . . . .	<u>41.90, 50.51</u>	<b>F</b>	
<code>\dateserbian</code> . . . .	<u>51.29</u>	<code>\eob</code> . . . . .	<u>41.90, 50.51</u>	<code>\Fcolonspace</code> . . .	<u>29.222</u>
<code>\dateslovak</code> . . . . .	<u>52.29</u>	<code>\Esper</code> . . . . .	<u>17.53</u>	<code>\FDP@thinspace</code> . . . .	
<code>\dateslovene</code> . . . .	<u>53.29</u>	<code>\esper</code> . . . . .	<u>17.53</u>	. . . .	<u>54.268, 56.247</u>
<code>\dateswedish</code> . . . .	<u>43.29</u>	<code>\estonianhyphenmins</code>		<code>\FDPoff</code> . .	<u>54.272, 56.251</u>
<code>\datesymd</code> . . . . .	<u>43.36</u>	. . . . .	<u>47.51</u>	<code>\FDPon</code> . . .	<u>54.272, 56.251</u>
<code>\dateturkish</code> . . . .	<u>59.30</u>	<code>\extrasafrikaans</code>	<u>19.93</u>	<code>\fg</code> . . . . .	<u>29.233</u>
<code>\dateukrainian</code> .	<u>56.162</u>	<code>\extrasaustrian</code> .	<u>21.42</u>	<code>\finishhyphenmins</code>	<u>45.66</u>
<code>\datewelsh</code> . . . . .	<u>24.31</u>	<code>\extrasbahasa</code> . . .	<u>64.38</u>	<code>\flq</code> . . . . .	<u>12.943</u>
<code>\DaysInHebrewYear</code> .		<code>\extrasbasque</code> . . .	<u>38.36</u>	<code>\flqq</code> . . . . .	<u>12.953</u>
. . . . .	<u>60.1264</u>	<code>\extrasbreton</code> . . .	<u>23.35</u>	<code>\fnum@figure</code> . . . .	<u>46.63</u>
<code>\DecimalMathComma</code>	<u>29.414</u>	<code>\extrasbulgarian</code>	<u>55.181</u>	<code>\fnum@table</code> . . . . .	<u>46.63</u>
<code>\decimalsep</code> . . . . .		<code>\extrascatalan</code> . .	<u>36.37</u>	<code>\footnoterule</code> . .	<u>60.634</u>
. . . . .	<u>29.429, 41.106</u>	<code>\extrascroatian</code> .	<u>48.34</u>	<code>\foreign@language</code>	<u>12.157</u>
<code>\declare@shorthand</code> .		<code>\extrasczech</code> . . . .	<u>49.35</u>	<code>\FOREIGNLANGUAGE</code>	<u>12.1341</u>
. . . . .	<u>12.597, 13</u>	<code>\extrasdanish</code> . . .	<u>40.35</u>	<code>\foreignlanguage</code> . .	
<code>\defineshorthand</code> . .		<code>\extrasdutch</code> . . . .	<u>19.93</u>	. . . . .	<u>4, 12.148</u>
. . . . .	<u>5, 12.623</u>	<code>\extrasenglish</code> .	<u>20.133</u>	<code>\FormatDate</code> . . . .	<u>60.998</u>
<code>\degres</code> . . . . .	<u>29.629</u>	<code>\extrasesperanto</code>	<u>17.35</u>	<code>\FormatForEnglish</code> .	
<code>\dieresia</code> . . . . .	<u>38.50</u>	<code>\extrasestonian</code> .	<u>47.44</u>	. . . . .	<u>60.1075</u>
<code>\dieresis</code> .	<u>36.74, 37.55</u>	<code>\extrasfinnish</code> . .	<u>45.35</u>	<code>\FormatForHebrew</code>	<u>60.1050</u>
<code>\DisableNikud</code> . .	<u>61.243</u>	<code>\extrasfrench</code> . . .	<u>29.84</u>	<code>\fprimo)</code> . . . . .	<u>29.582</u>
<code>\DJ</code> . . . . .	<u>12.893</u>	<code>\extrasgalician</code> .	<u>37.34</u>	<code>\french@sh@:</code> . .	<u>29.213</u>
<code>\dj</code> . . . . .	<u>12.893</u>	<code>\extrasgerman</code> . . .	<u>21.42</u>	<code>\french@sh@;</code> . .	<u>29.186</u>
<code>\doc@style</code> . . . .	<u>12.1009</u>	<code>\extrasgreek</code> . . . .	<u>27.80</u>	<code>\french@sh@?</code> . .	<u>29.195</u>
<code>\dq</code> <u>21.59, 22.59, 41.54,</u>		<code>\extrashebrew</code> . . .	<u>60.78</u>	<code>\french@sh@@</code> . . .	<u>29.195</u>
<u>42.75, 43.51,</u>		<code>\extrasicelandic</code>	<u>41.18</u>	<code>\FrenchFootnotes</code>	<u>29.378</u>
<u>50.112, 52.49,</u>		<code>\extrasinterlingua</code>	<u>18.36</u>	<code>\FrenchGuillemetsFrom</code>	
<u>54.287, 55.193,</u>		<code>\extrasirish</code> . . . .	<u>25.38</u>	. . . . .	<u>29.235</u>
<u>56.266, 58.51</u>		<code>\extrasitalian</code> . .	<u>30.35</u>	<code>\FrenchLayout</code> . .	<u>29.519</u>
<code>\dutchhyphenmins</code>	<u>19.101</u>	<code>\extraslang</code> . . . . .	<u>12</u>	<code>\fromhebrew</code> . . . .	<u>60.90</u>
		<code>\extraslatin</code> . . . .	<u>31.50</u>	<code>\frq</code> . . . . .	<u>12.943</u>
		<code>\extraslsorbian</code> .	<u>57.50</u>	<code>\frqq</code> . . . . .	<u>12.953</u>
<b>E</b>		<code>\extrasmagyar</code> . . .	<u>46.59</u>	<code>\Frtextellipsis</code>	<u>29.501</u>
<code>\EEob</code> . . . . .	<u>41.90</u>	<code>\extrasnaustrian</code>	<u>22.42</u>	<code>\full</code> . . . . .	<u>361</u>
<code>\eeob</code> . . . . .	<u>41.90</u>	<code>\extrasngerman</code> . .	<u>22.42</u>		

<b>G</b>		
<code>\gentilde</code> . . . . .	47.52	
<code>\gim</code> . . . . .	60.200	
<code>\gim@nomil</code> . . . .	60.151	
<code>\gim@print</code> . . . .	60.193	
<code>\glq</code> . . . . .	12.919	
<code>\glqq</code> . . . . .	12.931	
<code>\gr@c@greek</code> . . . .	27.71	
<code>\gr@ill@value</code> . . .	27.82	
<code>\gr@month</code> . . . . .	27.64	
<code>\gr@num@i</code> . . . . .	27.139	
<code>\gr@num@ii</code> . . . .	27.139	
<code>\gr@num@iii</code> . . . .	27.139	
<code>\gr@num@iv</code> . . . .	27.148	
<code>\gr@num@v</code> . . . . .	27.148	
<code>\gradur</code> . . . . .	41.193	
<code>\greek@Alph</code> . . . .	27.115	
<code>\greek@alph</code> . . . .	27.115	
<code>\greek@amp</code> . . . .	27.135	
<code>\greek@Roman</code> . . .	27.125	
<code>\greek@roman</code> . . .	27.125	
<code>\greek@tilde</code> . . .	27.160	
<code>\greekhyphenmins</code>	27.30	
<code>\Greeknumeral</code>	27.113, 109	
<code>\greeknumeral</code>	27.89, 109	
<code>\greektext</code> . . . .	27.24, 108	
<code>\GregorianDaysInPriorMonths</code>	60.1113	
<code>\GregorianDaysInPriorYears</code>	60.1137	
<code>\grq</code> . . . . .	12.919	
<code>\grqq</code> . . . . .	12.931	
<code>\Grtoday</code> . . . . .	27.76	
<code>\guillemotleft</code> . . .	12.847, 29.233	
<code>\guillemotright</code> . .	12.847, 29.233	
<code>\guilsinglleft</code> . .	12.865	
<code>\guilsinglright</code>	12.865	
<b>H</b>		
<code>\headeven</code> . . . . .	60.637	
<code>\headodd</code> . . . . .	60.637	
<code>\hebdate</code> . . . . .	60.73	
<code>\hebday</code> . . . . .	60.76	
<code>\HeblatexRedefineL</code> .	60.293	
<code>\hebmonth</code> . . . . .	60.61	
<code>\hebr</code> . . . . .	60.200	
<code>\Hebrewdate</code> . . . .	60.985, 361	
<code>\HebrewDayName</code> . .	60.1049	
<code>\HebrewDaysInPriorMonths</code>	60.1274	
<code>\HebrewElapsedDays</code> .	60.1207	
<code>\HebrewElapsedMonths</code>	60.1182	
<code>\hebrewencoding</code> . .	60.7	
<code>\HebrewFromGregorian</code>	60.1331	
<code>\hebrewhyphenmins</code>	60.21	
<code>\HebrewMonthName</code>	60.1025	
<code>\HebrewMonthNameInEnglish</code>	60.1053	
<code>\Hebrewnumeral</code> . .	60.96	
<code>\hebrewnumeral</code> . .	60.96	
<code>\Hebrewnumeralfinal</code>	60.96	
<code>\Hebrewsetreg</code> . . .	60.995	
<code>\hebrewtext</code> . . . .	60.86	
<code>\Hebrewtoday</code>	60.993, 361	
<code>\HebrewYearName</code>	60.1004	
<code>\hhline</code> . . . . .	12.1333	
<code>\hmbbox</code> . . . . .	60.313	
<code>\hodiau</code> . . . . .	17.63	
<code>\hodiaun</code> . . . . .	17.63	
<code>\hun@alph@lehgth</code>	46.453	
<code>\hun@number@lehgth</code> .	46.447	
<code>\hun@tempadef</code> . . .	46.381	
<code>\hunnewlabel</code> . . .	46.539	
<code>\hyphenrules</code> (environ- ment) . . . . .	5, 12.173	
<b>I</b>		
<code>\ieme</code> . . . . .	29.550	
<code>\if@gim@apost</code> . . .	60.94	
<code>\if@gim@final</code> . . .	60.94	
<code>\if@gim@prev</code> . . .	60.193	
<code>\if@rl</code> . . . . .	60.237	
<code>\if@rlmain</code> . . . .	60.238	
<code>\if@safe@actives</code>	12.580	
<code>\if@Two@E</code> . . . . .	29.8, 41.11	
<code>\IfGregorianLeap</code>	60.1095	
<code>\iflanguage</code> . . . .	5, 12.60	
<code>\ifLaTeX</code> . . . . .	29.4	
<code>\ifLaTeXe</code> . . . . .	29.4	
<code>\ifthenelse</code> . . . .	12.1304	
<code>\ifundefined</code> . . .	60.1093	
<code>\IJ</code> . . . . .	12.883	
<code>\ij</code> . . . . .	12.883	
<code>\initiate@active@char</code>	12.410, 13	
<code>\interlinguahyphenmins</code>	18.6	
<code>\irishhyphenmins</code> . .	25.6	
<code>\it@ccap</code> . . . . .	30.94	
<code>\it@cwm</code> . . . . .	30.48, 30.56	
<code>\it@ocap</code> . . . . .	30.94	
<code>\italianhyphenmins</code>	30.34	
<b>L</b>		
<code>\L</code> . . . . .	60.293	
<code>\L.L</code> . . . . .	36.187	
<code>\l.1</code> . . . . .	36.187	
<code>\l@chapter</code> . . . .	60.573	
<code>\l@paragraph</code> . . .	60.591	
<code>\l@part</code> . . . . .	60.450	
<code>\l@section</code> . . . .	60.591	
<code>\l@subparagraph</code>	60.591	
<code>\l@subsection</code> . .	60.591	
<code>\l@subsubsection</code>	60.591	
<code>\label</code> . . . . .	46.519, 60.112	
<code>\labelenumii</code> . . .	60.379	
<code>\langhyphenmins</code> . .	12	
<code>\language</code> . . . . .	12.37	
<code>\language@group</code>	12.613	
<code>\languageattribute</code> .	5, 12.704	
<code>\language@name</code> . . . .	5	
<code>\languageshorthands</code>	5, 12.624	
<code>\last@language</code> . .	12.40	
<code>\LasyGuillemets</code>	29.243	
<code>\LaTeX</code> . . . . .	12.1300, 60.349	
<code>\LaTeXe</code> . . . . .	60.351	
<code>\latinencoding</code>	12.12, 54.7, 55.7, 56.7	
<code>\latinhyphenmins</code>	31.49	
<code>\latintext</code> . . . . .	12.22, 54.111, 55.111, 56.111, 108	
<code>\Lcaron</code> . . . . .	49.46	
<code>\lcaron</code> . . . . .	49.46	
<code>\ldf@finish</code> . . . .	12, 12.225	
<code>\ldf@quit</code> . . . . .	12, 12.219	
<code>\LdfInit</code> . . . . .	12, 12.187	
<code>\Lgem</code> . . . . .	36.147	
<code>\lgem</code> . . . . .	36.147	
<code>\list</code> . . . . .	60.353	
<code>\listoffigures</code> . .	60.424	
<code>\listoftables</code> . . .	60.424	
<code>\loadlocalcfg</code> . . .	12, 13.1	
<code>\lower@umlaut</code> . . .	12.973	
<code>\lrlistoffigures</code>	60.418	
<code>\lrlistoftables</code>	60.418	
<code>\lrrtableofcontents</code> .	60.418	
<code>\ltx@amp</code> . . . . .	27.135	
<code>\LtxSymbCaporali</code>	30.94	

<b>M</b>		
\main@language	12, 12.234	
\make@lr	60.330	
\MakeLowercase	60.817	
\MakeUppercase	60.817	
\markboth	12.1265	
\markright	12.1265	
\mathserbian	51.67	
\mdqoff	21.113, 22.90, 50.159, 54.331, 56.310, 58.95	
\mdqon	21.113, 22.90, 50.159, 54.331, 56.310, 58.95	
<b>N</b>		
\newcheck	47.52	
\newdatelsorbian	57.29	
\newdateusorbian	58.29	
\newlabel	12.1196	
\newtilde	47.52	
\nfss@catcodes	12.1344	
\No	29.582	
\no	29.582	
\NoAutoSpaceBeforeFDP	29.222, 54.268, 56.247	
\nocite	12.1249	
\noextrasafrikaans	19.93	
\noextrasaustrian	21.42	
\noextrasbahasa	64.38	
\noextrasbasque	38.36	
\noextrasbreton	23.35	
\noextrascatalan	36.37	
\noextrascroatian	48.34	
\noextrasczech	49.35	
\noextrasdanish	40.35	
\noextrasdutch	19.93	
\noextrasenglish	20.133	
\noextrasesperanto	17.35	
\noextrasestonian	47.44	
\noextrasfinnish	45.35	
\noextrasfrench	29.84	
\noextrasgalician	37.34	
\noextrasgerman	21.42	
\noextrasgreek	27.80	
\noextrashebrew	60.81	
\noextrasicelandic	41.18	
\noextrasinterlingua	18.36	
\noextrasirish	25.38	
\noextrasitalian	30.35	
\noextraslang	12	
\noextraslatin	31.50	
\noextraslsorbian	57.50	
\noextrasmagyar	46.59	
\noextrasnaustrian	22.42	
\noextrasngerman	22.42	
\noextraspolsish	50.35	
\noextrasportuges	34.97	
\noextrasromanian	39.36	
\noextrassamin	44.46	
\noextrasscottish	26.37	
\noextrasserbian	51.34	
\noextrasslovak	52.35	
\noextrasslovene	53.34	
\noextrasswedish	43.43	
\noextrasturkish	59.36	
\noextraswelsh	24.38	
\nohebrewtext	60.86	
\nombre	29.448	
\norskhyphenmins	42.6	
<b>O</b>		
\og	29.233	
\olddatelsorbian	57.35	
\olddateusorbian	58.35	
\ondatemagyar	46.45	
\ontoday	236	
\Ob	41.90	
\oob	41.90	
\OOb	41.90	
\oob	41.90	
\ord	34.114	
\orda	34.114	
\originalTeX	12.246	
\OT1dqpos	12.699	
otherlanguage (envi-	4, 12.134	
ronment)		
otherlanguage* (envi-	5, 12.142	
ronment)		
<b>P</b>		
\p@enumiii	60.379	
\pageref	12.1231	
\ped	30.82	
\peek@token	12.412	
\PolishGuillemets	29.243	
\polishrz	50.130	
\polishzx	50.130	
\portugeshyphenmins	34.96	
\primo	29.582	
\process@language	12.305	
\process@line	12.283	
\process@synonym	12.290	
\ProsodicMarks	32.19	
\ProsodicMarksOff	32.1	
\ProsodicMarksOn	32.1	
\providehyphenmins	12, 12.182	
\ProvidesLanguage	10.1, 12	
\ps@headings	46.155, 46.253, 46.321, 46.356, 60.637	
\ps@myheadings	60.637	
<b>Q</b>		
\quotedblbase	12.837	
\quotesinglbase	12.842	
<b>R</b>		
\R	60.293	
\ra	34.114	
\raggedleft	60.805	
\raggedright	60.805	
\readconfigfile	12.352	
\ref	12.1231	
\refstepcounter	46.514	
\Remainder	60.1078	
\rl@outputdblcol	60.597	
\rllistoffigures	60.421	
\rllistoftables	60.421	
\rltableofcontents	60.421	
\ro	34.114	
\romandate	31.49	
\russian@sh@:	54.231	
\russian@sh@;	54.231	
\russian@sh@?	54.231	
\russian@sh@@	54.231	
<b>S</b>		
\saminhyphenmins	44.6	
\save@sf@q	12.830, 14	
\selectlanguage	4, 12.70, 60.262	
\set@hyphenmins	12.186	
\set@low@box	12.827, 14	
\set@outputdblcol	60.597	
\sethebrew	60.84	
\SetLatinLigatures	31.61	
\setrlanguage	60.281	
\shorthandoff	5, 12.646	
\shorthandon	5, 12.646	
\skb	50.71	
\slidelabel	60.56	
\sob	41.82, 50.43	
\spb	50.63	
\SS	12.917	
\StandardFootnotes	29.378	

<code>\StandardLayout</code>	<a href="#">29.519</a>	<code>\textfr</code>	<a href="#">62.510</a>	<code>\turkish@sh@=</code>	<a href="#">59.44</a>
<code>\StandardMathComma</code>	<a href="#">29.414</a>	<code>\textgrave</code>	<a href="#">36.74</a>		
<code>\substitutefontfamily</code>	<a href="#">11.99</a> , <a href="#">13</a>	<code>\textgreek</code>	<a href="#">27.27</a> , <a href="#">108</a>	<b>U</b>	
<code>\swedishhyphenmins</code>	<a href="#">43.42</a>	<code>\textjm</code>	<a href="#">62.473</a>	<code>\ukrainian@sh@:</code>	<a href="#">56.210</a>
<code>\system@group</code>	<a href="#">12.613</a>	<code>\textlatin</code>	<a href="#">12.25</a> , <a href="#">54.115</a> , <a href="#">55.115</a> , <a href="#">56.115</a> , <a href="#">108</a>	<code>\ukrainian@sh@;</code>	<a href="#">56.210</a>
<code>\system@sh@:</code>	<a href="#">29.229</a> , <a href="#">54.280</a> , <a href="#">56.259</a>	<code>\textto</code>	<a href="#">62.507</a>	<code>\ukrainian@sh@?</code>	<a href="#">56.210</a>
<code>\system@sh@;</code>	<a href="#">29.229</a> , <a href="#">54.280</a> , <a href="#">56.259</a>	<code>\textol</code>	<a href="#">27.28</a> , <a href="#">108</a>	<code>\ukrainian@sh@@</code>	<a href="#">56.210</a>
<code>\system@sh@?</code>	<a href="#">29.229</a> , <a href="#">54.280</a> , <a href="#">56.259</a>	<code>\textormath</code>	<a href="#">12.607</a>	<code>\umlauthigh</code>	<a href="#">12.963</a>
<code>\system@sh@@</code>	<a href="#">29.229</a> , <a href="#">54.280</a> , <a href="#">56.259</a>	<code>\textopl</code>	<a href="#">50.78</a>	<code>\umlautlow</code>	<a href="#">12.963</a>
<b>T</b>		<code>\textredis</code>	<a href="#">62.511</a>	<code>\underline</code>	<a href="#">60.821</a>
<code>\Tidqpos</code>	<a href="#">12.699</a>	<code>\textshold</code>	<a href="#">62.513</a>	<code>\unit</code>	<a href="#">30.82</a>
<code>\tableofcontents</code>	<a href="#">60.424</a>	<code>\textshscr</code>	<a href="#">62.514</a>	<code>\unsethebrew</code>	<a href="#">60.84</a>
<code>\tala</code>	<a href="#">41.115</a>	<code>\textshstk</code>	<a href="#">62.515</a>	<code>\unsetrlanguage</code>	<a href="#">60.281</a>
<code>\telepl</code>	<a href="#">50.87</a>	<code>\texttta</code>	<a href="#">62.508</a>	<code>\up</code>	<a href="#">29.550</a> , <a href="#">36.194</a>
<code>\TeX</code>	<a href="#">12.1300</a> , <a href="#">60.347</a>	<code>\texttilde</code>	<a href="#">37.55</a> , <a href="#">38.50</a>	<code>\up@size</code>	<a href="#">29.550</a>
<code>\textacute</code>	<a href="#">36.74</a> , <a href="#">37.55</a>	<code>thebibliography</code> (envi- ronment)	<a href="#">60.903</a>	<code>\upp</code>	<a href="#">41.155</a>
<code>\textclas</code>	<a href="#">62.512</a>	<code>\theenumii</code>	<a href="#">60.112</a>	<code>\upp@size</code>	<a href="#">41.155</a>
<code>\textcrl</code>	<a href="#">62.509</a>	<code>\theenumiv</code>	<a href="#">60.112</a>	<code>\user@group</code>	<a href="#">12.613</a>
<code>\textcyrillic</code>	<a href="#">54.115</a> , <a href="#">55.115</a> , <a href="#">56.115</a>	<code>\thousandsep</code>	<a href="#">29.429</a> , <a href="#">41.106</a>	<code>\usesorthands</code>	<a href="#">5</a> , <a href="#">12.616</a>
<code>\textds</code>	<a href="#">62.506</a>	<code>\tilde</code>	<a href="#">47.52</a>	<b>V</b>	
		<code>\todayRoman</code>	<a href="#">55.179</a>	<code>\v</code>	<a href="#">49.39</a>
		<code>\tohebrew</code>	<a href="#">60.90</a>	<code>\verbatim@font</code>	<a href="#">54.202</a> , <a href="#">56.181</a>
		<code>\turkish@sh@:</code>	<a href="#">59.44</a>	<code>\vrefpagenum</code>	<a href="#">12.1321</a>
		<code>\turkish@sh@@</code>	<a href="#">59.44</a>	<b>W</b>	
				<code>\welshhyphenmins</code>	<a href="#">24.6</a>

## Change History

babel-1.5b	
General: Added support for canadian and acadian	127
babel 2.0a	
General: Added text about <code>german.sty</code>	1
babel 2.0b	
General: Changed order of code to prevent plain $\TeX$ from seeing all of it	1
babel 2.1	
General: Modified user interface, <code>\langTeX</code> no longer necessary	1
babel 2.1a	
General: Incorporated Nico's comments	1
babel 2.1b	
General: rename <code>\language</code> to <code>\current@language</code>	1
babel 2.1c	
General: abstract for report fixed, missing <code>\}</code> , found by Nicolas Brouard	1
babel 2.1d	
General: Missing right brace in definition of abstract environment, found by Werenfried Spit	1
babel 2.1e	
General: Incorporated more comments from Nico	1
babel 2.2	
General: Renamed <code>\newlanguage</code> to <code>\addlanguage</code>	1
babel 2.2a	
General: Modified the documentation somewhat	1
babel 3.0	
General: Moved part of the code to hyphen.doc in preparation for $\TeX$ 3.0	1
babel 3.0a	
General: Updated comments in various places	1
<code>\iflanguage</code> : Added <code>\@bsphack</code> and <code>\@esphack</code>	23
<code>\selectlanguage</code> : Added <code>\@bsphack</code> and <code>\@esphack</code>	25
Replaced <code>\gdef</code> with <code>\def</code>	25
babel 3.0b	
General: Removed some problems in change log	1
babel 3.0c	
General: Renamed <code>babel.sty</code> and <code>latexhax.sty</code> to <code>.com</code>	1
<code>\iflanguage</code> : Added comment character after <code>#2</code>	23
<code>\selectlanguage</code> : Made <code>\selectlanguage</code> robust	23
babel 3.0d	
<code>\@noopterr</code> : Added a percent sign to remove unwanted white space	30
General: Removed use of <code>\@ifundefined</code>	20
<code>\doc@style</code> : Removed use of <code>\@ifundefined</code>	57
<code>\iflanguage</code> : Removed space hacks and use of <code>\@ifundefined</code>	23
Removed superfluous <code>\expandafter</code>	23
<code>\process@language</code> : Added the collection of pattern names.	32
Reinserted <code>\expandafter</code>	32
Removed superfluous <code>\expandafter</code>	32
<code>\selectlanguage</code> : Removed space hacks and use of <code>\@ifundefined</code>	25
Removed superfluous <code>\expandafter</code>	25
babel 3.1	
General: Added the support for active characters and for extending a macro	1
Removed definition of <code>\if@restonecol</code>	57
Removed the need for <code>latexhax</code>	1
<code>\addto</code> : Added macro	50

\readconfigfile: Removed the extra if control sequence .....	35
Removed use of \toks0 .....	34
\selectlanguage: \originalTeX should only be executed once .....	25
babel 3.2	
General: Some Changes by br .....	1
\adddialect: Added \relax .....	22
\addlanguage: Added a %, removed by .....	22
\babel@beginsave: Added macro .....	49
\babel@save: Added macro .....	49
\babel@savecnt: Added macro .....	49
\babel@savevariable: Added macro .....	50
\bbl@add@special: Added macro .....	35
\bbl@remove@special: Added macro .....	36
\iflanguage: Rephrased \ifnum test .....	23
\selectlanguage: Modified to allow arguments that start with an escape character .....	23
babel 3.2a	
General: Fixups of the code and documentation .....	1
\originalTeX: Set \originalTeX to \empty, because it should be expandable. ....	30
\readconfigfile: Free macro space for \process@language .....	35
\selectlanguage: Added \relax as first command to stop an expansion if	
\protect is empty .....	25
Added three \expandafters to save macro space for \originalTeX .....	25
Moved definition of \originalTeX before \extras<lang> .....	25
Set \originalTeX to \empty, because it should be expandable. ....	25
Simplified the modification to allow the use in a \write command .....	23
babel 3.2b	
\allowhyphens: Moved macro from language definition files .....	50
\save@sf@q: Moved macro from language definition files .....	51
\set@low@box: Moved macro from language definition files .....	51
babel 3.2c	
\babel@save: missing backslash led to errors when executing \originalTeX ..	49
babel 3.2d	
\babel@save: saving in \babel@i and restoring from \@babel@i doesn't work	
very well... .....	49
babel 3.2e	
General: Added slovak .....	72
babel 3.3	
General: \headpagename should be \pagename .....	61
Added catalan and galician .....	72
Added turkish .....	72
Included driver file, and prepared for distribution .....	1
babel 3.4	
General: Added bahasa .....	72
Added language definition file for bahasa .....	1
Updated for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> .....	1
\addto: Changed to use toks register .....	50
babel 3.4b	
General: Added a small driver to be able to process just this file .....	1
Use the ltxdoc class instead of article .....	70
babel 3.4c	
General: lhyphen.cfg has become lthyphen.cfg .....	16
babel 3.4e	
\@nolanerr: Use \PackageError in L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> mode .....	30



\@nopatterns: Macro added	30
\process@language: Added code to detect assignments to left- and righthyphen- min in the patternfile.	32
\ProvidesLanguage: Redid the identification code, provided dummy definition of \ProvidesFile for plain T <sub>E</sub> X	15
babel 3.4g	
\@testdef: Moved the \def inside the macrocode environment	63
babel 3.5a	
\@noopterr: Added \@activated to log active characters	30
General: Added a system shorthand for the right quote	45
Added breton, irish, scottish	72
Changed extension of language definition files to ldf	16
Provided common code to handle the active double quote	1
Replaced 16 system shorthands to deal with hex numbers by one	45
\bbl@activate: Added macro	42
\bbl@deactivate: Added macro	42
\bbl@main@language: Macro added	30
\bbl@pr@ms: Added macro	45
\bbl@set@language: write the language change to the auxiliary files	25
\initiate@active@char: Added a check for right quote and adapt \pr@ms if necessary	38
Added macro	36
\main@language: Macro added	30
babel 3.5b	
General: Added brazilian as alternative for brazil	16
Added lsorbian, usorbian	72
Added the estonian option	17
lthyphen.cfg has become hyphen.cfg	16
\initiate@active@char: Renamed macro	36
\pageref: Made \ref and \pageref robust (PR1353)	64
\process@language: Added optional reading of file with hyphenation exceptions	33
\process@line: added macro	31
\process@synonym: added macro	31
\readconfigfile: Now add a \space and a / character	34
\selectlanguage: Added an extra level of expansion to separate the switching mechanism from writing to aux files	24
Added default setting of hyphenmin parameters	26
Changed the name of the internal macro to \selectlanguage	24
Separated the setting of the hyphenmin values	26
Store the name of the current language in a control sequence instead of passing the whole macro construct to strip the escape character in the argument of \selectlanguage	23
babel 3.5c	
\@noopterr: Added missing closing brace	30
General: Changed the order of including the language files somewhat (PR1652)	72
corrected a few typos (PR1652)	1
Repaired a typo (itlaic, PR1652)	51
babel 3.5d	
General: Added british as an alternative for english with a preference for british hyphenation	17
Added options to influence behaviour of active acute and grave accents	18
Load french.ldf when it is found instead of frenchb.ldf	17
Load language definition files <i>after</i> the check for the hyphenation patterns	16
Merged glyphs.dtx into this file	1

<code>\active@prefix: \@protected@cmd</code> has vanished from <code>ltoutenc.dtx</code> . . . . .	41
<code>\declare@shorthand</code> : Make a ‘note’ when a shorthand with an argument is defined. . . . .	43
<code>\foreignlanguage</code> : Macro added . . . . .	27
<code>\initiate@active@char</code> : Skip the language-level active char with argument if no shorthands with arguments were defined . . . . .	40
Skip the user-level active char with argument if no shorthands with arguments were defined . . . . .	39
<code>\loadlocalcfg</code> : Added macro . . . . .	69
<code>\pageref</code> : use a different control sequence while making <code>\ref</code> and <code>\pageref</code> robust . . . . .	64
<code>otherlanguage</code> : environment added . . . . .	26
babel 3.5e	
<code>otherlanguage</code> : changed name . . . . .	26
babel 3.5f	
<code>\@bibitem</code> : Now use <code>\bbl@redefine</code> . . . . .	65
<code>\@citex</code> : Now use <code>\bbl@redefine</code> . . . . .	64
<code>\@testdef</code> : Complete rewrite of this macro as the same character ended up with different category codes in the labels that are being compared. Now use <code>\meaning</code> . . . . .	63
Now use <code>\bbl@redefine</code> . . . . .	63
Use <code>\strip@prefix</code> only on <code>\bbl@tempa</code> when it is not <code>\relax</code> . . . . .	63
General: Added a system shorthand for the left quote . . . . .	45
Added the <code>greek</code> option . . . . .	17
No need to reset the category code of the tilde as <code>\initiate@active@char</code> now correctly deals with active characters . . . . .	46
Now use the file <code>frenchb.ldf</code> from Daniel Flipo for french support . . . . .	17
repaired a typo . . . . .	1
replaced <code>\tmp</code> , <code>\bbl@tmp</code> and <code>\bbl@temp</code> with <code>\bbl@tempa</code> . . . . .	1
<code>\aliasshorthand</code> : New command . . . . .	44
<code>\bbl@disc</code> : Macro moved from language definition files . . . . .	51
<code>\bbl@redefine</code> : Macro added . . . . .	61
<code>\bbl@redefineroast</code> : Define <code>\*foo</code> instead of <code>\foo</code> . . . . .	62
Macro added . . . . .	62
<code>\bbl@set@language</code> : Now also define <code>\language</code> at this level . . . . .	25
<code>\bbl@test@token</code> : macro added . . . . .	37
<code>\bibcite</code> : Now use <code>\bbl@redefine</code> . . . . .	64
<code>\DJ</code> : New definition of <code>\dj</code> , see PR 2058 . . . . .	53
<code>\frq</code> : corrected spelling of <code>\quilsingl...</code> . . . . .	54
now use <code>\textormath</code> in these definitions . . . . .	54
<code>\frqq</code> : corrected spelling of <code>\quillemot...</code> . . . . .	54
now use <code>\textormath</code> in these definitions . . . . .	54
<code>\initiate@active@char</code> : Deal correctly with already active characters, provide top level expansion and define all lower level expansion macros outside of the <code>\else</code> branch. . . . .	38
restore the <code>\lccode</code> of the tie . . . . .	39
Restore the category code of a shorthand char at end of package . . . . .	38
store the <code>\lccode</code> of the tie before changing it . . . . .	38
use <code>\peek@token</code> to check whether it is safe to proceed . . . . .	40, 41
<code>\lower@umlaut</code> : Added a <code>\allowhyphens</code> . . . . .	56
removed <code>\allowhyphens</code> . . . . .	56
<code>\newlabel</code> : Now use <code>\bbl@redefine</code> . . . . .	62
<code>\nocite</code> : Now use <code>\bbl@redefine</code> . . . . .	64
<code>\pageref</code> : Now use <code>\bbl@redefineroast</code> . . . . .	64

redefine <code>\*ref</code> if it exists instead of <code>\ref</code> .....	64
redefine <code>\setref</code> instead of <code>\ref</code> and <code>\pageref</code> in $\LaTeX$ 2 $\epsilon$ . ....	64
Reverse the previous change as it inhibits the use of active characters in labels	64
<code>\peek@token</code> : macro added .....	37
<code>\process@language</code> : Use <code>\empty</code> instead of <code>\@empty</code> as the latter is unknown in plain .....	33
<code>\ProvidesLanguage</code> : Need to temporarily change the definition of <code>\ProvidesFile</code> for December 1995 release .....	15
Store version in <code>\fileversion</code> .....	15
<code>\readconfigfile</code> : Moved the fiddling with <code>\dump</code> to <code>bbplain.dtx</code> as it is no longer needed for $\LaTeX$ .....	35
<code>\selectlanguage</code> : Added a missing percent character .....	23
Moved check for escape character one level down in the expansion .....	23
<code>otherlanguage*</code> : environment added .....	26
babel 3.5g	
General: Added definition of <code>\Babel</code> .....	71
Added greek .....	72
Added option <code>afrikaans</code> .....	16
Removed the use of <code>\patterns@loaded</code> altogether .....	31
replaced <code>\undefined</code> with <code>\@undefined</code> to be consistent with $\LaTeX$ .....	1
<code>\ifthenelse</code> : Redefinition of <code>\ifthenelse</code> added to circumvent problems with <code>\pageref</code> in the argument of <code>\isodd</code> .....	67
<code>\initiate@active@char</code> : Top level expansion of <code>\normal@char</code> <code>char</code> where <code>char</code> is already active, should be the expansion of the active character, not the active character itself as this causes an endless loop .....	38
<code>\nfss@catcodes</code> : Need to add the double quote and acute characters to <code>\nfss@catcodes</code> to prevent problems when reading in .fd files .....	68
<code>\process@line</code> : Simplified code, removing <code>\bbl@eq@</code> .....	31
<code>\ProvidesLanguage</code> : Save a few csnames; use <code>\bbl@tempa</code> instead of <code>\ProvidesFile</code> and store message in <code>\toks8</code> .....	15
babel 3.6a	
<code>\@vpageref</code> : Redefinition of <code>\@vpageref</code> added to circumvent problems with active : in the argument of <code>\vref</code> when <code>varioref</code> is used .....	67
General: Added <code>welsh</code> .....	72
Removed <code>\babel@core@loaded</code> , no longer needed with the advent of <code>\LdfInit</code>	20
<code>\ldf@finish</code> : Macro added .....	29
<code>\ldf@quit</code> : Macro added .....	29
<code>\LdfInit</code> : Macro added .....	28
<code>\main@language</code> : <code>\main@language</code> now also sets <code>\language</code> and <code>\l@language</code> for use by other packages in the preamble of a document .....	30
<code>\selectlanguage</code> : Check for the existence of <code>\date...</code> instead of <code>\l@...</code> ....	25
babel 3.6b	
<code>\addto</code> : Also check if control sequence expands to <code>\relax</code> .....	50
babel 3.6c	
General: When <code>\LdfInit</code> is undefined we need to load <code>babel.def</code> from <code>babel.sty</code>	16
<code>\bbl@main@language</code> : When <code>hyphen.cfg</code> is not loaded in the format <code>\l@english</code> might not be defined; assume english is language 0 .....	30
babel 3.6d	
<code>\foreign@language</code> : Added <code>\relax</code> to prevent disappearance of the first token after this command. ....	27
New macro .....	27
set the language shorthands to ‘none’ before switching on the extras .....	27
<code>\foreignlanguage</code> : Introduced <code>\foreign@language</code> .....	27

<b>\selectlanguage</b> : set the language shorthands to ‘none’ before switching on the extras .....	26
<b>otherlanguage*</b> : Introduced <b>\foreign@language</b> .....	26
babel 3.6e	
General: Added option <b>frenchb</b> an alias for <b>francais</b> .....	17
Added options <b>UKenglish</b> and <b>USenglish</b> .....	18
babel 3.6f	
General: Added option <b>KeepShorthandsActive</b> .....	18
<b>\bbl@redefine@long</b> : Macro added .....	62
<b>\ifthenelse</b> : <b>\ifthenelse</b> needs to be long .....	67
<b>\initiate@active@char</b> : Made restoring of the category code of shorthand characters optional .....	38
babel 3.6h	
<b>\readconfigfile</b> : Added a couple of <b>\expandafters</b> to copy the contents of <b>\toks8</b> into <b>\everyjob</b> instead of the reference .....	35
babel 3.6i	
<b>\@newl@bel</b> : Now redefine <b>\@newl@bel</b> instead of <b>\@lbibitem</b> and <b>\newlabel</b> ..	62
<b>\@testdef</b> : <b>\@safe@activesfalse</b> is now part of the label definition .....	63
Make sure that shorthands don’t get expanded at the wrong moment. ....	63
General: Added basque .....	72
Added default option .....	18
Added the Basque option .....	16
Added the ukrainian option .....	18
Added the possibility to have a <b>bblopts.cfg</b> file with option declarations. .	18
<b>\bbl@afterfi</b> : Made <b>\bbl@afterelse</b> and <b>\bbl@afterfi \long</b> .....	37
<b>\bbl@test@token</b> : renamed <b>\bbl@token</b> to <b>\bbl@test@token</b> to prevent a clash with ArabTeX .....	37
<b>\declare@shorthand</b> : Make it possible to distinguish the constructed control sequences for the case with argument .....	43
<b>\ifthenelse</b> : Now reset the <b>@safe@actives</b> switch inside the 2nd and 3rd arguments of <b>\ifthenelse</b> .....	67
<b>\initiate@active@char</b> : Make shorthands active during <b>.aux</b> file processing .	39
Remove the use of <b>\peek@token</b> again .....	40, 41
Remove the use of <b>\peek@token</b> again and make the <b>\...active@arg...</b> commands <b>\long</b> .....	40
<b>\latinencoding</b> : Macro added, moved from <b>.ldf</b> files .....	20
<b>\latintext</b> : Macro added, moved from <b>.ldf</b> files .....	20
<b>\markboth</b> : Added redefinition of <b>\mark...</b> commands .....	65
<b>\peek@token</b> : Renamed <b>\test@token</b> to <b>\bbl@test@token</b> to prevent a clash with ArabTeX .....	37
<b>\system@group</b> : Have a user group called ‘user’ by default .....	43
<b>\textlatin</b> : Macro added, moved from <b>.ldf</b> files .....	21
babel 3.6k	
<b>\latinencoding</b> : Use T1 encoding when it is a known encoding .....	20
babel 3.6l	
General: Don’t load <b>babel.def</b> now, but rather define <b>\LdfInit</b> temporarily in order to load <b>babel.def</b> at the right time, preventing problems with the temporary definition of <b>\bbl@redefine</b> .....	16
babel 3.6m	
<b>\latinencoding</b> : Can’t use <b>\@ifpackageloaded</b> need to parse <b>\@filelist</b> ...	20
babel 3.6n	
<b>\latinencoding</b> : Added a check for ‘manual’ selection of T1 encoding, without loading <b>fontenc</b> .....	20
moved checking for <b>fontenc</b> right to the top of <b>babel.sty</b> .....	20

babel 3.6o	
General: Moved the rest of the font encoding related definitions to their original place	21
babel 3.6p	
General: Added the <code>ngerman</code> and <code>naustrian</code> options	17
babel 3.6q	
<code>\latinencoding</code> : Better solution then parsing <code>\@filelist</code> , use <code>\@ifl@aded</code>	20
babel 3.6r	
General: We <b>do</b> need to load <code>babel.def</code> right now as <code>\ProvidesLanguage</code> needs to be defined before the <code>.ldf</code> files are read and the reason for for 3.6l has been removed	16
babel 3.6s	
<code>\bibcite</code> : Need to determine ‘online’ which definition of <code>\bibcite</code> is needed	64
babel 3.6u	
<code>\latinencoding</code> : Moved this code to <code>babel.def</code>	20
babel 3.6v	
<code>\bbl@bibcite</code> : Macro <code>\bbl@bibcite</code> added	65
<code>\bbl@cite@choice</code> : Macro <code>\bbl@cite@choice</code> added	65
<code>\bibcite</code> : Also check for <code>cite</code> it can’t handle <code>\@safe@activesfalse</code> in its second argument	64
babel 3.7a	
<code>\@newl@bel</code> : Call <code>\@safe@activetrue</code> directly	62
<code>\@testdef</code> : Removed <code>\@safe@activesfalse</code> from the label definition	63
General: Added icelandic	72
Added the <code>hebrew</code> option	17
Added the icelandic option	17
Added the <code>polutonikogreek</code> option	17
No longer define the control sequence <code>\KeepShorthandsActive</code>	18
Now need packages <code>tlenc</code> and <code>supertabular</code> to be loaded; the documentation for icelandic needs its <code>.ldf</code> file to be present	70
<code>\allowhyphens</code> : Make <code>\allowhyphens</code> a no-op for T1 fontencoding	50
<code>\bbl@switch@sh</code> : Added command	44
<code>\foreignlanguage</code> : Added executing <code>\originalTeX</code>	27
<code>\grq</code> : Make the definition of <code>\grq</code> dependent on the font encoding	54
<code>\grqq</code> : Make the definition of <code>\grqq</code> dependent on the font encoding	54
<code>\iflanguage</code> : Now evaluate the <code>\ifnum</code> test <i>after</i> the <code>\fi</code> from the <code>\ifx</code> test and use <code>\@firstoftwo</code> and <code>\@secondoftwo</code>	23
<code>\initiate@active@char</code> : Commented out <code>peek@token</code> and <code>\test@token</code> as shorthands are made expandable again	37
Use <code>\@ifpackagewith</code> to determine whether shorthand characters need to remain active	38
<code>\LaTeX</code> : Make <code>TeX</code> and <code>L<sup>A</sup>TeX</code> logos encoding-independent	66
<code>\process@language</code> : Read pattern files in a group	33
<code>\ProvidesLanguage</code> : Added macro to prevent problems with unexpected <code>\ProvidesFile</code> in plain formats because of <code>babel</code> .	15
Removed superfluous braces	15
<code>\shorthandoff</code> : Added command	44
<code>\shorthandon</code> : Added command	44
babel 3.7b	
General: Added Latin	72
Added the <code>latin</code> option	17
<code>\iflanguage</code> : Slight enhancement: added braces around first argument of <code>\bbl@afterfi</code>	23

babel 3.7c	
General: Added an error message for when no language option was specified	18
Added hebrew and serbian	72
Added support for language attributes	46
Added ukrainian	72
define <code>\adddialect</code> before loading <code>plain.def</code> here	20
No longer use a redefinition of an internal macro, just check <code>\bbl@main@language</code> and load <code>babel.def</code>	18
Removed redefinition of <code>\@roman</code> and <code>\@Roman</code>	66
set the correct language attribute for polutoniko greek	17
<code>\initiate@active@char</code> : Only execute <code>\initiate@active@char</code> for each character	37
<code>\markboth</code> : Avoid expanding the arguments by storing them in token registers	65
Removed the use of <code>\head@lang</code> (PR 2990)	65
<code>\process@language</code> : Added the execution of the contents of <code>\toks@</code>	33
Also store <code>\language</code> for possible later use in <code>\process@synonym</code>	32
need to set hyphenmin values globally	33
Only set hyphenmin values when the pattern file changed them	33
Set <code>\lefthyphenmin</code> to <code>\m@ne</code> <i>inside</i> the group; explicitly set the hyphenmin parameters for language 0	33
<code>\process@line</code> : added an extra argument in order to prevent a trailing space from becoming part of the control sequence when defining a synonym (PR 2851)	31
<code>\process@synonym</code> : Now also store hyphenmin parameters for language synonyms	32
Use a token register to temporarily store a command to set hyphenmin parameters for the synonym which is defined <i>before</i> the first pattern file is processed	32
babel 3.7d	
General: Fixed a few typos in <code>\changes</code> entries which made typesetting the code impossible	1
<code>\initiate@active@char</code> : Make sure the active character doesn't get expanded more than once by the <code>\edef</code> by adding <code>\expandafter\strip@prefix\meaning</code>	38
babel 3.7e	
General: Added missing hebrew files	72
<code>\bbl@clear@ttribs</code> : When <code>\bbl@attributes</code> is undefined this should be a no-op	49
<code>\initiate@active@char</code> : pass the argument on with braces in order to prevent it from breaking up	40
previous change was rubbish; use <code>\let</code> instead of <code>\edef</code>	38
<code>hyphenrules</code> : Added environment <code>hyphenrules</code>	27
babel 3.7f	
General: Added bulgarian	72
Added samin	72
Added the <code>bulgarian</code> option	17
Added the <code>samin</code> option	17
<code>\bbl@get@enc</code> : Added macro	33
<code>\bbl@ifattributeset</code> : macro added	48
<code>\bbl@prim@s</code> : Need to redefine <code>\prim@s</code> as well as plain TeX's definition uses <code>\next</code>	45
<code>\bbl@set@language</code> : Macro <code>\bbl@set@language</code> introduced	25
<code>\ifthenelse</code> : <code>\pageref</code> needs to have its babel definition reinstated in the second and third arguments	67
<code>\initiate@active@char</code> : Added an extra shorthand combination on user level to catch an interfering <code>\protect</code>	41

Insert a check for math mode in the definition of <code>\normal@char'</code> . . . . .	38
Introduced an extra level of expansion in the definition of an active caret . .	38
Make an exception for the active caret which needs an extra level of expansion	39
remove the braces again . . . . .	40
The redefinition needs to take place on level higher, <code>\prim@s</code> needs to be redefined. . . . .	38
<code>\process@language</code> : Allow for the encoding to be used as part of the language name . . . . .	32
<code>\providehyphenmins</code> : added macro . . . . .	28
<code>\save@sf@q</code> : PR3119, don't start a paragraph in a local group . . . . .	51
<code>\selectlanguage</code> : Use <code>\aftergroup</code> to keep the language grouping correct in auxiliary files PR3091 . . . . .	24
babel 3.7g	
<code>\@citex</code> : The shorthands need to be deactivated for the second argument of <code>\@citex</code> only. . . . .	64
General: Added option <code>acadian</code> . . . . .	16
Added option <code>canadian</code> . . . . .	17
Added option <code>canadien</code> . . . . .	17
<code>\initiate@active@char</code> : use <code>\textormath</code> to get rid of the <code>\fi</code> (PR 3266) . . .	38
babel 3.7h	
General: Added a number of missing comment characters which caused spurious white space . . . . .	1
babel 3.7j	
General: <i>only</i> load <code>frenchb.ldf</code> . . . . .	17
<code>\bbl@pop@language</code> : Introduce the language stack mechanism . . . . .	24
Now use the language stack mechanism . . . . .	25
<code>\FOREIGNLANGUAGE</code> : Define <code>\FOREIGNLANGUAGE</code> unconditionally . . . . .	68
<code>\substitutefontfamily</code> : create file with lowercase name . . . . .	19
<code>\textlatin</code> : added <code>\leavevmode</code> to prevent a paragraph starting <i>inside</i> the group	21
<code>otherlanguage</code> : rely on <code>\selectlanguage</code> to keep track of the nesting . . . . .	26
<code>\usesshorthands</code> : The change from 11/112001 was incomplete . . . . .	43
When T <sub>E</sub> X has seen a character its category code is fixed; need to use a 'stand-in' for the call of <code>\bbl@activate</code> . . . . .	43
babel 3.7k	
<code>\textlatin</code> : Use <code>\DeclareTextFontCommand</code> . . . . .	21
babel 3.7m	
<code>\@noopterr</code> : Macro added . . . . .	30
General: Added the <code>interlingua</code> option . . . . .	17
<code>\bbl@pop@language</code> : Removed the superfluous empty definition of <code>\bbl@pop@language</code> . . . . .	25
<code>\bbl@restore@actives</code> : New macro added . . . . .	42
<code>\markboth</code> : added <code>\bbl@restore@actives</code> to the mark . . . . .	65, 66
<code>\selectlanguage</code> : Check for the existence of both <code>\l@...</code> and <code>\date...</code> . . . .	25
babel 3.7o	
<code>\active@prefix</code> : Added handling of the situation where <code>\protect</code> is set to <code>\@unexpandable@protect</code> . . . . .	41
<code>\ldf@finish</code> : Also restore the category code of the equals sign . . . . .	29
<code>\ldf@quit</code> : Also restore the category code of the equals sign . . . . .	29
<code>\LdfInit</code> : make sure the equals sign has its default category code . . . . .	29
<code>\vrefpagemum</code> : Added redefinition of <code>\vrefpagemum</code> which deals with ranges of pages . . . . .	67
babel 3.8a	
General: Added <code>interlingua</code> . . . . .	72
Also load package <code>url</code> . . . . .	70

babel 3.8b	
\bb1@sh@select: Added command	41
\declare@shorthand: We need to support shorthands with and without argument	
in different groups; added the name of the group to the storage macro	43
\frq: Made \flq and \frq fontencoding dependent	54
\frqq: Made \flqq and \frqq fontencoding dependent	54
\grq: Made \glq fontencoding dependent as well	54
\grqq: Made \grqq fontencoding dependent as well	54
\hhline: added \string to prevent unwanted expansion of the colon	68
\initiate@active@char: Now use \bb1@sh@select	39–41
babel 3.8c	
General: Added option <code>australian</code>	16
Added the <code>newzealand</code> option	17
\markboth: No need to add <i>anything</i> to an empty mark, prevented this by checking the contents of the arguments	66
No need to add <i>anything</i> to an empty mark; prevented this by checking the contents of the argument	65
babel 3.8e	
General: Many enhancements to the text by Andrew Young	1
bahasa-0.9c	
General: Now use \@patterns to produce the warning	397
Removed the use of \filedate and moved identification after the loading of <code>babel.def</code>	397
bahasa-1.0b	
\captionsbahasa: Added \proofname for AMS- $\LaTeX$	397
bahasa-1.0d	
General: Replaced \undefined with \@undefined and \empty with \@empty for consistency with $\LaTeX$	397
\captionsbahasa: Replaced ‘Proof’ by ‘Bukti’ (PR2214)	397
bahasa-1.0e	
General: Moved the definition of \atcatcode right to the beginning.	397
Now use \ldf@finish to wrap up	398
Now use \LdfInit to perform initial checks	397
\bahasahyphenmins: use \bahasahyphenmins to store the correct values	398
bahasa-1.0f	
\datebahasa: Use \edef to define \today	398
bahasa-1.0g	
\datebahasa: Februari should be spelled as Pebruari	398
bahasa-1.0h	
\bahasahyphenmins: Now use \providehyphenmins to provide a default value	398
\captionsbahasa: Added \glossaryname	397
bahasa-1.0i	
\captionsbahasa: Inserted translation for Glossary	397
bahasa 1.0f	
\datebahasa: use \def instead of \edef to save memory	398
basque-1.0b	
General: Removed empty groups after guillemot characters	206
\datebasque: use \def instead of \edef	205
Use \edef to define \today to save memory	205
basque-1.0c	
\datebasque: fixed typo in April’s name	205
basque-1.0d	
\noextrasbasque: Deactivate shorthands outside of Basque	205



basque-1.0e	
\basquehyphenmins: Now use \providehyphenmins to provide a default value	205
\captionsbasque: Added \glossaryname	204
basque-1.0f	
General: Changed url's for the patterns file	204
\captionsbasque: Added translation for Glossary	204
bbplain-0.1	
General: Added redefinition of \dump to add a message to \everyjob	400
bbplain-1.0c	
General: Add execution of \@begindocumenthook to \@preamblecmds	401
Added definition of \loadlocalcfg	400
Moved the \dump code here from babel.dtx	400
bbplain-1.0d	
General: Also reset category codes after loading the configuration file as \AtEndOfPackage is undefined in this case	400
bbplain-1.0e	
General: Added the \newcommand code	404
Provide a more complete emulation of \DeclareRobustCommand and \newcommand	402
bbplain-1.0f	
General: added \@empty	400
Added \textquotedblright and \textquoteright	408
Added definition of \scriptsize	408
Consistently use \@undefined instead of \undefined	400
Use \toks8 instead of \patterns@loaded	401
bbplain-1.0g	
General: Added \ss and \i	408
bbplain-1.0h	
General: Only load the necessary parts into the format, let this file be read again by babel.def	400
bbplain-1.0i	
General: \document is not a L <sup>A</sup> T <sub>E</sub> X2.09-only command; AMST <sub>E</sub> X defines it too; now use \@ztryfc to detect L <sup>A</sup> T <sub>E</sub> X2.09	401
bbplain-1.0j	
General: \@begindocumenthook might already be defined	402
Add the definition of \@begindocumenthook to the L <sup>A</sup> T <sub>E</sub> X2.09 format	401
bbplain-1.0k	
General: \newcount is an \outer command, can't use it inside an \if construct	404
missing \@undefined added	402
bbplain-1.0l	
General: Mixed up the definition of \@tempcntb	404
bbplain-1.0m	
General: Set \if@filesw to \iffalse only for plain T <sub>E</sub> X	402
bbplain-1.0n	
General: Added \@secondoftwo	401
Added the source for the format wrapper files	399
Repaired typo and added missing \endcsname	402
bbplain-1.0o	
General: Added definition of \in@	404
bbplain-1.0p	
General: Added \@ifl@aded as a no-op	404
bbplain-1.0q	
General: Added \@ifundefined	401

bbplain-1.0r	
General: Added <code>\textquotedblleft</code> and <code>\textquoteleft</code>	408
breton-1.0	
General: First release	98
breton-1.0b	
<code>\captionsbreton</code> : Added <code>\proofname</code> for AMS- $\text{\LaTeX}$	98
<code>\noextrasbreton</code> : Use the new mechanism for dealing with active chars	99
breton-1.0c	
General: Postpone the <code>\DeclareTextCompositeCommands</code> untill <code>\AtBeginDocument</code>	101
breton-1.0e	
General: Now use <code>\ldf@finish</code> to wrap up	101
Now use <code>\LdfInit</code> to perform initial checks	98
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with $\text{\LaTeX}$ , moved the definition of <code>\atcatcode</code> right to the beginning.	98
breton-1.0f	
<code>\datebreton</code> : use <code>\def</code> instead of <code>\edef</code>	99
Use <code>\edef</code> to define <code>\today</code> to save memory	99
breton-1.0g	
<code>\noextrasbreton</code> : Deactivate shorthands outside of Breton	99
breton-1.0h	
<code>\captionsbreton</code> : Added <code>\glossaryname</code>	98
bulgarian-0.99	
General: This is a prerelease version of this file. Features needing further testing are removed.	293
bulgarian-1.0b	
<code>\extrabulgarian</code> : Now use <code>\providehyphenmins</code> to provide a default value	302
bulgarian-1.0c	
General: Added missing closing brace	296
<code>\dq</code> : repaired typo	300
bulgarian-1.0d	
General: Change definition of <code>\th</code> only for this language	304
catalan-1.1	
<code>\captionscatalan</code> : <code>\headpagename</code> should be <code>\pagename</code>	193
catalan-2.0	
General: Removed code to load <code>latexhax.com</code>	193
<code>\captionscatalan</code> : Added some names	193
<code>\extrascatalan</code> : Macro completely rewritten	194
<code>\noextrascatalan</code> : Macro completely rewritten	194
catalan-2.0b	
General: Incorporated the changes from <code>spanish.sty</code>	192
catalan-2.1	
General: Update for $\text{\LaTeX 2\epsilon}$	192
catalan-2.1d	
General: Now use <code>\@nopatterns</code> to produce the warning	193
Removed the use of <code>\filedate</code> and moved identification after the loading of <code>babel.def</code>	192
<code>\captionscatalan</code> : Added a few missing translations	193
<code>\textacute</code> : Renamed from <code>\acute</code> as that is a <code>\mathaccent</code>	195
catalan-2.2a	
General: All the code to deal with active characters is now in <code>babel.def</code>	196
<code>\extrascatalan</code> : Handling of active characters completely rewritten	194

<code>\noextrascatalan</code> : All the code for handling active characters is now moved to <code>babel.def</code> .....	195
catalan-2.2b	
General: Changed mathmode definition of acute shorthands to expand to a single prime followed by the next character in the input .....	197
Made the activation of the grave and acute accents optional .....	192
<code>\captionscatalan</code> : Added <code>\proofname</code> for AMS- $\LaTeX$ .....	193
<code>\datecatalan</code> : Month names in lowercase .....	193
<code>\Lgem</code> : Added support for typing the catalan “ <i>ela geminada</i> ” with the macros <code>\lgem</code> and <code>\Lgem</code> .....	197
<code>\noextrascatalan</code> : Make activating the accent characters optional .....	194
<code>\up</code> : Added definition of macro <code>\up</code> , which can be used to type ordinals .....	199
catalan-2.2c	
General: Added “” as an extra shorthand, removed ‘n as a shorthand .....	197
Added shorthands for guillemets .....	196
cedile now produced by double quote shorthand .....	196
Removed the use of the tilde for catalan .....	192
catalan-2.2d	
<code>\captionscatalan</code> : added translation of Proof .....	193
Translations revised .....	193
catalan-2.2e	
General: Added “ as an extra shorthand .....	196
Added vertical bar as argument to active acute .....	197
<code>\L.L</code> : Added redefinition of <code>\l</code> and <code>\L</code> .....	198
<code>\noextrascatalan</code> : Need to split up the <code>\@ifpackagewith</code> statements .....	194
Now give the apostrophe a lowercase code .....	194
<code>\up</code> : Now use <code>\textsuperscript</code> and make <code>\up</code> robust .....	199
catalan-2.2f	
General: Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with $\LaTeX$ .....	192
<code>\Lgem</code> : Added a check for math mode as the use of <code>\lgem</code> and <code>\Lgem</code> in math mode is not sensible. ....	197
catalan-2.2g	
General: Moved the definition of <code>\atcatcode</code> right to the beginning. ....	192
Now use <code>\ldf@finish</code> to wrap up .....	199
Now use <code>\LdfInit</code> to perform initial checks .....	193
catalan-2.2h	
<code>\noextrascatalan</code> : Added some comment signs to prevent unwanted spaces in the output .....	195
catalan-2.2i	
General: Removed empty groups after guillemot characters .....	196
<code>\datecatalan</code> : use <code>\def</code> instead of <code>\edef</code> .....	193
Use <code>\edef</code> to define <code>\today</code> to save memory .....	193
catalan-2.2k	
General: A wrong <code>\changes</code> entry made typesetting impossible .....	192
catalan-2.2l	
<code>\noextrascatalan</code> : Don’t forget to deactivate the shorthands .....	194
Make sure that the grave accent has catcode 12 <i>before</i> it is made <code>\active</code> ..	194
catalan-2.2m	
<code>\captionscatalan</code> : Added <code>\glossaryname</code> .....	193
catalan-2.2n	
<code>\catalanhyphenmins</code> : Set the hyphenation parameters both to two as required by <code>cahyph.tex</code> .....	193

catalan-2.2o	
\l.L: Postpone the redefinition of \l and \L until begin document to prevent overwriting by fontenc .....	198
catalan-2.2p	
\captionscatalan: Inserted translation for Glossary .....	193
changes-1.0f	
General: The hyphen char needs to appear at the beginning of the line as well.	207
croatian-1.0a	
General: Renamed babel.sty in babel.com .....	258
croatian-1.0b	
General: Removed use of \@ifundefined .....	258
croatian-1.0c	
General: Removed some typos .....	258
croatian-1.1	
General: Added a warning when no hyphenation patterns were loaded. ....	258
Brought up-to-date with babel 3.2a .....	258
\captionscroatian: Added \seename, \alsoname and \prefacename .....	258
croatian-1.2	
\captionscroatian: \headpagename should be \pagename .....	258
croatian-1.3	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> .....	258
croatian-1.3d	
\captionscroatian: Added a few translations .....	258
croatian-1.3e	
\captionscroatian: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X .....	258
croatian-1.3f	
\captionscroatian: Added translation of Proof .....	258
\datecroatian: in croatian language, the genitive for the name of the month has to be used .....	258
croatian-1.3g	
General: Now use \ldf@finish to wrap up .....	259
Now use \LdfInit to perform initial checks .....	258
Replaced \undefined with \@undefined and \empty with \@empty for consis- tency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of \atcatcode right to the beginning.	258
croatian-1.3h	
\datecroatian: sijev{c}nja should be seij\v{c}nja and there should be a period after the year .....	258
croatian-1.3i	
\captionscroatian: Replaced some of the translations with ‘better’ words ..	258
\datecroatian: use \def instead of \edef .....	258
Use \edef to define \today to save memory .....	258
croatian-1.3j	
\datecroatian: changed \od into \or .....	258
croatian-1.3k	
\captionscroatian: Added \glossaryname .....	258
croatian-1.3l	
\captionscroatian: Inserted translation for Glossary .....	258
czech-1.0a	
General: Renamed babel.sty in babel.com .....	260
czech-1.0b	
General: Removed use of \@ifundefined .....	260
czech-1.1	
General: Added a warning when no hyphenation patterns were loaded. ....	260
Brought up-to-date with babel 3.2a .....	260

\captionsczech: Added \seename, \alsoname and \prefacename .....	260
czech-1.1a	
\noextrasczech: Removed typo, \q was restored twice, once too many. ....	261
czech-1.2	
General: Included some features from Kasal's czech.sty .....	260
czech-1.3	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> .....	260
czech-1.3d	
General: Now use \@nopatterns to produce the warning .....	260
Removed the use of \filedate and moved identification after the loading of	
babel.def .....	260
czech-1.3e	
\noextrasczech: now use \bbl@frenchspacing and \bbl@nonfrenchspacing	261
Use L <sup>A</sup> T <sub>E</sub> X's \v and \r accent commands .....	261
czech-1.3f	
\captionsczech: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X .....	260
czech-1.3g	
\captionsczech: Fixed two errors and provided translation for 'proof' .....	260
czech-1.3h	
General: Now use \ldf@finish to wrap up .....	261
Now use \LdfInit to perform initial checks .....	260
Replaced \undefined with \@undefined and \empty with \@empty for consis-	
tency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of \atcatcode right to the beginning.	260
czech-1.3i	
\dateczech: use \def instead of \edef .....	261
Use \edef to define \today to save memory .....	261
czech-1.3j	
\captionsczech: Added \glossaryname .....	260
czech-1.3k	
\captionsczech: Added translation for Glossary .....	260
danish-1.0a	
General: Renamed babel.sty in babel.com .....	210
danish-1.0b	
General: Removed use of \@ifundefined .....	210
danish-1.1	
General: Added a warning when no hyphenation patterns were loaded. ....	210
Brought up-to-date with babel 3.2a .....	210
\captionsdanish: Added \seename, \alsoname and \prefacename .....	210
danish-1.2	
\captionsdanish: \headpagename should be \pagename .....	210
danish-1.2b	
\captionsdanish: Added a few translations .....	210
danish-1.3	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> .....	210
danish-1.3a	
\datedanish: Added '.' to definition of \today .....	211
danish-1.3c	
\captionsdanish: Included some revisions from Peter Busk Larsen .....	210
danish-1.3f	
General: Now use \@nopatterns to produce the warning .....	210
Removed the use of \filedate and moved identification after the loading of	
babel.def .....	210

danish-1.3g	
General: Added the active double quote character as suggested by Peter Busk Laursen	210
danish-1.3h	
\captionsdanish: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	210
\extrasdanish: Added \bbl@frenchspacing	211
\noextrasdanish: Added \bbl@nonfrenchspacing	211
danish-1.3i	
\captionsdanish: Added translation of ‘Proof’	210
danish-1.3j	
General: Now use \ldf@finish to wrap up	212
Now use \LdfInit to perform initial checks	210
Replaced \undefined with \@undefined and \empty with \@empty for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of \atcatcode right to the beginning.	210
\extrasdanish: Added definition of "~ and "="	211
Changed definition of "’ to print “ instead of ”	211
danish-1.3k	
\datedanish: use \def instead of \edef	211
Use \edef to define \today to save memory	211
\extrasdanish: Removed empty groups after double quote and guillemot characters	211
danish-1.3m	
\extrasdanish: Deactivate shorthands outside of Danish	211
danish-1.3n	
\captionsdanish: Added \glossaryname	210
danish-1.3o	
\captionsdanish: Added translation of ‘Glossary’	210
danish-1.3p	
\englishhyphenmins: Added default for setting of hyphenmin parameters	210
dutch-2.0a	
General: Added checking of format	80
dutch-2.0b	
General: Added extrasdutch	80
dutch-2.0c	
General: Added grqq macros	80
dutch-2.1	
General: reflect change to version 2.1 in babel and changes in german v2.3	80
dutch-2.1a	
General: Incorporated Nico’s comments	80
dutch-2.1b	
General: Incorporated more comments by Nico	80
dutch-2.1c	
General: Fixed some typos	80
dutch-2.2	
General: Fixed problem with the use of " in moving arguments while " is active	80
dutch-2.3	
\@trema: \dieresis instead of \accent127	83
General: \dieresis instead of \accent127	83
When using PostScript fonts with the Adobe font-encoding, the dieresis-accent is located elsewhere, modified code	80
\noextrasafrikaans: Added \dieresis	82
dutch-2.3a	
General: Modified the documentation somewhat	80

dutch-3.0	
General: Modified for babel 3.0	80
Now use <code>\adddialect</code> if language undefined	81
dutch-3.0a	
General: Removed some problems in change log	80
dutch-3.0b	
<code>\extrasafrikaans</code> : added some comment chars to prevent white space	82
<code>\noextrasafrikaans</code> : added some comment chars to prevent white space	82
dutch-3.1	
General: Removed bug found by van der Meer	80
dutch-3.1a	
<code>\captionsdutch</code> : <code>\pagename</code> should be <code>\headpagename</code>	81
Removed <code>\global</code> definitions	81
<code>\datedutch</code> : Removed <code>\global</code> definitions	81
<code>\extrasafrikaans</code> : Removed <code>\global</code> definitions	82
<code>\noextrasafrikaans</code> : Removed <code>\global</code> definitions	82
dutch-3.2	
General: added case for "y and "Y	83
<code>\extrasafrikaans</code> : Save all redefined macros	82
<code>\noextrasafrikaans</code> : Try to restore everything to its former state	82
dutch-3.2a	
General: Added reset of catcode of @ before <code>\endinput</code> .	80
Renamed <code>babel.sty</code> in <code>babel.com</code>	80
dutch-3.2b	
General: removed typo ( <code>allowhpyhens</code> )	83
dutch-3.2c	
General: Removed code to load <code>latexhax.com</code>	80
removed use of <code>\@ifundefined</code>	80, 81
dutch-3.3	
General: Rewritten parts of the code to use the new features of babel version 3.1	80
<code>\extrasafrikaans</code> : Macro complete rewritten	82
<code>\noextrasafrikaans</code> : Macro complete rewritten	82
dutch-3.3a	
<code>\@trema</code> : renamed <code>\@umlaut</code> to <code>\@trema</code>	83
General: Added <code>\save@sf@q</code> macro from <code>germanb</code> and rewrote all quote macros to use it	83
Moved code to the beginning of the file and added <code>\selectlanguage</code> call	80
<code>\captionsdutch</code> : added <code>\seename</code> and <code>\alsoname</code>	81
dutch-3.3b	
General: Added warning, if no dutch patterns loaded	81
<code>\captionsdutch</code> : added <code>\prefacename</code>	81
<code>\extrasafrikaans</code> : modified handling of <code>\dospecials</code> and <code>\@sanitize</code>	82
<code>\noextrasafrikaans</code> : modified handling of <code>\dospecials</code> and <code>\@sanitize</code>	82
dutch-3.4b	
General: moved definition of <code>\allowhyphens</code> , <code>\set@low@box</code> and <code>\save@sf@q</code> to <code>babel.com</code>	83
dutch-3.5	
<code>\captionsdutch</code> : <code>\headpagename</code> should be <code>\pagename</code>	81
dutch-3.6	
General: Update or LaTeX2e	80
dutch-3.6c	
General: Now use <code>\@nopatterns</code> to produce the warning	81
Removed the use of <code>\filedate</code> , moved identification after the loading of <code>babel.def</code>	80

dutch-3.7a	
General: Moved identification code to the top of the file	80
Moved the definition of \ij and \IJ to <code>glyphs.def</code>	83
moved the definition of the double quote character at the baseline to	
<code>glyphs.def</code>	83
Now use <code>\Declaredqddutch</code> to define the functions of the active double quote	83
Removed <code>\dlqq</code> , <code>\@dlqq</code> , <code>\drqq</code> , <code>\@drqq</code> and <code>\dieresis</code>	83
Rewrote the code with respect to the active double quote character	80
The support macros for the active double quote have been moved to <code>babel.def</code>	83
Use <code>\ddot</code> instead of <code>\@MATHUMLAUT</code>	83
Use more general mechanism of <code>\declare@shorthand</code>	83
<code>\afrikaanshyphenmins</code> : use <code>\dutchhyphenmins</code> to store the correct values	83
<code>\IJ</code> : Changed the kerning in the faked ij to match the dc-version of it	53
dutch-3.7b	
General: Added <code>"</code> shorthand	83
dutch-3.7c	
<code>\captionsdutch</code> : We need the <code>"</code> to be active while defining <code>\captionsdutch</code>	81
dutch-3.7d	
<code>\captionsdutch</code> : Added <code>\proofname</code> for AMS- $\text{\LaTeX}$	81
dutch-3.7f	
General: Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for	
consistency with $\text{\LaTeX}$	80
dutch-3.8a	
General: Merged in the definitions for ‘afrikaans’	80
Now use <code>\ldf@finish</code> to wrap up	84
this needs a more complicated check as ‘afrikaans’ may or may not have its	
own hyphenation patterns	81
<code>\noextrasafrikaans</code> : Made all definitions dependant on <code>\CurrentOption</code>	82
dutch-3.8b	
<code>\captionsdutch</code> : Use <code>Bew"ys</code> instead of <code>Bewijs</code>	81
dutch-3.8c	
General: Added the <code>"~</code> shorthand	83
dutch-3.8e	
General: Added a shorthand with the slash character	84
Forgot to replace ‘german’ by ‘dutch’ when copying definition for <code>"~</code>	83
Removed empty groups after double quote characters	83
<code>\dateafrikaans</code> : use <code>\def</code> instead of <code>\edef</code>	82
Use <code>\edef</code> to define <code>\today</code> to save memory	82
<code>\datedutch</code> : use <code>\def</code> instead of <code>\edef</code>	81
Use <code>\edef</code> to define <code>\today</code> to save memory	81
dutch-3.8h	
<code>\afrikaanshyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	83
<code>\captionsdutch</code> : Added <code>\glossaryname</code>	81
dutch-3.8i	
<code>\-:</code> <code>\-</code> should use <code>\bbl@allowhyphens</code>	84
General: <code>"/</code> should use <code>\bbl@allowhyphens</code>	84
english-2.0a	
General: Added checking of format	85
english-2.1	
General: Reflect changes in babel 2.1	85
english-2.1a	
General: Incorporated Nico’s comments	85



english-2.1b	
General: merged <code>USenglish.sty</code> into this file	85
english-2.1c	
General: fixed typo in definition for american language found by Werenfried Spit (nspit@fys.ruu.nl)	85
english-2.1d	
General: Fixed some typos	85
english-3.0	
General: Modified for babel 3.0	85
Now use <code>\adddialect</code> for american	86
Now use <code>\adddialect</code> if language undefined	85
english-3.0a	
General: Removed bug found by van der Meer	85
english-3.0b	
General: Removed <code>\global</code> definitions	86
<code>\captionenglish: \pagename</code> should be <code>\headpagename</code>	87
Removed <code>\global</code> definitions	87
<code>\dateamerican: \global</code> definitions	88
<code>\dateenglish: \global</code> definitions	87
english-3.0c	
General: Renamed <code>babel.sty</code> in <code>babel.com</code>	85
english-3.0d	
General: removed use of <code>\@ifundefined</code>	85
english-3.1	
General: Rewrote parts of the code to use the new features of babel version 3.1	85
english-3.1a	
<code>\captionenglish: added \seename and \alsoname</code>	87
english-3.1b	
<code>\captionenglish: added \prefacename</code>	87
english-3.2	
<code>\captionenglish: \headpagename</code> should be <code>\pagename</code>	87
english-3.3	
General: Update or $\text{\LaTeX} 2\epsilon$	85
english-3.3c	
General: Now use <code>\@nopatterns</code> to produce the warning	85
Removed the use of <code>\filedate</code> and moved the identification after the loading of <code>babel.def</code>	85
english-3.3d	
General: Only define american as a dialect when no separate patterns have been loaded	86
english-3.3e	
<code>\captionenglish: Added \proofname</code> for AMS- $\text{\LaTeX}$	87
english-3.3g	
General: Allow british as the name of the UK patterns	85
Allow USenglish as the name of the american patterns	86
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consis- tency with $\text{\LaTeX}$	85
<code>\captionenglish: Construct control sequence on the fly</code>	87
<code>\dateenglish: Construct control sequence on the fly</code>	87
<code>\noextrasenglish: Construct control sequences on the fly</code>	88
english-3.3h	
General: Moved the definition of <code>\atcatcode</code> right to the beginning.	85
Now use <code>\ldf@finish</code> to wrap up	88
Now use <code>\LdfInit</code> to perform initial checks	85

english-3.3i	
\dateamerican: use \def instead of \edef	88
Use \edef to define \today to save memory	88
\dateenglish: use \def instead of \edef	87
Use \edef to define \today to save memory	87
english-3.3j	
General: Also allow american english hyphenation patterns to be used for ‘english’	85
Ensure that \l@USenglish is always defined	86
\captionseenglish: Added \glossaryname	87
\dateenglish: Make sure that the value of \today is correct for both options	
‘american’ and ‘USenglish’	87
english-3.3k	
General: Added support for canadian	85, 86
english-3.3l	
General: Added missing backslash	86
english-3.3m	
\englishhyphenmins: Added default for setting of hyphenmin parameters	86
english-3.3n	
General: Added support for australian and newzealand	85, 86
\dateaustralian: Add australian date	88
\dateenglish: Added support for ‘Australian’ and ‘Newzealand’	87
english-3.3o	
General: Make sure that british patterns are used if they were loaded	86
\dateenglish: Explicitly choose the UK form of date	87
esperanto-1.4o	
\noextrasesperanto: Moved the check for math to babel.def	76
esperanto-1.0a	
General: Renamed babel.sty in babel.com	75
esperanto-1.0b	
General: Removed use of \makeatletter	75
esperanto-1.1	
General: Added a warning when no hyphenation patterns were loaded.	75
Brought up-to-date with babel 3.2a	75
\captionseesperanto: Added \seename, \alsoname and \prefacename	75
esperanto-1.2	
General: Included code from esperant.sty	75
esperanto-1.3	
\captionseesperanto: \headpagename should be \pagename	75
Repaired a number of mistakes, indicated by D. Ederveen	75
\dateesperanto: Removed the capitals from \today	76
esperanto-1.4a	
General: Updated for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub>	75
\captionseesperanto: added missing closing brace	75
esperanto-1.4d	
General: Removed the use of \filedate, moved Identification after loading of	
babel.def	75
Use \@nopatterns for the warning	75
esperanto-1.4e	
General: Moved identification code to the top of the file	75
esperanto-1.4f	
General: Corrected typos (PR1652)	75
esperanto-1.4g	
\captionseesperanto: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	75

esperanto-1.4h	
General: Added a few shorthands	76
esperanto-1.4i	
General: Moved the definition of <code>\atcatcode</code> right to the beginning.	75
Now use <code>\ldf@finish</code> to wrap up	77
Now use <code>\LdfInit</code> to perform initial checks	75
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X	75
<code>\captionesperanto</code> : Replaced ‘Proof’ by ‘Pruvo’ PR 2207	75
esperanto-1.4j	
General: fixed typo in table caption (funtion instead of function)	75
esperanto-1.4k	
<code>\dateesperanto</code> : Removed Rthe use of <code>\edef</code> again	76
Use <code>\edef</code> to define <code>\today</code> to save memory	76
esperanto-1.4l	
General: Added a shorthand definition on system level	76
esperanto-1.4n	
<code>\noextrasesperanto</code> : Added a check for math mode to the definition of the shorthand character	76
esperanto-1.4p	
<code>\captionesperanto</code> : Added <code>\glossaryname</code>	75
esperanto-1.4q	
<code>\captionesperanto</code> : Added translation for Glossary	75
<code>\esper</code> : Removed the extra level of expansion for more than five items, as was done in L <sup>A</sup> T <sub>E</sub> X	77
estonian-1.0b	
General: corrected typos	254
estonian-1.0c	
<code>\captionsestonian</code> : Added <code>\proofname</code> for AMS-L <sup>A</sup> T <sub>E</sub> X	255
estonian-1.0d	
General: The second argument was missing in the definition of some of the double-quote shorthands	257
<code>\captionsestonian</code> : Added translation of ‘Proof’	255
<code>\noextrasestonian</code> : Removed the code that changes category, lower case, upper case and space factor codes	256
estonian-1.0e	
General: Now use <code>\ldf@finish</code> to wrap up	257
Now use <code>\LdfInit</code> to perform initial checks	254
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of <code>\atcatcode</code> right to the beginning.	254
estonian-1.0f	
General: Removed empty groups after double quote and guillemot characters	257
<code>\dateestonian</code> : use <code>\def</code> instead of <code>\edef</code>	255
Use <code>\edef</code> to define <code>\today</code> to save memory	255
estonian-1.0g	
General: use <code>\bbl@t@one</code> instead of <code>\bbl@next</code>	256
estonian-1.0h	
<code>\captionsestonian</code> : Added <code>\glossaryname</code>	255
<code>\estonianhyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	256
finnish-1.0a	
General: Renamed <code>babel.sty</code> in <code>babel.com</code>	233
finnish-1.0b	
General: Removed use of <code>\@ifundefined</code>	233

finnish-1.1	
General: Added a warning when no hyphenation patterns were loaded. . . . .	233
Brought up-to-date with babel 3.2a . . . . .	233
\captionsfinnish: \headpagename should be \pagename . . . . .	233
Added \seename, \alsoname and \prefacename . . . . .	233
finnish-1.1.2	
\captionsfinnish: Added translations . . . . .	233
finnish-1.2	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> . . . . .	233
finnish-1.3c	
General: Now use \@nopatterns to produce the warning . . . . .	233
Removed the use of \filedate and moved identification after the loading of	
babel.def . . . . .	233
finnish-1.3d	
General: Removed a few references to babel.com . . . . .	233
finnish-1.3e	
\datefinnish: Added a ‘.’ after the number of the day . . . . .	234
finnish-1.3f	
\finishhyphenmins: use \finnishhyphenmins to store the correct values . . .	235
\noextrasfinnish: Added the setting of \frenchspacing . . . . .	234
Added the setting of more hyphenation parameters, according to PR1027 .	234
finnish-1.3g	
\:-: Added change of \- . . . . .	235
\captionsfinnish: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X . . . . .	233
\noextrasfinnish: Added the active double quote . . . . .	234
finnish-1.3h	
\captionsfinnish: Added finnish word for ‘Proof’ . . . . .	233
finnish-1.3i	
General: Now use \ldf@finish to wrap up . . . . .	235
Now use \LdfInit to perform initial checks . . . . .	233
Replaced \undefined with \@undefined and \empty with \@empty for consis-	
tency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of \atcatcode right to the beginning.	233
finnish-1.3k	
\datefinnish: use \def instead of \edef . . . . .	234
Use \edef to define \today to save memory . . . . .	234
\noextrasfinnish: Removed empty groups after double quote and guillemot	
characters . . . . .	235
finnish-1.3m	
\noextrasfinnish: Added misisng closing brace . . . . .	235
finnish-1.3n	
\:-: \allowhyphens should have been \bbl@allowhyphens . . . . .	235
\captionsfinnish: Added \glossaryname . . . . .	233
\finishhyphenmins: Now use \providehyphenmins to provide a default value	235
\noextrasfinnish: Deactive shorthands outside of Finnish . . . . .	235
finnish-1.3o	
\captionsfinnish: Provided translation for Glossary . . . . .	233
finnish-1.3p	
\noextrasfinnish: " = should also use \bbl@allowhyphens . . . . .	235
frenchb-1.1	
General: Add some font changing definitions. . . . .	128
Added \AllTeX. . . . .	145
Added \leavevmode in \bsc . . . . .	144
Added a hook to insert space or not before ‘double punctuation’. . . .	117, 132
Added command \bsc. . . . .	144

Added T1-encodings for $\text{\ae}$ , $\text{\CE}$ , $\text{\ae}$ , $\text{\AE}$ . <i>Do not</i> re-define these symbols outside $\text{\LaTeX} 2_{\epsilon}$ . . . . .	145
Corrected definitions of $\text{\boi}$ . . . . .	145
Do not redefine $\text{\^}$ and $\text{\"}$ in $\text{\MLTeX}$ , because it would break hyphenation. The correct place to redefine $\text{\^i}$ and $\text{\"i}$ is in the format itself, see $\text{\MLTeX.cfg}$ . . . . .	146
Do not use commands related to encodings outside $\text{\LaTeX} 2_{\epsilon}$ . . . . .	145
Do this only in $\text{\LaTeX} 2_{\epsilon}$ . . . . .	146
Special care has to be taken with $\text{\MLTeX}$ . . . . .	146
$\text{\bbl@nonfrenchitemize}$ : Save original definitions of label items, instead of hard coding them in $\text{\bbl@nonfrenchitems}$ (suggested by Vincent Jalby). . . . .	136
Tune vertical spacing in French lists. . . . .	136
$\text{\captionsfrench}$ : This code is useless in $\text{\PlainTeX}$ , check the format before loading it. . . . .	130
$\text{\degrees}$ : Added $\text{\leavevmode}$ in the $\text{\degrees}$ 's definition . . . . .	146
Fixed width bounding box for correct spacing with both CM, EC and PostScript fonts . . . . .	146
$\text{\fg}$ : A warning is now issued if $\text{\og}$ or $\text{\fg}$ have been defined elsewhere in a $\text{\LaTeX} 2_{\epsilon}$ document (suggested by Vincent Jalby). . . . .	133
$\text{\fprimo}$ : Avoid using math superscripts in text mode (suggested by V. Jalby), use $\text{\up}$ instead. The symbol 'degree' has nothing to do in $\text{\FrenchPopularEnumerate}$ , replace it by a small 'o'. . . . .	144
$\text{\french@sh@}$ : Added a hook to insert space or not before 'double punctuation'. . . . .	131
$\text{\ieme}$ : $\text{\@ptsize}$ may not be undefined, i. e. in $\text{\slides.cls}$ . . . . .	143
Added 5 macros from $\text{\french.sty}$ and missing $\text{\lowercase}$ . . . . .	144
Internal macro $\text{\up@size}$ introduced by Johannes Braams to replace $\text{\small}$ , too fragile in 2.09). . . . .	143
Use $\text{\textsuperscript}$ in $\text{\LaTeX} 2_{\epsilon}$ , as suggested by Vincent Jalby. . . . .	143
$\text{\if@Two@E}$ : New test $\text{\if@Two@E}$ . . . . .	126
$\text{\ifLaTeXe}$ : Use $\text{\fmtname}$ to check the format instead of $\text{\newcommand}$ ; define $\text{\PlainFmtName}$ and $\text{\LaTeXeFmtName}$ . . . . .	126
<b>frenchb-1.1b</b>	
General: Moved the definition of $\text{\atcatcode}$ right to the beginning. . . . .	117
Now use $\text{\ldf@finish}$ to wrap up. . . . .	147
Now use $\text{\LdfInit}$ to perform initial checks . . . . .	126
Removed test for $\text{\l@english}$ . . . . .	126
Replaced $\text{\undefined}$ with $\text{\@undefined}$ and $\text{\empty}$ with $\text{\@empty}$ for consistency with $\text{\LaTeX}$ . . . . .	117
<b>frenchb-1.2</b>	
General: 'french' 'frenchb' and 'français' are synonymous regardless of $\text{\CurrentOption}$ . . . . .	127
Check for hyphenation patterns . . . . .	126
New macros $\text{\nombre}$ $\text{\decimalsep}$ and $\text{\thousandsep}$ added to format numbers. . . . .	139
Removed $\text{\AllTeX}$ . . . . .	145
The config file searched for is 'frenchb.cfg' regardless $\text{\CurrentOption}$ . . . . .	147
$\text{\bbl@nonfrenchindent}$ : Corrected typo $\text{\bbl@nonfrenchident}$ . . . . .	137
$\text{\captionsfrench}$ : Added aliases $\text{\captionsfrenchb}$ and $\text{\captionsfrançais}$ . . . . .	130
$\text{\datefrench}$ : Added aliases $\text{\datefrenchb}$ and $\text{\datefrançais}$ . Use $\text{\ier}$ instead of $\text{\up}$ . . . . .	146
$\text{\noextrsfrench}$ : 'french' 'frenchb' and 'français' are synonymous regardless of $\text{\CurrentOption}$ . . . . .	128

frenchb-1.2b	
General: Spacing after opening and before closing guillemets slightly enlarged and some glue added, as suggested by Th. Bouche. Unlike <code>\kern</code> , <code>\hskip</code> doesn't inhibit hyphenation, nothing like <code>\allowhyphens</code> is required. ....	133
<code>\fg</code> : Define <code>\xspace</code> as if it is not defined by D. Carlisle 'xspace.sty'. Will be used in <code>\fg</code> , and <code>\ieme ... \ieres</code> (new for this release). ....	133
<code>\ieme</code> : Use <code>\xspace</code> to control spacing after <code>\ieme ... \ieres</code> . ....	144
<code>\thousandsep</code> : Definition of <code>\nombre</code> changed to correct a bug with moving arguments in L <sup>A</sup> T <sub>E</sub> X-2.09. ....	140
Extra care taken to handle signs properly inside <code>\nombre</code> in L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> . ....	140
frenchb-1.3	
General: Added this section. ....	141
Avoid mixing text and math mode whenever possible: check if <code>\textminus</code> and <code>co.</code> are available. ....	140
New implementation of guillemets. ....	132
Use <code>\r</code> to access the character 'degree', as suggested by V. Jalby. ....	145
Use <code>\textbackslash</code> to define <code>\boi</code> . ....	145
<code>\bbl@nonfrenchitemize</code> : Change <code>--</code> to <code>\textendash</code> , completely redesign the itemize environment in French and add a hook to switch back to L <sup>A</sup> T <sub>E</sub> X standard itemize lists. ....	136
<code>\bbl@nonfrenchlistspacing</code> : Add a switch to allow L <sup>A</sup> T <sub>E</sub> X standard settings. ....	135
<code>\nombre</code> : Added <code>\@empty</code> to the definitions of <code>\nb@first</code> and <code>\nb@suite</code> , as suggested by V. Jalby, to cope with possibly empty integer part as in <code>\nombre,123</code> . ....	140
frenchb-1.3b	
<code>\datefrench</code> : Use <code>\edef</code> to define <code>\today</code> to save memory ....	146
frenchb-1.3c	
General: changed <code>\@makecaption</code> definition to add a hook <code>\CaptionSeparator</code> . ....	129
<code>\captionsfrench</code> : Added <code>\CaptionSeparator</code> . ....	130
<code>\fprimo</code> ): Typos corrected: <code>quatro</code> , <code>fquatro</code> ....	144
frenchb-1.3d	
General: Spacing after opening and before closing guillemets changed again: normal space with little glue (suggested by Th. Bouche). ....	133
<code>\datefrench</code> : Move this code to the end of file, until <code>\ier</code> is defined (due to use of <code>\edef</code> ); expansion of <code>\ier</code> has to be stopped anyway. ....	146
frenchb-1.3e	
General: Try to use AMS Cyrillic fonts to provide better looking guillemets in OT1 encoding. ....	132
frenchb-1.3f	
General: Deleted sectioning command <code>\section{About French Typography}</code> . ....	117
<code>\ifLaTeXe</code> : Use <code>\magnification</code> to check if the format is plain (i.e. <i>not</i> L <sup>A</sup> T <sub>E</sub> X). Checking the format's name was not reliable: plain-like formats may not be called just 'plain' but 'babel-plain'. ....	126
frenchb-1.3g	
<code>\datefrench</code> : Replaced <code>\edef</code> with <code>\def</code> to prevent problems with unexpandable accent commands ....	146
frenchb-1.4	
General: Add a hook to let the comma be in math mode of type <code>\mathord</code> in French, as a decimal separator should be. ....	139
Add a hook to pick French guillemets from any font (suggested by Michel Bovani). ....	132
Add definitions for <code>\at</code> , <code>\circonflexe</code> and <code>\tild</code> in other encodings (mL <sup>A</sup> T <sub>E</sub> X's L <sup>O</sup> 1). ....	145
Added this section. ....	142

<b>\bbl@nonfrenchitemize</b> : <b>\newif</b> only in LaTeX. . . . .	136
Add a hook <b>\FrenchLabelItem</b> which defaults to <b>\textendash</b> , this was suggested by Michel Bovani to allow some customization of label items. . . . .	136
frenchb-1.4a	
General: frenchb-1.3 silently redefined <b>\@makecaption</b> , overwriting changes made by some classes like koma-script, ua-thesis... (pointed out by Werner Lemberg). New implementation suggested by Vincent Jalby. . . . .	129
<b>\captionsfrench</b> : Changed ‘ <b>␣</b> ’ to <b>\textendash</b> in <b>\CaptionSeparator</b> in case the ligature doesn’t exist (tt-fonts). . . . .	130
frenchb-1.4c	
General: Bug correction: <b>\xspace</b> didn’t work in <b>\dots</b> without amsmath.sty. . . . .	141
frenchb-1.4d	
General: AMS-LaTeX 2.0 provides a much better spacing for <b>\dots</b> than 1.2, so let’s take advantage of it when amsmath (up to 1.2 or newer) is loaded. . . . .	142
Do NOT set catcodes of French quotes to 12 before launching <b>\initiate@active@char</b> in frenchb.cfg, (problem on Mac reported by M.Bovani). . . . .	122
<b>\datefrench</b> : Changed <b>\noexpand\ier</b> to <b>\ier</b> , as a result of the replacement of <b>\edef</b> by <b>\def</b> , see previous change. Also add braces around <b>\ier</b> for xspace.sty. . . . .	146
frenchb-1.4e	
General: Captions print twice with AMS classes (amsart, amsbook). Bug reported by Jean-François Mertens. Revert to implementation of version 1.4, which is safer as makecaption can be changed unpredictably. . . . .	129
frenchb-1.4f	
General: Only issue a warning if <b>\@makecaption</b> exists . . . . .	129
<b>\captionsfrench</b> : Added <b>\glossaryname</b> . . . . .	130
frenchb-1.4g	
<b>\thousandsep</b> : Added a new hook <b>\ThinSpaceInFrenchNumbers</b> to have thin spaces instead of normal spaces (the default) when formatting French numbers. . . . .	140
frenchb-1.5a	
<b>\bbl@nonfrenchitemize</b> : Redesign <b>\itemize</b> to allow users to change the markers of any level in itemize lists. . . . .	136
<b>\bbl@nonfrenchlistspacing</b> : Redefine <b>\list</b> instead of <b>\@trivlist</b> to provide more freedom to the user, but still allow the former way with <b>\ifFrenchOldTrivlist</b> . . . . .	135
frenchb-1.5b	
General: Added support for canadien and acadian . . . . .	126
frenchb-1.5d	
General: Load frenchb.cfg first and change <b>\ldf@finish</b> to <b>\ldf@quit</b> . . . . .	147
The internal name for the French language is changed from ‘frenchb’ to ‘french’. . . . .	127
frenchb-1.5f	
General: Added a hook to customize the space before the colon in French (thin or normal). . . . .	132
<b>\fg</b> : <b>\og</b> and <b>\fg</b> should not be expanded when written to a file; use <b>\renewcommand</b> (in <b>\LaTeX</b> ) to redefine them instead of <b>\let</b> or <b>\def</b> . . . . .	133
frenchb-1.5g	
General: Instead of issuing a warning when <b>\captionsfrançais</b> or <b>\captionsfrenchb</b> are customized in the preamble, we merge the changes into <b>\captionsfrench</b> . . . . .	127
Let <b>\LdfInit</b> check for <b>\datefrench</b> instead of <b>\NoAutoSpaceBeforeFDP</b> , as the later is also defined by russianb.ldf! . . . . .	126

<b>\bbl@nonfrenchitemize:</b> <code>\parskip</code> is of type ‘skip’, its mean value only (not the glue) should be moved from <code>\topsep</code> to <code>\partopsep</code> : subtracting glue can lead to weird results. Bug pointed out by Michel Bovani. ....	136
<b>\bbl@nonfrenchlistspacing:</b> <code>\parskip</code> is of type ‘skip’, its mean value only (not the glue) should be moved from <code>\topsep</code> to <code>\partopsep</code> : subtracting glue can lead to weird results. Bug pointed out by Michel Bovani. ....	135
frenchb-1.6a	
General: Add two hooks to customize footnotes: <code>\AddThinSpaceBeforeFootnotes</code> and <code>\FrenchFootnotes</code> (suggested by Jacques André). ....	137
<b>\degres:</b> Replace <code>\degres</code> by <code>\textdegree</code> from <code>textcomp.sty</code> when possible (suggested by Michel Bovani). ....	146
frenchb-1.6b	
General: Default OT1 guillemets are now borrowed from Polish fonts, rather than from <code>wncyr</code> . ....	132
frenchb-1.6c	
General: Bug correction: it is necessary to re-execute <code>\captionsfrench</code> after merging <code>\captionsfrenchb</code> and <code>\captionsfrançais</code> . ....	127
OT1 ‘Polish’ guillemets are now taken from the LM fonts which will be part of TL8. ....	132
<b>\StandardLayout:</b> Bug correction: the definitions of <code>\labelitemi</code> ... <code>\itemize</code> need to be saved in <code>\StandardLayout</code> . ....	142
frenchb-1.6e	
General: The change from <code>\mathpunct</code> to <code>\mathord</code> should be encoding independent (suggested by Michel Bovani): just strip the highest hexadecimal digit to switch from type <code>\mathpunct</code> to type <code>\mathord</code> . ....	139
frenchb-1.6f	
<b>\StandardFootnotes:</b> Move <code>\newif</code> and <code>\newdimen</code> commands outside <code>\ifLaTeXe</code> ... <code>\fi</code> for compatibility with the plain format. ....	137
frenchb-1.6g	
General: <code>frenchb.cfg</code> is now loaded only with LaTeX2e, as the customization makes sense only in LaTeX2e. Suggested by J.F. Burnol. ....	147
<b>\degres:</b> Add <code>\hbox</code> in the definition of <code>\degres</code> when <code>textcomp.sty</code> is loaded, so that <code>\degres</code> can be used in math mode. ....	146
galician-1.1	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> ....	200
galician-1.1c	
General: Now use <code>\@nopatterns</code> to produce the warning ....	200
Removed the use of <code>\filedate</code> and moved identification after the loading of <code>babel.def</code> ....	200
<b>\textacute:</b> Renamed from <code>\acute</code> as that is a <code>\mathaccent</code> ....	202
<b>\texttilde:</b> Renamed from <code>\tilde</code> as that is a <code>\mathaccent</code> ....	202
galician-1.1d	
<b>\captionsgalician:</b> Added a few missing translations ....	200
<b>\dategalician:</b> Corrected the name of the month marzo from marzal ....	201
galician-1.2a	
<b>\extrasgalician:</b> Handling of active characters completely rewritten ....	201
<b>\noextrasgalician:</b> All the code for handling active characters is now moved to <code>babel.def</code> ....	201
galician-1.2b	
General: Changed mathmode definition of acute shorthands to expand to a single prime followed by the next character in the input ....	203
<b>\captionsgalician:</b> Added <code>\proofname</code> for AMS-L <sup>A</sup> T <sub>E</sub> X ....	200



galician-1.2c	
<code>\noextrasgalician</code> : Make active accent optional	201
galician-1.2d	
General: Added " as an extra shorthand	203
<code>\noextrasgalician</code> : Need to split up the <code>\@ifpackagewith</code> statement	201
galician-1.2e	
General: Now use <code>\ldf@finish</code> to wrap up	203
Now use <code>\LdfInit</code> to perform initial checks	200
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of <code>\atcatcode</code> right to the beginning.	200
galician-1.2f	
General: Added <code>\leavevmode</code> to definitions of "a and "o	203
<code>\noextrasgalician</code> : Added some comment signs to prevent unwanted spaces in the output	201
galician-1.2h	
<code>\dategalician</code> : use <code>\def</code> instead of <code>\edef</code>	201
Use <code>\edef</code> to define <code>\today</code> to save memory	201
galician-1.2i	
<code>\noextrasgalician</code> : Don't forget to deactivate the shorthands	201
galician-1.2j	
<code>\captionsgalician</code> : Added <code>\glossaryname</code>	200
galician-1.2k	
<code>\captionsgalician</code> : Translated Proof	200
galician-1.2l	
<code>\captionsgalician</code> : Translated Glossary	200
germanb-1.0a	
General: Incorporated Nico's comments	89
germanb-1.0b	
General: fixed typo in definition for austrian language found by Werenfried Spit	
<code>nspit@fys.ruu.nl</code>	89
germanb-1.0c	
General: Fixed some typos	89
germanb-1.1	
General: When using PostScript fonts with the Adobe fontencding, the dieresis-accent is located elsewhere, modified code	89
<code>\noextrasaustrian</code> : Added <code>\dieresis</code>	91
germanb-1.1a	
General: Modified the documentation somewhat	89
germanb-2.0	
General: Modified for babel 3.0	89
Now use <code>\adddialect</code> for austrian	90
Now use <code>\adddialect</code> if language undefined	90
germanb-2.0a	
General: Removed some problems in change log	89
germanb-2.0b	
<code>\extrasaustrian</code> : added some comment chars to prevent white space	91
<code>\noextrasaustrian</code> : added some comment chars to prevent white space	91
germanb-2.1	
General: Removed bug found by van der Meer	89
germanb-2.2	
General: Removed global assignments, brought uptodate with <code>german.tex</code> v2.3d	89
<code>\captionsaustrian</code> : <code>\pagename</code> should be <code>\headpagename</code>	90
Removed <code>\global</code> definitions	90
<code>\extrasaustrian</code> : Save all redefined macros	91

<code>\noextrasaustrian</code> : Try to restore everything to its former state	91
germanb-2.2a	
General: Renamed <code>babel.sty</code> in <code>babel.com</code>	89
germanb-2.2d	
General: Removed use of <code>\@ifundefined</code>	90
germanb-2.3	
General: Rewritten parts of the code to use the new features of babel version 3.1	89
germanb-2.3e	
General: Added <code>\save@sf@q</code> macro and rewrote all quote macros to use it	91
Added warning, if no german patterns loaded	90
Brought up-to-date with <code>german.tex</code> v2.3e (plus some bug fixes) [br]	89
<code>\captionsaustrian</code> : Added <code>\prefacename</code> , <code>\seename</code> and <code>\alsoname</code>	90
<code>\dategerman</code> : Added <code>\month@german</code>	90
germanb-2.3h	
General: moved definition of <code>\allowhyphens</code> , <code>\set@low@box</code> and <code>\save@sf@q</code> to	
<code>babel.com</code>	91
germanb-2.4	
<code>\captionsaustrian</code> : <code>\headpagename</code> should be <code>\pagename</code>	90
germanb-2.5	
General: Update or $\text{\LaTeX} 2_{\epsilon}$	89
germanb-2.5c	
General: Now use <code>\@nopatterns</code> to produce the warning	90
Removed the use of <code>\filedate</code> and moved the identification after the loading	
of <code>babel.def</code>	89
germanb-2.6a	
General: <code>\umlautlow</code> and <code>\umlauthigh</code> moved to <code>glyphs.dtx</code> , as well as <code>\newumlaut</code>	
(now <code>\lower@umlaut</code> )	91
Moved all quotation characters to <code>glyphs.dtx</code>	91
Moved the identification to the top of the file	89
Rewrote the code that handles the active double quote character	89
Use <code>\ddot</code> instead of <code>\@MATHUMLAUT</code>	92
<code>\noextrasaustrian</code> : All the code to handle the active double quote has been	
moved to <code>babel.def</code>	91
Removed <code>\3</code> as it is no longer in <code>german.ldf</code>	91
use <code>\germanhyphenmins</code> to store the correct values	91
germanb-2.6b	
<code>\captionsaustrian</code> : Added <code>\proofname</code> for AMS- $\text{\LaTeX}$	90
germanb-2.6c	
General: added the <code>\allowhyphens</code>	92
Moved <code>\german@dq@disc</code> to <code>babel.def</code> , calling it <code>\bbl@disc</code>	92
<code>\noextrasaustrian</code> : Use decimal number instead of hat-notation as the hat may	
be activated	91
germanb-2.6d	
General: Moved the definition of <code>\atcatcode</code> right to the beginning.	89
Now use <code>\ldf@finish</code> to wrap up	93
Now use <code>\LdfInit</code> to perform initial checks	89
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with $\text{\LaTeX}$	89
<code>\captionsaustrian</code> : Construct control sequence on the fly	90
<code>\noextrasaustrian</code> : Construct control sequence <code>\extrasgerman</code> or <code>\extrasaustrian</code>	
on the fly	91
germanb-2.6f	
General: Copied the coding for "f from <code>german.dtx</code> version 2.5d	92
use <code>\SS</code> instead of <code>SS</code> , removed braces after <code>\ss</code>	92

\ck: Now use \shorthandon and \shorthandoff .....	93
\dateaustrian: use \def instead of \edef .....	91
Use \edef to define \today to save memory .....	91
\dategerman: use \def instead of \edef .....	90
Use \edef to define \today to save memory .....	90
germanb-2.6i	
\noextrasaustrian: Deactivate shorthands outside of German .....	91
germanb-2.6j	
\captionsaustrian: Added \glossaryname .....	90
\noextrasaustrian: Now use \providehyphenmins to provide a default value .....	91
germanb-2.6k	
\noextrasaustrian: Turn frenchspacing on, as in <code>german.sty</code> .....	91
greek-1.0b	
General: Moved the definition of \atcatcode right to the beginning .....	108
Now use \ldf@finish to wrap up .....	116
Now use \LdfInit to perform initial checks .....	109
Replaced \undefined with \@undefined and \empty with \@empty for consistency with L <sup>A</sup> T <sub>E</sub> X .....	108
\textgreek: Added a level of braces to keep encoding change local .....	110
greek-1.0c	
\greek@tilde: Added command .....	114
greek-1.1	
\Grtoday: Added macro \Grtoday .....	112
greek-1.1a	
\dategreek: Fixed typo, Oktwbr'iou instead of Oktobr'iou .....	111
\greek@Alph: removed two superfluous @'s which made \@alph undefined ..	113
greek-1.1b	
\noextragreek: Added setting of \uccodes (after <code>kdgreek.sty</code> ) .....	115
Added shorthand for \char255 .....	115
Made tilde expand to a tilde with \catcode 12 .....	116
greek-1.1c	
General: Added a couple of symbols, needed for \greeknumeral .....	116
\noextragreek: fixed two typos .....	115
greek-1.1d	
\dategreek: Macro \gr@month now produces the name of the month .....	111
greek-1.1e	
General: Added caption name for proof .....	110
Most symbols are removed and are now defined in package grsymp .....	116
\gr@month: Macro added .....	111
\noextragreek: Added lowercase code for v .....	115
Added uppercase code for special letter “v”. Uppercase code for accents is now 9f, instead of ff .....	115
Shorthand is changed. Active character is now \char159 .....	115
greek-1.2	
General: Added caption names for \polutonikogreek .....	111
Classical Greek is now a dialect .....	108
\gr@cc@greek: Added macro \datepolutonikogreek .....	111
Added macro \gr@cl@month .....	111
\noextragreek: Added lowercase codes for “modern” greek .....	115
Added uppercase codes for “modern” Greek. The old codes are now for “Polutoniko” Greek .....	115
Definitions for “modern” Greek are now the definitions of “Polutoniko” Greek .....	115
greek-1.2a	
General: filename <code>lgrenc.def</code> now lowercase .....	110

\dategreek: Use \edef to define \today .....	111
\noextragreek: Need shorthand to exist for “monotoniko” Greek, not “polu- toniko” Greek .....	115
greek-1.2b	
General: Classical Greek is now called “Polutoniko” Greek. The previous name was at least misleading .....	108
\dategreek: use \def instead of \edef .....	111
\gr@num@iii: No longer use \ in the expansion of the \gr@num@x macros as they ned to be expandable .....	114
greek-1.2c	
General: Package grsymb has been eliminated because the CB fonts v2.0 do not include certain symbols and so the remaining symbol definitions have been moved here .....	116
This version conforms to version 2.0 of the CB fonts and consequently we added a few new symbol-producing commands .....	108
greek-1.2e	
\greek@Roman: Moved redefinition of \@roman back to the language specific file	113
greek-1.2f	
\ltx@amp: Now switch the definition of & from \extragreek .....	114
greek-1.3a	
General: polutoniko is now an attribute to Greek, no longer a ‘dialect’ .....	108
\gr@c@greek: removed macro \datepolutonikogreek .....	111
greek-1.3b	
\greeknumeral: Added \expandafter and \number (PR3000) in order to make a counter an acceptable argument .....	112
greek-1.3c	
\ltx@amp: Added a missing opening brace .....	114
greek-1.3d	
General: Fixed typo, bl’epe ep’ishc instead of bl’pe ep’ishc .....	110
Fixed typo, bl’epe <ep’ishc instead of bl’pe <ep’ishc .....	111
\greek@Roman: \@roman and @Roman need to be added to \extrapolutonikogreek .....	113
greek-1.3e	
\greek@Roman: \@roman and @Roman need <i>not</i> be in \extrapolutonikogreek when they are already in \extragreek .....	113
\noextragreek: \extragreek and \extrapolutonikogreek should be com- plementary .....	115
greek-1.3f	
General: Added some code to make older documents work .....	109
greek-1.3g	
General: \noextrapolutonikogreek was missing .....	109
\noextragreek: uc code of   is now just   to reflect recent changes in the cb fonts .....	115
greek-1.3h	
\captionsgreek: Added \glossaryname .....	110
\greekhyphenmins: Now use \providehyphenmins to provide a default value	110
greek-1.3i	
\captionsgreek: The final sigma in all names appears as ‘s’ instead of ‘c’. . .	110
\noextragreek: uc code of ‘v’ is switched to V so that mixed text appears correctly in headers. ....	115
greek-1.3j	
\noextragreek: Because other languages might make the caret active, we can’t use the double caret notation here .....	115
Uses the tilde as an alias for character 159 .....	115

greek-1.3k	
<code>\greek@tilde</code> : Make sure the character “ is not active during the definition of	
<code>\greek@tilde</code> . . . . .	114
<code>\textgreek</code> : Added <code>\leavevmode</code> as was done with <code>\latintext</code> . . . . .	110
greek-1.3l	
General: Commented these lines out as this change has made it into L <sup>A</sup> T <sub>E</sub> X itself. . . . .	116
heb209 1.0a	
General: Initial version. Provides <code>hebrew_newcode</code> , <code>hebrew_oldcode</code> and <code>hebrew_p</code> style files for L <sup>A</sup> T <sub>E</sub> X 2.09 (by Boris Lavva) . . . . .	395
hebfdd-1.0a	
General: Initial version. Supports only 7-bit LHE font encoding and all available Hebrew T <sub>E</sub> X fonts (by Boris Lavva) . . . . .	378
hebfdd-1.0b	
General: fixed <code>lhecmr.fd</code> to use <code>oldjaf10</code> for a slanted font available Hebrew T <sub>E</sub> X fonts (by Tzafrir Cohen) . . . . .	378
hebfdd-1.1a	
General: Adding 8-bit HE8 fonts. Note that most of them cannot be distributed with <code>hebl<sup>A</sup>T<sub>E</sub>X</code> (by Tzafrir Cohen) . . . . .	378
hebfdd-1.2a	
General: Adding configurations for the Culmus fonts, currently 0.90 (by Tzafrir Cohen) . . . . .	378
hebfdd-1.2b	
General: Reiterated the test whether LHE or HE8 is to be used . . . . .	378
hebinp 1.0a	
General: Initial version. Provides 8859-8, cp862, cp1255, and old 7-bit input encodings (by Boris Lavva) . . . . .	370
hebinp 1.1	
General: Renamed hebrew letters: <code>\alef</code> to <code>\hebalef</code> etc. (by Tzafrir Cohen) . . . . .	370
hebinp 1.1a	
General: Renamed CP1255 nikud <code>\patah</code> to <code>\hebpatah</code> etc. Added the macro <code>\DisableNikud</code> - may not be a good idea (by Tzafrir Cohen) . . . . .	370
hebrew-2.0b	
<code>\captionshbrew</code> : Added <code>\glossaryname</code> . . . . .	330
hebrew-2.3h	
<code>\hebrewencoding</code> : Make LHE the default encoding for compatibility reasons . . . . .	330
hebrew 0.1	
General: Preliminary L <sup>A</sup> T <sub>E</sub> X Hebrew option (by Sergio Fogel) . . . . .	328
hebrew 0.2	
General: Corrections and additions (by Rama Porrat) . . . . .	328
hebrew 0.6	
General: Additions (by Yael Dubinsky) . . . . .	328
hebrew 1.2	
General: Bilingual tables, penalties, documentation and more changes (by Yaniv Bargury) . . . . .	328
hebrew 1.30	
General: Font selection, various (by Alon Ziv) . . . . .	328
hebrew 1.31	
General: Bug fixes (by Alon Ziv) . . . . .	328
hebrew 1.32	
General: Made font-change command for numbers ‘ <code>\protect</code> ’ed (by Alon Ziv) . . . . .	328
hebrew 1.33	
General: Made <code>\refstepcounter</code> work using <code>\@ltor</code> (by Alon Ziv) . . . . .	328

hebrew 1.34	
General: Moved font loading to another file. Added <code>\mainsec</code> . Made all text strings be produced by control codes (similar to L <sup>A</sup> T <sub>E</sub> X 2.09 Mar '92). Fixed <code>\noindent</code> (by Alon Ziv) . . . . .	328
hebrew 1.35	
General: Moved the texts to a file selected by the current encoding (by Alon Ziv)	328
hebrew 1.36	
General: Use T <sub>E</sub> X tricks to redefine <code>\theXXXX</code> without keeping old definitions. Use only <code>\@eng</code> for direction/font change (removed <code>\@ltor</code> ). Switched from use of <code>\mainsec</code> to code taken from <code>babel</code> system (by Alon Ziv) . . . . .	328
hebrew 1.37	
General: Use <code>\add@around</code> in defining font size commands. Small bug fixes (by Alon Ziv) . . . . .	328
hebrew 1.38	
General: <code>\everypar</code> changed so that <code>\noindent</code> works unmodified (by Alon Ziv, thanks to Chris Rowley) . . . . .	328
hebrew 1.39	
General: Redefined primitive sectioning commands. Changed <code>\include</code> so it finds <code>.h</code> , <code>.xet</code> , and <code>.ltx</code> files (no extension needed). Reinstated use of <code>\@ltor</code> (by Alon Ziv) . . . . .	328
hebrew 1.40	
General: Added the <code>\@brackets</code> hack (by Alon Ziv) . . . . .	328
hebrew 1.41	
General: Reworked towards using NFSS2. Changed some macro names to be more logical: renamed <code>\@ltor</code> to <code>\@number</code> , <code>\@eng</code> to <code>\@latin</code> , and (in <code>hebrew.ldf</code> ) <code>\@heb</code> to <code>\@hebrew</code> (by Alon Ziv) . . . . .	328
hebrew 1.42	
General: Made list environments work better. Fixed thebibliography environment (by Alon Ziv) . . . . .	328
hebrew 2.0a	
General: Completely rewritten for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> and <code>babel</code> support. Various input and font encodings (with NFSS2) are supported too. The original <code>hebrew.sty</code> is divided to a number of packages and definition files for better readability and extensibility. Added some user- and code-level documentation inside the <code>.dtx</code> and <code>.fdd</code> files, and L <sup>A</sup> T <sub>E</sub> X-driven installation with <code>hebrew.ins</code> (by Boris Lavva) . . . . .	328
hebrew 2.0b	
<code>\hebrewhyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	330
hebrew 2.1	
General: corrections from Sivan Toledo: sender name in letter, and section name in headings. (by Tzafrir Cohen) . . . . .	328
hebrew 2.2	
General: renamed hebrew letters to heb* (e.g.: alef renamed to hebalef) (by Tzafrir Cohen) . . . . .	328
hebrew 2.3	
General: added several <code>\@ifclassloaded{slides}</code> to allow the use of the slides class. (by Tzafrir Cohen) . . . . .	328
hebrew 2.3a	
General: The documentation should now be built fine (broken since at least 2.1, and probably 2.0) (by Tzafrir Cohen) . . . . .	328
hebrew 2.3b	
General: minor clean-ups. The documentation builds now with no warnings. Also removed <code>\R</code> from the caption macro (added in 2.1) Added internal <code>\@ensure@L</code>	

and <code>\@ensure@R</code> (Is there a real need for them? Maybe should they be exposed?) (by Tzafrir Cohen) . . . . .	328
hebrew 2.3c	
General: a temporary fix to the <code>\gim</code> macro. Should be replaced by stuff from <code>hebc</code> . (by Tzafrir Cohen) . . . . .	328
hebrew 2.3d	
General: Initial support for the prosper class. Added <code>\arabicnorl</code> . (by Tzafrir Cohen) . . . . .	328
hebrew 2.3e	
General: Removing <code>hebtech</code> from this distribution (not relevant to babel), added <code>\HeblatexEncoding</code> . some docs cleanup (by Tzafrir Cohen) . . . . .	328
hebrew 2.3f	
General: redefined <code>\list</code> instead of redefining every environment that uses it. some pscolor handling, removed <code>HeblatexEncoding</code> (don't use 2.3e) (by Tzafrir Cohen) . . . . .	328
hebrew 2.3g	
General: Reimplemented the printing of Hebrew numerals and Hebrew counters; modified <code>hebc</code> .sty to use this implementation when typesetting Hebrew dates; added option <code>full</code> to package <code>hebc</code> ; also removed some gratuitous spaces inserted by <code>hebc</code> .sty by adding comment marks. CAUTION: the changes to <code>hebc</code> .sty make it dependent on <code>babel</code> and not useable as a stand-alone package. Is this a problem? (by Ron Artstein) . . . . .	328
icelandic-1.1	
General: Added definitions for old icelandic. . . . .	217
icelandic-1.1a	
General: Added definitions for formatting numbers in Icelandic and some extra utilities. . . . .	218
icelandic-1.1b	
General: Added references to various publications used . . . . .	218
icelandic-1.1c	
General: Removed code already present in <code>babel.def</code> . . . . .	213
<code>\dateicelandic</code> : use <code>\def</code> instead of <code>\edef</code> . . . . .	216
Use <code>\edef</code> to define <code>\today</code> to save memory . . . . .	216
icelandic-1.1e	
<code>\noextrasicelandic</code> : Deactivate shorthands outside of Icelandic . . . . .	215
icelandic-1.1f	
<code>\captionsicelandic</code> : Added <code>\glossaryname</code> . . . . .	215
<code>\noextrasicelandic</code> : Now use <code>\providehyphenmins</code> to provide a default value . . . . .	215
icelandic-1.1g	
<code>\captionsicelandic</code> : Added translation for Glossary . . . . .	215
Only use 7-bit ASCII characters in order to keep the texts input encoding independant . . . . .	215
irish-1.0b	
General: Corrected typo (PR1652) . . . . .	104
irish-1.0c	
<code>\captionsirish</code> : Added <code>\proofname</code> for AMS- $\text{\LaTeX}$ . . . . .	104
irish-1.0e	
General: Now use <code>\ldf@finish</code> to wrap up . . . . .	105
Now use <code>\LdfInit</code> to perform initial checks . . . . .	104
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with $\text{\LaTeX}$ , moved the definition of <code>\atcatcode</code> right to the beginning. . . . .	104
irish-1.0f	
<code>\captionsirish</code> : Added missing translations provided in PR 2719 . . . . .	104

\dateirish: use \def instead of \edef .....	105
Use \edef to define \today to save memory .....	105
\irishhyphenmins: Added definition of \hyphenmins .....	104
irish-1.0h	
\captionssirish: Added \glossaryname .....	104
\irishhyphenmins: Now use \providehyphenmins to provide a default value .....	104
italian-0.99	
General: First version, from english.doc .....	148
italian-1.0	
General: Modified for babel 3.0 .....	148
Now use \adddialect if language undefined .....	149
italian-1.0a	
General: removed typo .....	148
italian-1.0b	
General: Removed bug found by van der Meer .....	148
italian-1.0c	
\captionssitalian: \pagename should be \headpagename .....	149
Removed \global definitions .....	149
\dateitalian: Removed \global definitions .....	150
italian-1.0d	
\captionssitalian: ‘contiene’ substituted by ‘Allegati’ as suggested by Marco Bozzo (BOZZO@CERNVM). .....	149
italian-1.0e	
General: Renamed babel.sty in babel.com .....	148
italian-1.0h	
General: Removed use of \@ifundefined .....	149
italian-1.1	
General: Added a warning when no hyphenation patterns were loaded. ....	149
Brought up-to-date with babel 3.2a .....	148
\captionssitalian: \headpagename should be \pagename .....	149
Added \seename, \alsoname and \prefacename .....	149
italian-1.2	
General: Update for LaTeX .....	148
italian-1.2b	
\captionssitalian: Changed some of the words following suggestions from Claudio Beccari .....	149
\italianhyphenmins: Added setting of left and righthyphenmin according to Claudio Beccari’s suggestion .....	150
\noextrasitalian: Added setting of club- and widowpenalty .....	150
Added setting of finalhyphendemerits .....	150
italian-1.2e	
General: Now use \@nopatterns to produce the warning .....	149
Removed the use of \filedate and moved identification after the loading of babel.def .....	148
italian-1.2f	
General: Updated for babel 3.5 .....	148
italian-1.2g	
\captionssitalian: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X .....	149
italian-1.2h	
\captionssitalian: Added translation of ‘Proof’ .....	149
\noextrasitalian: Now give the apostrophe a lowercase code .....	150
italian-1.2i	
General: Now use \ldf@finish to wrap up .....	157
Now use \LdfInit to perform initial checks .....	149



Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of <code>\atcatcode</code> right to the beginning.	148
italian-1.2j	
General: Added braces around second arg of <code>\LdfInit</code>	149
italian-1.2l	
General: Added <code>\unit</code> , <code>\ap</code> , and <code>\ped</code> macros	148
Added useful macros for fulfilling ISO 31/XI regulations	153
<code>\noextrasitalian</code> : Changed example “ <i>begl’italiani</i> ” (obsolete spelling) with another, “ <i>nell’altezza</i> ”, that behaves the same way	150
italian-1.2m	
General: Added support for etymological hyphenation	148
Support for etymological hyphenation	150
<code>\italianhyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	150
italian-1.2n	
General: Added several commands for the caporali double quotes and for simplifying the accented vowel input	148
Completely modified etymological hyphenation facility	148
Completely new etymological hyphenation facility	151
italian-1.2o	
General: Added <code>\glossaryname</code>	148
italian-1.2p	
General: Removed redefinition of <code>\add@acc</code> since its functionality has been introduced into the kernel of L <sup>A</sup> T <sub>E</sub> X 2001/06/01	148, 154
latin-0.99	
General: Added shortcuts for breve, macron, and etymological hyphenation (CB)	158
First version, from <code>italian.dtx</code> (CB)	158
latin-1.2	
General: Added suggestions from Krzysztof Konrad Żelechowski (CB)	158
latin-2.0	
General: Completely new etymological hyphenation (CB)	158
latin-2.0a	
General: Revised by JB	158
<code>\latinhyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	161
latin-2.0b	
General: Simplified shortcuts for etymological hyphenation; modified breve and macro shortcuts; language attribute <code>medieval</code> declared	158
latin-2.0d	
General: Restored caret and equals sign category codes before exiting	158
latin-2.0e	
General: Introduced the language attribute ‘ <code>withprosodicmarks</code> ’; modified use of breve and macron shortcuts in order to avoid possible conflicts with other packages	158
latin-2.0f	
<code>\datelatin</code> : Added a comment character to prevent unwanted space	160
lsorbian-0.1	
General: First version	319
lsorbian-1.0b	
<code>\captionlsorbian</code> : Added <code>\proofname</code> for AMS-L <sup>A</sup> T <sub>E</sub> X	319
lsorbian-1.0d	
General: Now use <code>\ldf@finish</code> to wrap up	320
Now use <code>\LdfInit</code> to perform initial checks	319
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of <code>\atcatcode</code> right to the beginning.	319

lsorbian-1.0e	
\newdatelsorbian: use \def instead of \edef	319
Use \edef to define \today to save memory	319
lsorbian-1.0f	
\captionlsorbian: Added \glossaryname	319
magyar-1.0a	
General: Renamed babel.sty in babel.com	236
magyar-1.0b	
General: Removed use of \@ifundefined	237
magyar-1.1	
General: Added a warning when no hyphenation patterns were loaded.	237
Brought up-to-date with babel 3.2a	236
\captionsmagyar: \headpagename should be \pagename	238
Added \seename, \alsoname and \prefacename	238
magyar-1.1c	
\captionsmagyar: Added translations, fixed typos	238
\ondatemagyar: The date number should not be followed by a dot.	239
magyar-1.1d	
General: Further spelling corrections	236
\datemagyar: Rewritten to produce the correct date format	238
\ondatemagyar: Renamed from \datemagyar; no longer redefines \today.	239
magyar-1.1e	
General: Still more spelling corrections	236
magyar-1.2	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub>	236
magyar-1.3c	
General: Now use \@nopatterns to produce the warning	237
Removed the use of \filedate and moved identification after the loading of	
babel.def	236
magyar-1.3e	
\captionsmagyar: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	238
magyar-1.3f	
\captionsmagyar: translated Proof and replaced some translations	238
magyar-1.3g	
General: Replaced \undefined with \@undefined and \empty with \@empty for	
consistency with L <sup>A</sup> T <sub>E</sub> X	236
magyar-1.3h	
General: Now use \ldf@finish to wrap up	253
Now use \LdfInit to perform initial checks	237
magyar-1.4a	
General: order inverting in headings/titles/captions; definite article handling; ac-	
tive char for special hyphenation	236
\captionsmagyar: the initial letter of fejezet, táblázat, rész, lásd changed to	
lowercase	238
\datemagyar: Use \number\day instead of \ifcase construct	238
magyar-1.4b	
\captionsmagyar: Added \glossaryname	238
magyar-1.4c	
General: Make sure that the grave accent has catcode 12 <i>before</i> it is made \active	252
magyar-1.4d	
General: Corrected checksum	236
The \else clause got outside of the \if statement, breaking the Hungarian	
support	237

magyar-1.4f	
\hun@tempdef: Added \def\safe@activesfalse as a fix for PR3426	247
magyar-1.4g	
General: Further change to make it work when neither \l@magyar nor \l@hugarian are defined	237
magyar-1.4h	
\captionsmagyar: Inserted translation for Glossary	238
magyar-1.4i	
\fnun@table: Use \nobreakspace instead of tilde	239
magyar-1.4j	
General: Added missing comment characters in the redefinitions of \ps@headings to prevent spurious spaces	236
ngermanb-2.6f	
General: Renamed from germanb.1df; language names changed from german and austrian to ngerman and naustrian.	94
ngermanb-2.6j	
\noextrasnaustrian: Deactivate shorthands outside of German	95
ngermanb-2.6k	
\captionснаustrian: Added \glossaryname	94
\noextrasnaustrian: Now use \providehyphenmins to provide a default value	95
ngermanb-2.6m	
\noextrasnaustrian: Turn frenchspacing on, as in german.sty	96
norks-2.0h	
\captionсnynorsk: Changed \ccname and \alsoname	223
norsk-1.0a	
General: Renamed babel.sty in babel.com	222
norsk-1.0c	
General: Removed use of \@ifundefined	222
norsk-1.1a	
General: Added a warning when no hyphenation patterns were loaded.	222
Brought up-to-date with babel 3.2a	222
\captionсnorsk: Added \seename, \alsoname and \prefacename	223
\captionсnynorsk: Added \seename, \alsoname and \prefacename	223
norsk-1.1b	
\captionсnorsk: \headpagename should be \pagename	223
\captionсnynorsk: \headpagename should be \pagename	223
norsk-1.1c	
General: Added a couple of translations (from Per Norman Oma, TeX@itk.unit.no)	222
norsk-1.2a	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub>	222
norsk-1.2d	
General: Now use \@nopatterns to produce the warning	222
Removed the use of \filedate and moved identification after the loading of babel.def	222
norsk-1.2f	
\captionсnorsk: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	223
\norskhyphenmins: Added setting of hyphenmin parameters	222
norsk-1.2g	
\captionсnorsk: Replaced ‘Proof’ by its translation	223
\captionсnynorsk: Replaced ‘Proof’ by its translation	223
norsk-1.2h	
General: Moved the definition of \atcatcode right to the beginning.	222

Now use <code>\ldf@finish</code> to wrap up	225
Now use <code>\LdfInit</code> to perform initial checks	222
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X	222
norsk-1.2i	
<code>\datenorsk</code> : use <code>\def</code> instead of <code>\edef</code>	224
Use <code>\edef</code> to define <code>\today</code> to save memory	224
norsk-2.0a	
General: Describe the use of double quote as active character	222
Made double quote character active	224
<code>\norskhyphenmins</code> : Changed setting of hyphenmin parameters to 2 2	222
norsk-2.0b	
General: added the french double quotes	225
Copied the coding for "f from germanb.dtx version 2.6g	225
norsk-2.0c	
General: Deactivate shorthands outside of Norsk	224
norsk-2.0d	
General: Shorthands are the same for both spelling variants, no need to use <code>\CurrentOption</code>	225
Use <code>\bbl@allowhyphens</code> in "-	225
norsk-2.0e	
<code>\captionsnorsk</code> : Added <code>\glossaryname</code>	223
<code>\captionsnynorsk</code> : Added <code>\glossaryname</code>	223
<code>\norskhyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	222
norsk-2.0g	
<code>\captionsnorsk</code> : Replaced ‘Glossary’ by its translation	223
<code>\captionsnynorsk</code> : Replaced ‘Glossary’ by its translation	223
polish-1.0a	
<code>\textpl</code> : Initially execute ‘textpl	265
polish-1.1c	
General: Now use <code>\@nopatterns</code> to produce the warning	262
Removed the use of <code>\filedate</code> and moved identification after the loading of babel.def	262
polish-1.1d	
General: The dqmacro for C used <code>\’c</code>	266
polish-1.2a	
General: Don’t modify <code>\rm</code> and friends for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> , take <code>\selectfont</code> instead	265
polish-1.2b	
<code>\captionspolish</code> : Added <code>\proofname</code> for AMS-L <sup>A</sup> T <sub>E</sub> X	262
polish-1.2d	
General: Now use <code>\ldf@finish</code> to wrap up	267
Now use <code>\LdfInit</code> to perform initial checks	262
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of <code>\atcatcode</code> right to the beginning.	262
<code>\Eob</code> : Use the constructed version of the characters only in OT1; use proper characters in T1.	264
<code>\skb</code> : <code>\skb</code> is meant to be used in horizontal mode; so leave vertical mode if necessary	264
<code>\sob</code> : This macro is meant to be used in horizontal mode; so leave vertical mode if necessary	264
<code>\spb</code> : <code>\spb</code> is meant to be used in horizontal mode; so leave vertical mode if necessary	264

polish-1.2e	
General: Removed empty groups after double quote and guillemot characters	266
polish-1.2f	
\captionspolish: Added translation for Proof and changed translation of Contents	262
\datepolish: use \def instead of \edef	263
Use \edef to define \today to save memory	263
\mdqoff: Now use \shorthandon and \shorthandoff	267
polish-1.2h	
\noextrapolish: Deactivate shorthands outside of Polish	263
polish-1.2i	
\captionspolish: \bibname and \refname were swapped	262
Added \glossaryname	262
\datepolish: A missing comment character caused an unwanted space character in the output	263
polish-1.2j	
\polishzx: Added support for two notationstyles for kropka and accented z	266
polish-1.2k	
\polishzx: Fixed a typo	266
polish-1.2l	
General: Changed closing quote	266
portuges-1.0a	
General: Renamed babel.sty in babel.com	166
portuges-1.0b	
General: Removed use of cs@ifundefined	166
portuges-1.1	
General: Added a warning when no hyphenation patterns were loaded.	166
Brought up-to-date with babel 3.2a	166
\captionsportuges: \headpagename should be \pagename	167
Added \seename, \alsoname and \prefacename	167
portuges-1.2	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub>	166
portuges-1.2d	
General: Now use \nopatterns to produce the warning	166
Removed the use of \filedate and moved identification after the loading of babel.def	166
portuges-1.2e	
\captionsportuges: Added a few missing translations	167
portuges-1.2g	
General: Enhanced support for brasilian	166
\captionsbrazil: The captions for brasilian and portuguese are different now	168
\extraspportuges: Added the definition of some " shorthands	169
\ord: Added macro	170
\orda: Added macro	170
\portugeshyphenmins: Added setting of hyphenmin values	169
\ra: Added macro	170
\ro: Added macro	170
portuges-1.2h	
\captionsportuges: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	167
portuges-1.2i	
\captionsbrazil: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	168
\captionsportuges: Substituted ‘Prova’ for ‘Proof’	167
portuges-1.2j	
General: Moved the definition of \atcatcode right to the beginning.	166

Now use <code>\LdfInit</code> to perform initial checks	166
ow use <code>\ldf@finish</code> to wrap up	170
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X	166
portuges-1.2k	
<code>\datebrazil</code> : use <code>\def</code> instead of <code>\edef</code>	168
Use <code>\edef</code> to define <code>\today</code> to save memory	168
<code>\dateportuges</code> : use <code>\def</code> instead of <code>\edef</code>	168
Use <code>\edef</code> to define <code>\today</code> to save memory	168
<code>\noextraportuges</code> : Removed empty groups after guillemot characters	169
portuges-1.2m	
<code>\captionsbrazil</code> : Added <code>\glossaryname</code>	168
<code>\captionsportuges</code> : Added <code>\glossaryname</code>	168
<code>\noextraportuges</code> : Deactivate shorthands outside of Basque	169
<code>\portugeshyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	169
portuges-1.2n	
<code>\datebrazil</code> : Removed spurious space after dezembro	168
<code>\dateportuges</code> : Removed spurious space after Dezembro	168
portuges-1.2o	
<code>\portugeshyphenmins</code> : Set <code>\righthyphenmin</code> to 3 if not provided by the pattern file.	169
portuges-1.2p	
<code>\captionsportuges</code> : Substituted ‘Glossário’ for ‘Glossary’	168
romanian-1.0a	
General: Renamed babel.sty in babel.com	208
romanian-1.0b	
General: Removed use of <code>\@ifundefined</code>	208
romanian-1.1	
General: Added a warning when no hyphenation patterns were loaded.	208
Brought up-to-date with babel 3.2a	208
<code>\captionsromanian</code> : <code>\headpagename</code> should be <code>\pagename</code>	208
Added <code>\seename</code> , <code>\alsoname</code> and <code>\prefacename</code>	208
Translation errors found by Robert Juhasz fixed	208
<code>\dateromanian</code> : Translation errors found by Robert Juhasz fixed	208
romanian-1.2	
General: Update for L <sup>A</sup> T <sub>E</sub> X <sub>2</sub> ε	208
romanian-1.2d	
General: Now use <code>\@nopatterns</code> to produce the warning	208
Removed the use of <code>\filedate</code> and moved identification after the loading of babel.def	208
romanian-1.2e	
General: Updated for babel release 3.5	208
romanian-1.2f	
<code>\captionsromanian</code> : Added <code>\proofname</code> for AMS-L <sup>A</sup> T <sub>E</sub> X	208
romanian-1.2g	
<code>\captionsromanian</code> : Added translation of ‘Proof’	208
romanian-1.2h	
General: Now use <code>\ldf@finish</code> to wrap up	209
Now use <code>\LdfInit</code> to perform initial checks	208
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of <code>\atcatcode</code> right to the beginning.	208
romanian-1.2i	
<code>\dateromanian</code> : use <code>\def</code> instead of <code>\edef</code>	208

Use <code>\edef</code> to define <code>\today</code> to save memory	208
romanian-1.2k	
<code>\captionsromanian</code> : Added <code>\glossaryname</code>	208
romanian-1.2l	
<code>\captionsromanian</code> : Added translation for Glossary	208
russianb-1.1a	
<code>\extrasrussian</code> : Use <code>\ddot</code> instead of <code>\@MATHUMLAUT</code>	288
use <code>\russianhyphenmins</code> to store the correct values	290
Use the new mechanism for dealing with active characters	286
<code>\russian@sh@?@</code> : Use new <code>\DefineActiveNoArg</code>	287
Use the more general mechanism of <code>\declare@shorthand</code>	287
<code>\system@sh@;@</code> : Added system level shorthands	288
russianb-1.1b	
<code>\extrasrussian</code> : Added switch to LWN encoding	285
<code>\russian@sh@?@</code> : Updated to reflect the latest french definitions	287
<code>\verbatim@font</code> : Added changing of <code>\verbatim@font</code>	285
russianb-1.1c	
General: Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X	279
russianb-1.1d	
General: Moved the definition of <code>\atcatcode</code> right to the beginning.	279
Now use <code>\ldf@finish</code> to wrap up	292
Now use <code>\LdfInit</code> to perform initial checks	280
russianb-1.1e	
General: Added closing brace to second argument of <code>\LdfInit</code>	280
russianb-1.1f	
General: Added definitions of Cyrillic emdash stuff and thinspace	279
<code>\extrasrussian</code> : Add commands for switch on/off doublequote activeness. Borrowed from german.	290
Add macro for thinspace between initials	290
Added a hook to insert space or not before ‘double punctuation’ (from frenchb).	286, 287
Rearranging of cyrillic emdash stuff	289
<code>\FDPoff</code> : One more chance to avoid spaces before double punctuation	288
<code>\russian@sh@?@</code> : changed to kern.1em (space bit thinner)	287
Added a hook to insert space or not before ‘double punctuation’ (from frenchb).	287
russianb-1.1k	
General: replaced all <code>\penalty\@M</code> with <code>\nobreak</code>	279
russianb-1.1l	
General: Made not using inputenc a warning instead of an error	283
russianb-1.1m	
<code>\captionsrussian</code> : Added <code>\glossaryname</code>	285
<code>\extrasrussian</code> : Now use <code>\providehyphenmins</code> to provide a default value	290
russianb-1.1n	
General: As this code generates a textfont 7 error it is commented out for now.	282
russianb-1.1o	
<code>\latintext</code> : <code>\latintext</code> is already defined by the core of <code>babel</code>	283
<code>\textlatin</code> : <code>\textlatin</code> already defined by the core of <code>babel</code>	283
russianb-1.1q	
General: Change definition of <code>\th</code> only for this language	291
russianb-1.1r	
<code>\extrasrussian</code> : Removed the command character before the next code line, see R3669	290

samin-1.0b	
\captionssamin: Added \glossaryname	231
\saminhyphenmins: use \providehyphenmins	231
samin-1.0c	
\captionssamin: Provided the translation for glossary	231
scottish-1.0b	
General: Corrected typos (PR1652)	106
scottish-1.0c	
\captionsscottish: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	106
scottish-1.0d	
General: Now use \ldf@finish to wrap up	107
Now use \LdfInit to perform initial checks	106
Replaced \undefined with \@undefined and \empty with \@empty for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of \atcatcode right to the beginning.	106
scottish-1.0e	
\datescottish: use \def instead of \edef	106
Use \edef to define \today to save memory	106
scottish-1.0g	
\captionsscottish: Added \glossaryname	106
serbian-1.0b	
General: Added suggestions for shorthands and so on from Jankovic Slobodan	268
\noextrasserbian: Introduced the active "	269
serbian-1.0c	
\noextrasserbian: Deactivate shorthands outside of Serbian	269
serbian-1.0d	
\captionsserbian: Added \glossaryname	268
\noextrasserbian: Changed definition of "- to be the same as for other languages	270
slovak-1.0	
General: First version	271
slovak-1.2	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub>	271
slovak-1.2b	
\noextrasslovak: Added setting of left- and righthyphenmin	273
slovak-1.2d	
General: Now use \@nopatterns to produce the warning	271
Removed the use of \filedate and moved identification after the loading of babel.def	271
slovak-1.2e	
\noextrasslovak: Now use \slovakhyphenmins	273
Use L <sup>A</sup> T <sub>E</sub> X's \v accent command	273
slovak-1.2g	
\captionsslovak: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	272
slovak-1.2i	
General: Now use \ldf@finish to wrap up	274
Now use \LdfInit to perform initial checks	271
Replaced \undefined with \@undefined and \empty with \@empty for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of \atcatcode right to the beginning.	271
slovak-1.2j	
\dateslovak: use \def instead of \edef	272
Use \edef to define \today to save memory	272
slovak-1.2k	
\captionsslovak: Repaired a few spelling mistakes	272
\dateslovak: Repaired a spelling mistake	272



slovak-1.2l	
\captionsslovak: Added \glossaryname	272
\noextrasslovak: Now use \providehyphenmins to provide a default value	273
slovak-1.3a	
General: Added contributed shorthand definitions	271
\noextrasslovak: Make three characters available for shorthands	273
slovene-1.0a	
General: Renamed babel.sty in babel.com	276
slovene-1.0b	
General: Removed use of \@ifundefined	276
slovene-1.1	
General: Added a warning when no hyphenation patterns were loaded.	276
Brought up-to-date with babel 3.2a	276
\captionsslovene: \headpagename should be \pagename	276
Added \seename, \alsoname and \prefacename	276
slovene-1.2	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub>	276
slovene-1.2b	
\captionsslovene: Added extra translations from Josef Leydold, leydold@statix2.wu-wien.ac.at	276
slovene-1.2d	
General: Now use \@nopatterns to produce the warning	276
Removed the use of \filedate and moved identification after the loading of	
babel.def	276
slovene-1.2f	
\noextrasslovene: Introduced the active "	277
slovene-1.2g	
\captionsslovene: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	276
slovene-1.2h	
\captionsslovene: Added translation of ‘Proof’	276
slovene-1.2i	
General: Now use \ldf@finish to wrap up	278
Now use \LdfInit to perform initial checks	276
Replaced \undefined with \@undefined and \empty with \@empty for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of \atcatcode right to the beginning.	276
Replaced ‘Slovakian’ with correct ‘Slovenian’	276
\noextrasslovene: removed shorthand for "L as it is not needed for slovenian	277
slovene-1.2j	
\dateslovene: use \def instead of \edef	277
Use \edef to define \today to save memory	277
\noextrasslovene: Removed empty groups after double quote and guillemot characters	277
slovene-1.2l	
\noextrasslovene: Deactivate shorthands outside of Slovene	277
slovene-1.2m	
\captionsslovene: Added \glossaryname	276
spanishb 1.1	
General: \es@lsc rewritten to incorporate the procedure so far available in \roman only	176
Again rewritten in full. Now that character is accesible as \dotlessi	177
Corrected \indexname to the promised text	174
dotless math i handling rewritten	177
Rewritten part	181

spanish 4.0a	
General: After the . is activated, it is redefined to avoid errors if followed by a closing brace. Changed <code>\edef</code> by <code>\mathchardef</code> . Use <code>\babel@savevariableinstead</code> of <code>\noextrasspanish</code> .	182
All files renamed from spanishb to spanish as requested by the Spanish TeX list, since this style should replace the current Spanish option. Julio Sanchez gave up supporting his files and he has withdrawn from his TeX activities. The last distributed version as spanishb was 1.1.	173
Introduced <code>\ldf@finish</code>	188
Introduced <code>\LdfInit</code> setup	173
Moved <code>\let\es@activeacute\@undefined</code> to <code>\AtEndOfPackage</code>	188
Test for 209 moved from sty	173
The extras subdivided into three further groups.	175
spanish 4.0b	
General: Added missing <code>\nolimits</code>	178
Added support for custom-bib	188
Introduced <code>\es@umlaut</code> to allow further division in words containing <code>gü</code>	183
spanish 4.0c	
General: Added missing space at the end of <code>\es@umlaut</code>	183
Merged <code>\es@op@i</code> and <code>\es@op@a</code> into a single command. The (re)defined commands have been changed as suggested by JoseRa Portillo and Juan Luis Varona. Now it conforms the UNE 5010 norm. Code is no longer duplicated— <code>\operator@font</code> is defined for lplain instead	178
Moved from its original place below. Decimal values replaced by hex ones.	177
Optimized a bit	181
Removed the explicit trigonometric declaration. While some functions are pre-receptive (sen, tg) some other are optional and defined in <code>\spanishoperators</code> . This is because there is no norm in Spanish and there is quite a chaos in their form. Restored the forms of v 1.1	178
Substituted <code>\char\hyphenchar\font</code> for some instances of -	183
spanish 4.0d	
General: Changed some parts for babel.ins to generate the files	173
Removed the tilde settings because they are included in babel.def	183
Restored the test for <code>\LdfInit</code> . It is redundant for LaTeX209 but not for plain	173
With a shoddy piece of work, the plain variant works (at last). Instead of inputting <code>babel.def</code> we input <code>switch.def</code> . To be changed, I think, since now <code>plain.def</code> is read twice	173
spanish 4.0e	
General: <code>\es@quoting</code> is written to the aux file, too	185
Adapted to 3.6k with some minor changes, since most of features intended for 3.7 are included now	173
Added <code>\leavevmode</code>	176
Added ignorespaces to <code>\es@dots</code>	177
Removed duplicated <code>\loadlocalcfg</code>	188
Replaced all instances of allowhyphens by <code>\bbl@allowhyphens</code>	173
The catcode is restored in the aux file, too	182
spanish 4.0f	
General: Beginning of changes to follow the doc conventions	173
spanish 4.0g	
General: Replaced <code>\ProvidesFile</code> by <code>\ProvidesLanguage</code>	173
Restored the assignment of <code>\operator@font</code> which was misteriously missing	178
The code introduced the 99/03/29 (see above) has been removed	173
spanish 4.0h	
General: Added <code>\deactivatetilden</code>	183

spanish 4.0i	
General: Added <code>\bbletal</code>	188
Replaced wrong <code>\spanishoperators</code> by <code>\es@b</code>	178
the mthesis and phdthesis text were reverted. Fixed	188
spanish 4.0j	
General: Added shorthands for <code>\protect</code> following active chars. This way, they	
work in headers	182
Removed an extra line in the <code>lplain</code> option	178
Renamed <code>spanish.tex</code> as <code>spanish.lpf</code>	173
spanish 4.0k	
General: Minor improvements in <code>\es@dotlessi</code> . Now it behaves like the dot-	
lessi.sty package	177
Restored the <code>\es@op@i</code> command, because we have to discriminate <code>\dotlessi</code>	
and <code>i</code>	178
spanish 4.0l	
General: Added the <code>\es@activate</code> command, which makes the shorthands more	
robust in math mode. In particular, any of them may be followed by a closing	
brace	182
We make a preevaluation of acute; in math mode, the shorthand mechanism is	
bypassed. That's done <i>after</i> the test of the protection status.	185
spanish 4.1a	
General: <code>\sptext</code> protected.	173
Added <code>\spanishdecimal</code> .	173
Added basic code for spanish shorthands.	180
Debugged and added support for the babel groups.	180
Introduced the <code>\es@delayed</code> mechanism for "conflictive" conditionals.	173
Modified <code>\@marginparreset</code> in order to kill the continuing guillemets.	173
spanish 4.1b	
General: Added the Spanish et sign.	173
spanish 4.1c	
General: Added <code>\glossaryname</code>	174
Added support for primes which are either 'active' or 'other'	181
Removed an unnecessary macro.	182
Revised so that it now uses the babel shorthands	180
The box used in <code>itemize</code> made slightly smaller (.1ex).	186
spanish 4.1d	
General: Disabled if in <code>xmlltex</code>	185
Now there are two versions of percent sign	177
Removed extra <code>\endinput</code>	188
Removed extra <code>\enspace</code> which formatted differently <code>\item</code> with brackets.	186
spanish 4.1f	
General: <code>\i</code> not used directly in the upper/lowercase list	177
The spacefactor is restored with the method used in LaTeX2e	182
spanish 4.2a	
General: Added <code>\spanishsignitems</code>	186
Added raised <code>¿</code> and <code>‘</code>	183
Added the mechanism to select <i>del</i> or <i>de</i>	174
Deactivation of dot as a special case	180
Misplaced <code>\es@enumerate</code> and <code>\es@itemize</code> moved into <code>\layoutspanish</code>	186
Names including <code>\acute</code> can be formed	178
The dot is deactivated, too	175
spanish 4.2b	
General: Added <code>er</code> and <code>ER</code>	183
If an entry <code>toc</code> has an empty <code>\numberline</code> the dot is not printed	186

swedish-1.0a	
General: Renamed <code>babel.sty</code> in <code>babel.com</code>	227
swedish-1.0b	
<code>\captionsswedish</code> : added definition for <code>\enclname</code>	228
made definition of <code>\refname</code> pluralis	228
removed type in definition of <code>\contentsname</code>	228
swedish-1.0c	
General: Removed use of <code>\@ifundefined</code>	227
swedish-1.1	
General: Added a warning when no hyphenation patterns were loaded.	227
Brought up-to-date with babel 3.2a	227
<code>\captionsswedish</code> : <code>\headpagename</code> should be <code>\pagename</code>	228
Added <code>\seename</code> , <code>\alsoname</code> and <code>\prefacename</code>	228
swedish-1.1b	
<code>\captionsswedish</code> : Added translations	228
swedish-1.2	
General: Update for LaTeX2e	227
swedish-1.3d	
General: Now use <code>\@nopatterns</code> to produce the warning	227
Removed the use of <code>\filedate</code> and moved identification after the loading of	
<code>babel.def</code>	227
<code>\captionsswedish</code> : Changed <code>\aa</code> to <code>\csname aa\endcsname</code> , to make <code>\uppercase</code>	
do the right thing	228
swedish-1.3e	
General: Update for release 3.5	227
<code>\captionsswedish</code> : Changed <code>\alsoname</code> from ‘se också’	228
<code>\extrasswedish</code> : Added <code>\bbl@frenchspacing</code>	229
<code>\noextrasswedish</code> : Added <code>\bbl@nonfrenchspacing</code>	229
<code>\swedishhyphenmins</code> : use <code>\swedishhyphenmins</code> to store the correct values	229
swedish-1.3f	
<code>\captionsswedish</code> : Added <code>\proofname</code> for AMS-L <sup>A</sup> T <sub>E</sub> X	228
swedish-1.3g	
<code>\captionsswedish</code> : Replaced ‘Proof’ by its translation	228
swedish-2.0	
General: Introduced active double quote	227
<code>\noextrasswedish</code> : Added active double quote character	229
swedish-2.1	
General: Now use <code>\ldf@finish</code> to wrap up	230
Now use <code>\LdfInit</code> to perform initial checks	227
Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for consistency with L <sup>A</sup> T <sub>E</sub> X, moved the definition of <code>\atcatcode</code> right to the beginning.	227
swedish-2.2	
<code>\dateswedish</code> : use <code>\def</code> instead of <code>\edef</code>	228
Use <code>\edef</code> to define <code>\today</code> to save memory	228
swedish-2.2b	
<code>\noextrasswedish</code> : Deactivate shorthands outside of Swedish	229
swedish-2.3a	
General: added <code>\allowhyphens</code>	229
changed definition of “=, \- and ”	230
<code>\captionsswedish</code> : Added full stop after “Bil”	228
<code>\datesdmy</code> : Command added	228
<code>\datesymd</code> : Command added	228
swedish-2.3b	
<code>\captionsswedish</code> : Added <code>\glossaryname</code>	228

swedish-2.3c	
\captionsswedish: Provided translation for Glossary	228
swedish-2.3d	
General: Fixed a \changes entry	227
turkish-1.1	
\captionsturkish: \headpagename should be \pagename	325
turkish-1.2	
General: Update for L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub>	325
turkish-1.2b	
\captionsturkish: Added braces behind \i in strings	325
\dateturkish: Added braces behind \i in strings	326
turkish-1.2c	
General: Now use \@nopatterns to produce the warning	325
Removed the use of \filedate and moved identification after the loading of	
babel.def	325
turkish-1.2d	
\dateturkish: removed extra closing brace, \mont should be \month	326
\turkish@sh@: Added missing \def	326
turkish-1.2e	
\extrasturkish: Completely rewrote macro	326
\noextrasturkish: now use \bbl@frenchspacing and \bbl@nonfrenchspacing	326
\turkish@sh@: Use the new mechanism of \declare@shorthand	326
turkish-1.2f	
\captionsturkish: Added \proofname for AMS-L <sup>A</sup> T <sub>E</sub> X	325
turkish-1.2h	
General: Replaced \undefined with \@undefined and \empty with \@empty for	
consistency with L <sup>A</sup> T <sub>E</sub> X	325
turkish-1.2i	
General: Moved the definition of \atcatcode right to the beginning.	325
Now use \ldf@finish to wrap up	327
Now use \LdfInit to perform initial checks	325
turkish-1.2j	
\captionsturkish: Added and modified translations	325
\dateturkish: use \def instead of \edef	326
Use \edef to define \today to save memory	326
turkish-1.2k	
\captionsturkish: Incorporated some more corrections	325
turkish-1.2l	
\dateturkish: removed dot from the date format	326
turkish-1.2m	
\captionsturkish: Added \glossaryname	325
ukraine-1.1d	
\captionsukrainian: replace \CYRUKRI with \CYRII in \authorname	309
ukraine-1.1e	
General: replaced all \penalty\@M with \nobreak	305
ukraine-1.1f	
General: Made not using inputenc a warning instead of an error	309
ukraine-1.1g	
\captionsukrainian: Added \glossaryname	309
\extrasukrainian: Now use \providehyphenmins to provide a default value	316
ukraine-1.1h	
\captionsukrainian: Added translation for ‘Glossary’	309

ukraineb-1.1i	
General: As this code generates a textfont 7 error it is commented out for now.	308
ukraineb-1.1j	
<code>\latintext</code> : <code>\latintext</code> is already defined by the core of <code>babel</code>	309
<code>\textlatin</code> : <code>\latintext</code> is already defined by the core of <code>babel</code>	309
ukraineb-1.1k	
General: Change definition of <code>\th</code> only for this language	317
usorbian-0.1	
General: First version	321
usorbian-0.1b	
General: Made it possible to run through L <sup>A</sup> T <sub>E</sub> X; added <code>\MF</code> and removed extra	
<code>\endmacro</code>	321
usorbian-0.1c	
<code>\captionsusorbian</code> : Removed two typos (Kapitel and Dodatki)	321
usorbian-1.0a	
General: Removed stuff that has been moved to <code>babel.def</code>	322
usorbian-1.0b	
<code>\captionsusorbian</code> : Added <code>\proofname</code> for AMS-L <sup>A</sup> T <sub>E</sub> X	321
usorbian-1.0c	
General: Now use <code>\bbl@disc</code>	323
usorbian-1.0d	
General: Replaced <code>\undefined</code> with <code>\@undefined</code> and <code>\empty</code> with <code>\@empty</code> for	
consistency with L <sup>A</sup> T <sub>E</sub> X	321
usorbian-1.0e	
General: Moved the definition of <code>\atcatcode</code> right to the beginning.	321
Now use <code>\ldf@finish</code> to wrap up	324
Now use <code>\LdfInit</code> to perform initial checks	321
usorbian-1.0f	
General: Removed empty groups after double quote and guillemot characters	323
usorbian-1.0g	
<code>\ck</code> : Now use <code>\shorthandon</code> and <code>\shorthandoff</code>	323
<code>\newdateusorbian</code> : use <code>\def</code> instead of <code>\edef</code>	321
Use <code>\edef</code> to define <code>\today</code> to save memory	321
<code>\olddateusorbian</code> : use <code>\def</code> instead of <code>\edef</code>	322
Use <code>\edef</code> to define <code>\today</code> to save memory	322
usorbian-1.0h	
<code>\extrasusorbian</code> : Deactivate shorthands outside of Upper Sorbian	322
usorbian-1.0i	
<code>\captionsusorbian</code> : Added <code>\glossaryname</code>	321
<code>\extrasusorbian</code> : Now use <code>\providehyphenmins</code> to provide a default value	322
v3.8a	
<code>\lower@umlaut</code> : Use <code>\leavevmode\bgroup</code> to prevent problems when this com-	
mand occurs in vertical mode.	55
<code>\umlauthigh</code> : Use <code>\leavevmode\bgroup</code> to prevent problems when this command	
occurs in vertical mode.	55
v3.8d	
<code>\@notshorthand</code> : Error message added	44
welsh-1.0b	
<code>\datewelsh</code> : use <code>\def</code> instead of <code>\edef</code>	103
Use <code>\edef</code> to define <code>\today</code> to save memory	103
welsh-1.0c	
<code>\captionswelsh</code> : Added <code>\glossaryname</code>	102

<code>\welshhyphenmins</code> : Now use <code>\providehyphenmins</code> to provide a default value	102
welsh-1.0d	
<code>\captionswelsh</code> : Provided the translation for Glossary . . . . .	102
<code>\datewelsh</code> : removed ‘a viz’ from the definition of <code>\today</code> . . . . .	103