

# The Russian Language in the babel system

Version 1.3a

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## 1 The Russian Language Definition File

The file `ruussianb.dtx`<sup>1</sup> is the source file for the Russian Language Definition file `ruussianb.ldf` to be loaded by the `babel` package with the option `ruussian`. It was derived by Igor A. Kotelnikov from the original version of `ruussianb.dtx`, first released by Olga Lapko and Johannes Braam and then adapted to the T2\* and X2 Cyrillic encodings by Vladimir Volovich and Werner Lemberg.

Starting the version 1.2, `ruussianb.ldf` is designed to work both with legacy non-unicode (8-bit) and new unicode encodings of the source document files (input encodings) and of the font files (font encodings). This is achieved by excluding (bypassing) the `\cyr...` macros, which map every letter in a source file with given input encoding to a corresponding code point in a font file with a given font encoding when running modern engines, such as `LuaLATEX` or `XeLATEX`, in native unicode mode instead of legacy engines, such as `LATEX` or `PDFLATEX`, or unicode engines in a compatibility (8-bit) mode. A few obsolete and controversial macros has been eliminated in first public release of version 1.2 of `ruussianb.ldf`.

The version 1.3 of `ruussianb.ldf` has been adapted to new features introduced in the version 3.9 of the `babel` package. In particular, the language attribute `ancient` has been introduced to support typesetting ancient and Church Slavonic books.

## 2 Usage

Typesetting Russian texts implies that a special input and output encodings should be used. Input encodings are those which are used in source (`.tex`) file. Output encoding is also known as the font encoding. It is implemented within the font files.

Generally, the user may choose between different available Cyrillic encodings provided. The current support for Cyrillic uses LH family of MetaFont fonts and theirs Postscript versions such as CM-super. `LuaLATEX` and `XeLATEX`, being the Unicode-based successors of `LATEX`, allow also for any Open Type (OTF) and True Type (TTF) fonts which has Cyrillic script, e.g. Computer Modern Unicode, Linux Libertine, and many other system fonts that came with Linux and Windows operating systems.

With the advent of Unicode, `LATEX` community are moving towards eliminating all existing encodings in favor of Unicode, but nowadays one should take care when switching from `LATEX` to `LuaLATEX` or `XeLATEX` since different packages should be loaded for those compilers.

Since earlier versions `babel` did not support `XeLATEX` (at least for some languages including Russian), the `polyglossia` package was generally recommended in the past for use with `XeLATEX` as a replacement for `babel`. Nowadays, `babel` can be used with any engines, including `LATEX`, `PDFLATEX`, `LuaLATEX`, and `XeLATEX`. Nevertheless some troubles may occur with some languages which have no promptly updated `.ldf` files.

<sup>1</sup>The file described in this document has the version number 1.3a and was last revised on 2013/04/13.

## 2.1 L<sup>A</sup>T<sub>E</sub>X

When user's document is compiled with `latex.exe` or `pdflatex.exe`, recommended set of packages includes the `inputenc` and `fontenc` package. They should be loaded before `babel`, for example,

```
\usepackage[T1,T2A]{fontenc}
\usepackage[utf8]{inputenc}
\usepackage[english,russian]{babel}
```

Some variations in the order of package loading are allowed in this case but it is better to follow one and the same convention at all circumstances: the `babel` package should go last, and `fontenc` must be the first.

Input encoding should be declared as option to the `inputenc` package. Known Cyrillic encodings include `cp866` (MS DOS), `cp1251` (Windows), `koi8-u` (UNIX) and their variants. Nowadays, this list is appended with `utf8` input encoding.

Output encodings (also known as font encodings) are declared as options to the `fontenc` package. Known Cyrillic encodings are `T2A`, `T2B`, `T2C`, `LCY`, and `X2`; `LWN` is excluded from Russian support stating version 1.2 of `russianb.dtx` since `LWN` is excluded from the `cyrillic` bundle of related files.

## 2.2 LuaL<sup>A</sup>T<sub>E</sub>X

If Unicode fonts are not available, LuaL<sup>A</sup>T<sub>E</sub>X can run in compatibility (8-bit) mode to use same font as L<sup>A</sup>T<sub>E</sub>X does. However the package `inputenc` does not work with LuaL<sup>A</sup>T<sub>E</sub>X and should be substituted with `luainputenc`. Source file is to be converted to UTF8 (Unicode-8) encoding; it is the only input encoding accepted by LuaL<sup>A</sup>T<sub>E</sub>X. The 8-bit mode is invoked by the following sequence of packages:

```
\usepackage[T1,T2A]{fontenc}
\usepackage[lut8]{luainputenc}
\usepackage[english,russian]{babel}
```

The order of the packages is crucial for LuaL<sup>A</sup>T<sub>E</sub>X in 8-bit mode. Since both `luainputenc` and `babel` should know what is a selected font encoding, the `fontenc` package should be loaded first. Input encoding management for LuaT<sub>E</sub>X is needed only for compatibility with old documents. For new documents, using UTF-8 encoding and Unicode fonts is strongly recommended. You've been warned! See [tex.stackexchange.com/questions/31709/can-one-instruct-lualatex-to-use-t2a-encoded-fonts](https://tex.stackexchange.com/questions/31709/can-one-instruct-lualatex-to-use-t2a-encoded-fonts).

To invoke Unicode mode, one needs to load the `fontspec` package instead of `luainputenc` and `fontspec` and explicitly indicate which fonts should be used for roman, sans-serif and monospaced types. Next example shows how to load Computer Modern Unicode fonts, which is a part of all modern L<sup>A</sup>T<sub>E</sub>X distributions:

```
\usepackage{fontspec}
\defaultfontfeatures{Renderer=Basic,Ligatures={TeX}}
\setmainfont{CMU Serif}
\setsansfont{CMU Sans Serif}
\setmonofont{CMU Typewriter Text}
\usepackage[english,russian]{babel}
```

The `\defaultfontfeatures` declares default font features for subsequent `\setmainfont` (which sets roman fonts), `\setsansfont` (sans-serif) and `\setmonofont` (monospaced font). Font features can be set up on per font bases; for example

```
\usepackage{fontspec}
  \setmainfont[Renderer=Basic,Ligatures={TeX}]{CMU Serif}
  \setsansfont[Renderer=Basic,Ligatures={TeX,Historic}]{CMU Sans Serif}
  \setmonofont{CMU Typewriter Text}
\usepackage[english,russian]{babel}
```

Here `Renderer=Basic,Ligatures={TeX}` activates ligatures which are existed in  $\text{\LaTeX}$ .

Recall that the language enlisted last in the list of options of the `babel` package is assumed to be the main language of the document, which is also active language right after `\begin{document}`. As of version 3.9, the main language can be set as a value of the `main` option as follows

```
\usepackage{fontspec}
\usepackage[english,main=russian,german]{babel}
```

## 2.3 Xe $\text{\LaTeX}$

In Xe $\text{\LaTeX}$ , there is also a special mode for 8-bit compatibility. One can use `\XeTeXinputencoding` to change the input encoding temporarily, and the "bytes" encoding makes Xe $\text{\LaTeX}$  works like a 8-bit  $\text{\LaTeX}$  engine:

```
\XeTeXinputencoding "bytes"
\usepackage[utf8]{inputenc}
\usepackage[T2A]{fontenc}
\usepackage[english,russian]{babel}
```

Xe $\text{\TeX}$  can use a different input encoding but it always uses the Unicode internally, so that `\XeTeXinputencoding` performs a conversion of the input into Unicode; see [tex.stackexchange.com/questions/36188/do-xetex-and-luatex-always-use-unicode](http://tex.stackexchange.com/questions/36188/do-xetex-and-luatex-always-use-unicode).

Unicode mode is set up same way as for Lua $\text{\LaTeX}$ , however the option `Renderer=Basic` can be dropped:

```
\usepackage{fontspec}
  \defaultfontfeatures{Ligatures={TeX}}
  \setmainfont{CMU Serif}
  \setsansfont{CMU Sans Serif}
  \setmonofont{CMU Typewriter Text}
\usepackage[english,russian]{babel}
```

## 2.4 Modern and Ancient spelling

By default, a modern spelling is enabled. For Church Slavonic and other old books ancient spelling can be enabled by setting the attribute to `ancient`. To set an attribute, put the `\languageattribute` macro within a document preamble after `babel`, for example,

```
\usepackage[english,russian]{babel}
\languageattribute{russian}{ancient}
```

Setting the `ancient` attribute changes the built-in strings (caption names) and a date format. For example, the bibliography will be entitled as ‘Литература’ by default and as ‘Библиография’ if the Russian language attribute is set to `ancient`.

### 3 User’s commands

In a multilingual document, some typographic rules are language dependent and should apply to the whole document.

Regarding local typography, the macro `\selectlanguage{russian}` switches to the Russian language, with the following effects:

1. Russian hyphenation patterns are made active;
2. `\today` prints the date in Russian;
3. the caption names are translated into Russian (L<sup>A</sup>T<sub>E</sub>X only);
4. emdash typed by the ligature `---` might be 20% shorter when Russian is the current language; the result depends on the current encoding; `---` always produce long emdash in Lua<sub>T</sub><sub>E</sub>X and Xe<sub>T</sub><sub>E</sub>X since these engines use same encodings for all languages;
5. emdash typed by the ligature `”---` in Russian is 20% shorter, however the ligature `”---` might not be defined in other languages; a shorter emdash (i.e. `\cyrdash`) can be typeset in any language using special macros enlisted in table 1.

By default, a modern spelling is used for built-in strings (caption names) and the date. The spelling can be reverted to ancient by setting the language attribute to `ancient` in the document preamble as discussed in Sec. 2.4.

Since Russian has its own numbering system, `russianb.ldf` adds macros `\asbuk{<counter>}` and `\Asbuk{<counter>}` for formatting numbers appropriately the alphabetic sequence in the Russian alphabet. Additional commands are provided to typeset quotes:

1. French quotation marks can be entered using the commands `\guillemotleft` and `\guillemotright` which work in L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> and Plain<sub>T</sub><sub>E</sub>X.
2. German quotation marks can be entered using the commands `\glqq` and `\grqq` which work in L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> and Plain<sub>T</sub><sub>E</sub>X.

The macro `\Russian` is now defined as an alias for `\selectlanguage{russian}`, and its “opponent” `\English`, existed in `russianb.ldf` prior to version 1.2 has been removed since the Russian language definition file is wrong place for definition of macros which switch to a distinct other language.

The macro `\textcyrillic{<text>}` is intended to typeset small chunks of text in Russian; it is essentially an alias for `\foreignlanguage{russian}{<text>}`.

#### 3.1 Active character

Table 1 shows macros and active string which can be used to typeset various dashes and quotes. In the Russian language, the character `”` is made active. It

can be considered as second escape character in addition to \. Some dashes and all quotes can be typed using both active character ” and ordinary macros as indicated in the table. However, some shorthanded hyphenations have no macro counterpart.

Таблица 1: Extra definitions made by `rusianb.1df`

<code>\glqq</code>	”“	German left double quotes (looks like „).
<code>\grqq</code>	””	German right double quotes (looks like “).
<code>\guillemotleft</code>	”<	French left double quotes (looks like <<).
<code>\guillemotright</code>	”>	French right double quotes (looks like >>).
<code>\dq</code>		Original quotes character (”).
<code>\babelhyphen{soft}</code>	”-	Optional (soft) hyphen sign, similar to \- but allows hyphenation in the rest of the word; equivalent to <code>\babelhyphen{soft}</code> in <code>babel 3.9</code> .
<code>\babelhyphen{empty}</code>	””	Similar to ”- but does not print hyphen; equivalent to <code>\babelhyphen{empty}</code> in <code>babel 3.9</code> .
<code>\babelhyphen*{nobreak}</code>	”~	A compound word mark without a breakpoint, prints hyphen prohibiting hyphenation at the point; equivalent to <code>\babelhyphen*{nobreak}</code> in <code>babel 3.9</code> .
<code>\babelhyphen{hard}</code>	”=	A compound word mark with a breakpoint, prints hyphen allowing hyphenation in the composing words. equivalent to <code>\babelhyphen{hard}</code> in <code>babel 3.9</code> .
<code>\babelhyphen{nobreak}</code>	”	Disables ligature at this position; equivalent to <code>\babelhyphen{nobreak}</code> (??) in <code>babel 3.9</code> .
<code>\cyrdash</code>	---	Row Cyrillic emdash (does not care spaces around).
<code>\cdash---</code>	”---	Cyrillic emdash in plain text.
<code>\cdash--~</code>	”--~	Cyrillic emdash in compound names (as in Mendeleev”--~Klapeiron).
<code>\cdash--*</code>	”--*	Cyrillic emdash in direct speech.
	”,	Thin space (allows further hyphenation as in D.”,Mendeleev).

Note that the standard soft hyphen \- is equivalent to `\babelhyphen*{soft}`.

The quotation marks traditionally used in Russian were borrowed from other languages (e.g., French and German) so they keep their original names.

The French quotes are also available as ligatures ‘<<’ and ‘>>’ in 8-bit Cyrillic font encodings (LCY, X2, T2\*) and in unicode encodings (EU1 and EU2) and as ‘<’ and ‘>’ characters in 7-bit Cyrillic font encodings (OT2 and LWN).

In Unicode encodings EU1 and EU2 cyrdashes and quotes can be typed as single character if text editor makes it possible to insert characters which absent of standard keyboard. This method works as well for 8-bit fonts encoded according

to T2A if source file is encoded with cp1251 or utf8.

By default, active double quote is switched on. It can be switched off any time using `\shorthandon{'}` and the switched on again using `\shorthandon{''}`. The aliases `\mdqoff` and `\mdqon` for these two macros has been removed from `russianb.ldf` starting from version 1.3 in favour of the macros `\shorthandon` and `\shorthandoff` provided in the `babel` core.

## 3.2 Math commands

`russianb.ldf` defines few macros than can be used independently of current language. These are 9 macros to be used in math mode to type the names of trigonometric functions common for Russian documents: `\sh`, `\ch`, `\tg`, `\ctg`, `\arctg`, `\arcctg`, `\th`, `\cth`, and `\cosec`. Cyrillic letters in math mode can be typed with the aid of text commands such as `\textbf`, `\textsf`, `\textit`, `\texttt`, e.t.c.

# 4 History

## 4.1 Changes in version 1.3a

- Added the Russian language attribute `ancient` for typesetting ancient slavonic books.

## 4.2 Changes in version 1.3

- Updated for `babel` 3.9.
- The `\alph` and `\Alph` commands are not redefined any more by the `russianb.ldf`.

## 4.3 Changes in version 1.2a

- Indentation of the first paragraph after sectioning command has been removed. Use `indentfirst` to make fist paragraph indented.

## 4.4 Changes in version 1.2

- Font encoding LWN is not supported any more.
- Macros `\Rus`, `\English`, `\Eng` have been removed. `\Russian` is now alias of `\selectlanguage{russian}`. Former definition of `\Russian` is preserved in the macros `\cyrillictext` and `\cyr` which should not be used at user level.
- `LuaLATEX` and `XeLATEX` are now supported; `\cyr...` commands are bypassed if `LuaLATEX` or `XeLATEX` run.
- The shorthands `”<` and `”>` are redefined; now they match `\guillemotleft` and `\guillemotright`, respectively, rather than `\flqq` and `\frqq`.
- Definitions of `\latinencoding` and `\latintext` are removed since these macros are defined in `babel.def`.

- `\cyrmathbf`, `\cyrmathsf`, `\cyrmathit`, and `\cyrmathtt` commands are removed; instead of them it is advised to use corresponding `\text..` command; they do work in math mode.
- The macro `\No` is removed since the Cyrillic number sign is available on keyboard and can also be typed using the `\textnumero` macro.
- Added translation for Glossary.

”

## 5 T<sub>E</sub>Xnical details

The packages `inputenc` and `luainputenc` make Cyrillic letters active so that compiler converts them into corresponding `\cyr...` macro at compilation time. For example, Russian letter ‘a’ matches macro `\cyr{a}`, and capital Russian letter ‘A’ matches `\cyr{A}`. The package `fontenc` then matches every macro `\cyr...` to corresponding glyph in font file depending on declared font encoding.

Nowadays, Unicode makes `\cyr...` macros outdated since both source file and font file are encoded consistently. These macros should therefore be removed because mixing them with unicode characters breaks sorting mechanism of such utilities as `bibtex` and `makeindex`. For the sake of backward compatibility, `\cyr...` are still kept for L<sup>A</sup>T<sub>E</sub>X, but they are bypassed if LuaL<sup>A</sup>T<sub>E</sub>X or XeL<sup>A</sup>T<sub>E</sub>X are detected.

Some inconsistencies of prior versions of `russianb.dtx` was also overcome in the version 1.2. Those users who used `\selectlanguage` macro, defined in the core `babel` system, to switch between different languages should not worry. However, the macros `\Russian`, `\Englsih` and their aliases `\Rus`, `\cyr`, `\Eng` are modified or removed as they did not conform the mechanism of language switching encoded into the core of `babel` and therefore can mess it.

## 6 Implementation

### 6.1 Initial setup

The macro `\LdfInit` 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 `@`-sign, preventing the `.ldf` file from being processed twice, etc.

```
1 (*code)
2 \LdfInit{russian}{captionsrussian}
```

First, we check if LuaL<sup>A</sup>T<sub>E</sub>X or XeL<sup>A</sup>T<sub>E</sub>X is running. If so, we set boolean key `\if@uni@ode` to true. It will be used to eliminate `\cyr...` commands, which were introduced in L<sup>A</sup>T<sub>E</sub>X2e to handle various Cyrillic input encoding. With the advent of unicode L<sup>A</sup>T<sub>E</sub>X is moving to universal input encoding, so we consider these `\cyr...` commands as obsolete. They are preserved though for backward compatibility in case if L<sup>A</sup>T<sub>E</sub>X or PDFL<sup>A</sup>T<sub>E</sub>X are running.

We don’t load the `ifluatex` or `ifxetex` package because `\RequirePackage` is not allowed at the stage of processing options (note that `babel` loads this file right when it processes its own options) but we borrow code from these packages.

```
3 \ifdefined\if@uni@ode
```



```

4 \PackageError{babel}{if@uni@ode already defined.\MessageBreak
5   Please contact author of russianb.ldf}
6 \relax
7 \fi
8 \newif\if@uni@ode
9 \ifdefined\luatexversion \@uni@odetrue \else
10 \ifdefined\XeTeXrevision \@uni@odetrue \fi\fi

```

Check if hyphenation patterns for the Russian language have been loaded in `language.dat`. Namely, we check for the existence of `\l@russian`. If it is not defined, we declare Russian as dialect for the default language number 0 which almost for sure is English.

```

11 \ifx\l@russian\@undefined
12   \@nopatterns{Russian}
13   \addialect\l@russian0
14 \fi

```

Now `\l@russian` is always defined.

## 6.2 Output encoding

We need to know font encoding that is supposed to be active at the end of the `babel` package. Default font encoding, set by  $\text{\LaTeX}$  core, is `OT1`. This can be changed by the `fontenc` package in case of  $\text{\LaTeX}$  and by `fontspec` package in case of  $\text{Lua}\text{\LaTeX}$ . It matters whether these packages are loaded before or after `babel`. In the latter case or if these packages are not loaded at all, `russianb.ldf` ignores their effect and tries to provide some reasonable settings. In particular, `T2A` will be selected for Russian language if  $\text{\LaTeX}$  is running but `EU1` in case of  $\text{Xe}\text{\LaTeX}$  and `EU2` in case of  $\text{Lua}\text{\LaTeX}$ .

`\latinencoding` The macro `\latinencoding` keeps the name of Latin encoding. It is defined in `babel.def` and is wrapped into `\AtBeginDocument` to allow for late loading `fontenc`. Therefore it does not matter whether `babel` is loaded before or after the `fontenc`. As of version 1.2, definition of `\latinencoding` was removed from `russianb.ldf` since it is overruled in `babel.def`. For example, after

```

% \usepackage[T1,T2A]{fontenc}
% \usepackage[english,russian]{babel}
%

```

as well as after

```

% \usepackage[english,russian]{babel}
% \usepackage[T1,T2A]{fontenc}
%

```

`\latinencoding` will be set to `T1`. After

```

% \usepackage[english,russian]{babel}
%

```

`\latinencoding` will be `OT1`.

In Unicode mode, the package `fontspec` should be loaded instead of `fontenc` to make font preparation; `fontspec` loads the package `xunicode` which sets current

encoding (kept in `\cf@encoding`) to EU1 for Xe $\LaTeX$  and EU2 for Lua $\LaTeX$ , and the `babel` package sets the macro `\latinencoding` to `\cf@encoding`. Since `babel` scan for value `\cf@encoding` within `\AtBeginDocument`, `\latinencoding` will be set to either EU1 for Xe $\LaTeX$  or EU2 for Lua $\LaTeX$  no matter which of the packages, `babel` or `fontspec` is loaded first.

**`\cyrillicencoding`** There is a limited list of encodings appropriate for Cyrillic text. We will look which of them is declared and keep its name in the macro `\cyrillicencoding`. Correct (but obsolete and now deleted) 7-bit Cyrillic encoding is LWN. Correct 8-bit Cyrillic encodings are T2A (default for 8-bit compilers), T2B, T2C, LCY and X2. Correct utf8 encodings are EU1 (default for Xe $\LaTeX$ ), EU2 (default for Lua $\LaTeX$ ).

In 8-bit ( $\LaTeX$ ) mode, user may choose between different non-unicode Cyrillic encodings—e.g., X2 or LCY. If user wants to use another font encoding rather than default (T2A), he has to load the corresponding file before `babel.sty`.

Remember that 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 encodings known to  $\LaTeX$  in the order they were loaded by the time when `babel` is loaded. We set the `\cyrillicencoding` to the last loaded encoding in the list of supported Cyrillic encodings: OT2, LCY, X2, T2C, T2B, T2A. In Unicode mode we also try the unicode encodings EU1 and EU2; 8-bit encodings are kept for unicode compilers (Lua $\LaTeX$  and Xe $\LaTeX$ ) since they can run in compatibility (8-bit) mode.

```

15 \def\@setcyrillicencoding{%
16   \def\sce@a##1##2{%
17     \edef\sce@b{##1}%
18     \edef\sce@c{##2}%
19     \ifx\sce@b\sce@c
20       \let\cyrillicencoding\sce@c
21     \fi}%
22   \def\cdp@elt##1##2##3##4{%
23     \sce@a{##1}{OT2}%
24     \sce@a{##1}{LCY}%
25     \sce@a{##1}{X2}%
26     \sce@a{##1}{T2C}%
27     \sce@a{##1}{T2B}%
28     \sce@a{##1}{T2A}%
29     \if@uni@code
30       \sce@a{##1}{EU1}%
31       \sce@a{##1}{EU2}%
32     \fi}%
33   \cdp@list
34 }
35 \@setcyrillicencoding
36 \@onlypreamble\@setcyrillicencoding
37 \@onlypreamble\sce@a
38 \@onlypreamble\sce@b
39 \@onlypreamble\sce@c

```

The last lines are to free the memory occupied by the macros `\@setcyrillicencoding` and `\sce@x` that are useless in the document. The contents of `\@begindocumenthook`

is cleared automatically.

If `\cyrillicencoding` is still undefined, we issue warning and provide reasonable default value for `\cyrillicencoding`. We then load default encoding definitions; we use the lowercase names (i.e., `lcyenc.def` instead of `LCYenc.def`) when we do that.

```

40 \ifdefined\cyrillicencoding
41 \else
42   \if@uni@ode
43     \ifdefined\XeTeXrevision
44       \edef\cyrillicencoding{EU1}
45     \else\ifdefined\luatexversion
46       \edef\cyrillicencoding{EU2}
47     \fi\fi
48   \else
49     \edef\cyrillicencoding{T2A}
50   \fi
51   \PackageWarning{babel}%
52     {No Cyrillic font encoding has been loaded so far.\MessageBreak
53     A font encoding should be declared before babel.\MessageBreak
54     Default ‘\cyrillicencoding’ encoding will be loaded
55   }%
56   \lowercase\expandafter{\expandafter\input\cyrillicencoding enc.def\relax}%

```

As final wisdom, we repeat `\setcyrillicencoding` at `\begin{document}` time. We could not avoid previous call to `\setcyrillicencoding` since compiler scan `.aux` file before it executes delayed code, and `.aux` may contain `\set@language{russian}`; the latter rises error if `\cyrillicencoding` would not be defined by that time.

```

57 \AtBeginDocument{\setcyrillicencoding}
58 \fi

```

`\Russian` For the sake of backward compatibility we keep the macro `\Russian` but redefine its meaning; now `\Russian` is simply an alias for `\selectlanguage{russian}`.  
`\cyr`  
`\cyrillictext` We define `\cyrillictext` and its alias `\cyr` but remove another alias `\Rus`; these macros are intended for use within `babel` macros and do not perform complete switch of the language. In particular, they do no switch captions and the name of current language stored in the macro `\language`. This inconsistency might break some assumptions embedded into `babel`’s. For example, the `\iflanguage` macro will fail.

Second, `\cyrillictext` does not activate shorthands, so that `”<`, `”>`, `”‘`, `””`, `”---`, e.t.c. will not work.

And third, `\cyrillictext` does not write its trace to `.aux` file, which might result in wrong typesetting of table of content, list of table and list of figures in multilingual documents.

Due to any of these reasons the use of the declaration `\cyrillictext` and its aliases in ordinary text is strongly discouraged. Instead of the declaration `\cyrillictext` it is recommended to use `\Russian` or the command `\foreignlanguage` defined in the `babel` core; their functionality is similar to `\selectlanguage{russian}` but they did not switch caption names, dates and shorthands.

```

59 \DeclareRobustCommand{\Russian}{\selectlanguage{\russian}}
60 \DeclareRobustCommand{\cyrillictext}{%
61   \fontencoding\cyrillicencoding\selectfont

```

```

62 \let\encodingdefault\cyrillicencoding
63 \expandafter\set@hyphenmins\russianhyphenmins
64 \language\l@russian}%
65 \let\cyr\cyrillictext

```

Starting from version v.1.2 we remove the `\English` macro and its aliases. We believe that reasonable place for defining these macros would be `englishb.1df`. Note also that the macro `\English` and its alias `\Eng` are absent in `russianb.1df`'s counterpart in the package `polyglossia`, analog of `babel` for Xe $\LaTeX$ .

```

% \begin{macrocode}
%\DeclareRobustCommand{\English}{%
% \fontencoding\latinencoding\selectfont
% \let\encodingdefault\latinencoding
% \expandafter\set@hyphenmins\englishhyphenmins
% \language\l@english}%
%\let\Eng\English
% \end{macrocode}
%

```

NEXT PART OF CODE SHOULD BE MOVED TO `X2enc.def`, `X2enc.dfu`, IF NEEDED.

Since the X2 encoding does not contain Latin letters, we should make some redefinitions of  $\LaTeX$  macros which implicitly produce Latin letters.

Unfortunately, the commands `\AA` and `\aa` are not encoding dependent in  $\LaTeX$  (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).

```

% \begin{macrocode}
\expandafter\ifx\csname T@X2\endcsname\relax\else
\DeclareTextSymbolDefault{\AA}{OT1}
\DeclareTextSymbolDefault{\aa}{OT1}
\DeclareTextCommand{\aa}{OT1}{\r a}
\DeclareTextCommand{\AA}{OT1}{\r A}
\fi
% \end{macrocode}
%

```

The macro `\cyrillictext` switches current (e.g., Latin) font encoding to a Cyrillic font encoding stored in `\cyrillicencoding`. The macro `\latintext` switches back. This method assumes that a font encoding is a Latin one. But in fact the latter assumption does not matter if any other language is switched on using same method, i.e. if corresponding `.1df` file defines required macros to switch that language on from same standard (Latin) state. Since `\latintext` is defined by the core of `babel` we do not repeat its definition here.

```

% \begin{macrocode}
%\DeclareRobustCommand{\latintext}{%
% \fontencoding{\latinencoding}\selectfont

```

```
% \def\encodingdefault{\latinencoding}}
%\let\lat\latintext
% \end{macrocode}
%
```

`\textcyrillic` {<text>}

The macros `\cyrillictext` and `\latintext` are declarations. For shorter chunks of text the commands `\textcyrillic` and `\textlatin` can be used.

The macro `\textcyrillic` takes an argument which is then typeset using the requested font encoding. It is thus an equivalent of `\foreignlanguage{russian}`.

```
66 \DeclareTextFontCommand{\textcyrillic}{\cyrillictext}
```

### 6.3 Input encoding

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 `inputenc` package should be explicitly called by `\usepackage{inputenc}` before `babel`. Note however that default font encoding T2A fits well enough to Russian version of Windows ANSI encoding which is almost equivalent to cp1251.

SHOULD WE WRAP THIS CHUNK INTO AT BEGIN DOCUMENT?

```
67 \@ifpackageloaded{inputenc}{%
68 \if@uni@ode
69 \PackageWarning{babel}{inputenc should not be used with LuaTeX or XeTeX}
70 \fi
71 }{%
72 %\def\reserved@a{LWN}%
73 %\ifx\reserved@a\cyrillicencoding\else
74 \def\reserved@a{OT2}%
75 \ifx\reserved@a\cyrillicencoding\else
76 \def\reserved@a{EU1}%
77 \ifx\reserved@a\cyrillicencoding\else
78 \def\reserved@a{EU2}%
79 \ifx\reserved@a\cyrillicencoding\else
80 \PackageWarning{babel}%
81 {No input encoding specified for Russian language}
82 \fi\fi\fi
83 %\fi
84 }
```

### 6.4 Shorthands

The double quote character ” is declared to be active in Russian language.

```
85 \initiate@active@char{''}
```

`\mdqon` Obsolete: Active double quote can be both activated and deactivated at any time using the macros `\mdqon` and `\mdqoff`.

```
86 %\def\mdqon{\bbl@activate{''}}
```

```
87 %\def\mdqoff{\bbl@deactivate{''}}
```

Initial activation state will set to on later in section 6.5.4.

`\dq` The active character `”` is used as indicated in table 1. We save the original double quote character in the `\dq` macro to keep it available. The math accent `\’` can now be typed as `‘`.

```
88 \begingroup \catcode‘\’12
89 \def\reserved@a{\endgroup
90 \def\@SS{\mathchar”7019 }
91 \def\dq{’}}
92 \reserved@a
```

### 6.4.1 Quotes

We set `‘` and `’` as shorthands for `\quotedblbase` and `\textquotedblleft`, respectively. Prior to ver.1.2, these shorthands were defined through german quotes `\glqq` and `\grqq`, which in their turn are defined in `babel.def` via `\quotedblbase` and `\textquotedblleft`, respectively. It occurred, that old definition caused errors in Unicode mode if `fontspec` is loaded.

Prior to version 1.2, the shorthands `”<` and `”>` were declared to be equivalents for the French quotes `\flqq` and `\frqq`, respectively. They are defined in `babel.def` via `\guillemotleft` and `\guillemotright`. However, `\flqq` and `\guillemotleft` (and their right counterparts) are typeset differently if current encoding is not T1. Therefore, since v.1.2, we define `”<` and `”>` directly through `\guillemotleft` and `\guillemotright`.

```
93 \declare@shorthand{russian}{‘}{\quotedblbase}
94 \declare@shorthand{russian}{’}{\textquotedblleft}
95 \declare@shorthand{russian}{”<}{\guillemotleft}
96 \declare@shorthand{russian}{”>}{\guillemotright}
```

Next set of shorthands is intended for variations of standard macro `\-` which indicates explicitly breakpoint for hyphenation in a word. Meaning of these shorthands is explained in table 1.

```
97 \declare@shorthand{russian}{’~}{\hskip\z@skip}
98 \declare@shorthand{russian}{’~}{\textormath{\leavevmode\hbox{-}}{-}}
99 \declare@shorthand{russian}{’=}{\nobreak-\hskip\z@skip}
100 \declare@shorthand{russian}{’!}{%
101 \textormath{\nobreak\discretionary{-}{-}{\kern.03em}\allowhyphens}{}}
```

### 6.4.2 Emdash, endash and hyphenation sign

To distinguish between `”-` and `”---` we must check whether the next after `-` token is a hyphen character. If it is, we output an emdash, otherwise a hyphen sign. Therefor `TEX` looks for the next token after the first `’-`, writes its meaning to `\russian@sh@next` and finally call for `\russian@sh@tmp`.

```
102 \declare@shorthand{russian}{’-}{%
103 \def\russian@sh@tmp{%
104 \if\russian@sh@next-\expandafter\russian@sh@emdash
105 \else\expandafter\russian@sh@hyphen\fi}%
106 \futurelet\russian@sh@next\russian@sh@tmp}
```

Two macros `\russian@sh@hyphen` and `\russian@sh@emdash` called by `\russian@sh@tmp` are defined below. The second of them has two parameters since it must gobble next two hyphen signs.

```

107 \def\russian@sh@hyphen{\nobreak\-\bbl@allowhyphens}
108 \def\russian@sh@emdash#1#2{\cdash-#1#2}

```

**\cdash** In its turn, `\russian@sh@emdash` simply calls for `\cdash` which has rich use. It analyses 3rd of 3 characters and calls for one of few predefined macros `\@Acdash`, `\@Bcdash`, `\@Ccdash`.

```

109 \def\cdash#1#2#3{\def\tempx@{#3}%
110 \def\tempa@{-}\def\tempb@{~}\def\tempc@{*}%
111 \ifx\tempx@\tempa@\@Acdash\else
112 \ifx\tempx@\tempb@\@Bcdash\else
113 \ifx\tempx@\tempc@\@Ccdash\else
114 \errmessage{Wrong usage of cdash}\fi\fi\fi}

```

All these 3 internal macros call for `\cyrdash`, which type Cyrillic emdash, but put different spaces around the dash.

`\@Acdash` is invoked by `''---`. It types Cyrillic emdash to be used inside a text and puts an unbreakable thin space before the dash if a space is placed before `''---` in the source file; can be used after display maths formulae, formatted lists, enumerations, etc.

```

115 \def\@Acdash{\ifdim\lastskip>\z@\unskip\nobreak\hskip.2em\fi
116 \cyrdash\hskip.2em\ignorespaces}%

```

`\@Bcdash` is invoked by `''--~`. It types Cyrillic emdash in compound names (like Mendeleev–Klapeyron); requires no space characters around and adds extra space after the dash.

```

117 \def\@Bcdash{\leavevmode\ifdim\lastskip>\z@\unskip\fi
118 \nobreak\cyrdash\penalty\exhyphenpenalty\hskip\z@skip\ignorespaces}%

```

`\@Ccdash` is invoked by `''--*`. It denotes direct speech and adds small space after the dash.

```

119 \def\@Ccdash{\leavevmode
120 \nobreak\cyrdash\nobreak\hskip.35em\ignorespaces}%

```

**\cyrdash** The `\cyrdash` can be defined in a fontenc file as it is done for the T2\* encodings. We provide fake definition of `\cyrdash` only if it is not defined there.

Cyrillic T2\* fonts contains shorter (Cyrillic) emdash. It can be typeset also via the ligature `---`. So, if `\laticencoding` differs from T2\* switching of languages also changes the emdash length typed as ligature in the source file.

```

121 \ifx\cyrdash\undefined
122 \def\cyrdash{\hbox to.8em{--\hss--}}
123 \PackageInfo{babel}{\string\cyrdash\space is defined}
124 \fi

```

Finally, we define a shorthand thin space to be placed between initials as in D.’’,Mendeleev. When used instead of `\,` as in D.\,Mendeleev it allows hyphenation in the next word.

```

125 \declare@shorthand{russian}{’’,}{\nobreak\hskip.2em\ignorespaces}

```

## 6.5 Switching to and from Russian

Now we define additional macros used to reset current language to Russian and back to some original state. The package `babel` based on the assumption that

original state is characterized by a Latin encoding. Previously, for back reset the macro `\OriginalTeX` was used, but now use `\latintext` for the same purpose.

### 6.5.1 Caption names

First, we define Russian equivalents for Russian caption names.

`\captionsrussian` The macro `\captionsrussian` defines caption names used in the four standard document classes provided with  $\text{\LaTeX}$ . The macro `\cyr` activates Cyrillic encoding. It could be dropped if we would be sure that Russian captions are called only if current language is Russian. However, the macros such as `\Russian` do not conform to strict rules of the package `babel` as explained in the above.

As of version v.1.2 we eliminate `\cyr...` macros from caption names if unicode engine is running. In the latter case, Cyrillic letters are typed in by their unicode code-points, the `~~~~abcd` notation is not used since it causes error at compilation time in case if  $\text{\LaTeX}$  is running and `utf8` input encoding is not declared.

Note that two names for the Table of Contents can be used in Russian publications. For books (and reports) the second variant is appropriate, but for proceedings the first variant is preferred:

```

126 \if@uni@ode
127   %\captionsrussian@modern
128   \addto\captionsrussian{%
129     \def\prefacename{Предисловие}%
130     \def\refname{Список литературы}%
131     \def\abstractname{Аннотация}%
132     \def\bibname{Литература}%
133     \def\chaptername{Глава}%
134     \def\appendixname{Приложение}%
135     \ifundefined{thechapter}
136       {\def\contentsname{Содержание}}%
137       {\def\contentsname{Оглавление}}%
138     \let\tocname=\contentsname
139     \def\listfigurename{Список иллюстраций}%
140     \def\listtablename{Список таблиц}%
141     \def\indexname{Предметный указатель}%
142     \def\authorname{Именной указатель}%
143     \def\figurename{Рис.}%
144     \def\tablename{Таблица}%
145     \def\partname{Часть}%
146     \def\enclname{вкл.}%
147     \def\cscname{исх.}%
148     \def\headtoname{вх.}%
149     \def\pagename{с.}%
150     \def\seename{см.}%
151     \def\alsoname{см. \ также}%
152     \def\proofname{Доказательство}%
153     \def\glossaryname{Словарь терминов}%
154   }%
155   \def\captionsrussian@ancient{%
156     \def\prefacename{Предисловие}%
157     \def\refname{Примѣчанія}%
158     \def\abstractname{Аннотация}%

```



```

159 \def\bibName{Библиография}%
160 \def\chaptername{Глава}%
161 \def\appendixname{Приложение}%
162 \ifundefined{thechapter}
163   {\def\contentsname{Содержание}}%
164   {\def\contentsname{Оглавление}}%
165 \let\tocname=\contentsname
166 \def\listfigurename{Списокъ иллюстрацій}%
167 \def\listtablename{Списокъ таблицъ}%
168 \def\indexname{Предмѣтный указатель}%
169 \def\authorname{Именной указатель}%
170 \def\figurename{Рис.}%
171 \def\tablename{Таблица}%
172 \def\partname{Часть}%
173 \def\enclname{вкл.}%
174 \def\ccname{исх.}%
175 \def\headtoname{вх.}%
176 \def\pagename{с.}%
177 \def\seename{см.}%
178 \def\alsoname{см.~также}%
179 \def\proofname{Доказательство}%
180 \def\glossaryname{Словарь терминов}%
181 }
182 \else
183 %\def\captionsrussian@modern{%
184 \addto\captionsrussian{%
185 \def\prefacename{%
186   {\cyr\CYRP\cyrr\cyre\cyrd\cyri\cyrs\cyrl\cyro\cyrv\cyri\cyre}}%
187 \def\refname{%
188   {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk\
189     \cyrl\cyri\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyrery}}%
190 \def\abstractname{%
191   {\cyr\CYRA\cyrn\cyrn\cyro\cyrt\cyra\cyrc\cyri\cyrya}}%
192 \def\bibName{%
193   {\cyr\CYRL\cyri\cyrt\cyre\cyrr\cyra\cyrt\cyru\cyrr\cyra}}%
194 \def\chaptername{{\cyr\CYRG\cyrl\cyra\cyrv\cyra}}%
195 \def\appendixname{%
196   {\cyr\CYRP\cyrr\cyri\cyrl\cyro\cyrrzh\cyre\cyrn\cyri\cyre}}%
197 \ifundefined{thechapter}%
198   {\def\contentsname{%
199     {\cyr\CYRS\cyro\cyrd\cyre\cyrr\cyrrzh\cyra\cyrn\cyri\cyre}}}%
200   {\def\contentsname{%
201     {\cyr\CYRO\cyrg\cyrl\cyra\cyrv\cyrl\cyre\cyrn\cyri\cyre}}}%
202 \let\tocname=\contentsname
203 \def\listfigurename{%
204   {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk
205     \ \cyri\cyrl\cyrl\cyryu\cyrs\cyrt\cyrr\cyra\cyrc\cyri\cyrishrt}}%
206 \def\listtablename{%
207   {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk
208     \ \cyrt\cyra\cyrb\cyrl\cyri\cyrc}}%
209 \def\indexname{%
210   {\cyr\CYRP\cyrr\cyre\cyrd\cyrm\cyre\cyrt\cyrn\cyrery\cyrishrt
211     \ \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl\cyrsftsn}}%
212 \def\authorname{%

```

```

213     {\cyr\CYRI\cym\cyre\cyrn\cyro\cyrishrt
214     \ \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl\cyrsftsn}}%
215     \def\figurename{{\cyr\CYRR\cyri\cyrs.}}%
216     \def\tablename{{\cyr\CYRT\cyra\cyrb\cyrl\cyri\cyrc\cyra}}%
217     \def\partname{{\cyr\CYRCH\cyra\cyrs\cyrt\cyrsftsn}}%
218     \def\enclname{{\cyr\cyrv\cyrk\cyrl.}}%
219     \def\ccname{{\cyr\cyri\cyrs\cyrh.}}%
220     \def\headtoname{{\cyr\cyrv\cyrh.}}%
221     \def\pagename{{\cyr\cyrs.}}%
222     \def\seename{{\cyr\cyrs\cym.}}%
223     \def\alsoname{{\cyr\cyrs\cym.\ \cyrt\cyra\cyrk\cyrzh\cyre}}%
224     \def\proofname{{\cyr\CYRD\cyro\cyrk\cyra\cyrz\cyra\cyrt
225     \cyre\cyrl\cyrsftsn\cyrs\cyrt\cyrv\cyro}}%
226     \def\glossaryname{{\cyr\CYRS\cyrl\cyro\cyrv\cyra\cyrr\cyrsftsn\
227     \cyrt\cyre\cyrr\cym\cyri\cym\cyro\cyrv}}%
228     }%
229     \def\captionsrussian@ancient{%
230     \def\prefacename{%
231     {\cyr\CYRP\cyrr\cyre\cyrd\cyri\cyrs\cyrl\cyro\cyrv\cyrii\cyre}}%
232     \def\refname{%
233     {\cyr\CYRP\cyrr\cyri\cym\cyryat\cyrch\cyra\cym\cyrii\cyrya}}%      <-
- Примѣчанія, нег \cyryat в кодировке T2*
234     \def\abstractname{%
235     {\cyr\CYRA\cyrn\cyrn\cyro\cyrt\cyra\cyrc\cyrii\cyrya}}%
236     \def\bibname{%
237     {\cyr\CYRB\cyri\cyrb\cyrl\cyrii\cyro\cyrg\cyrr\cyra\cyrf\cyrii\cyrya}}% <-
- Библиографія
238     \def\chaptername{{\cyr\CYRG\cyrl\cyra\cyrv\cyra}}%
239     \def\appendixname{%
240     {\cyr\CYRP\cyrr\cyri\cyrl\cyro\cyrzh\cyre\cym\cyrii\cyre}}%
241     \@ifundefined{thechapter}%
242     {\def\contentsname{%
243     {\cyr\CYRS\cyro\cyrd\cyre\cyrr\cyrzh\cyra\cym\cyrii\cyre}}}%
244     {\def\contentsname{%
245     {\cyr\CYRO\cyrg\cyrl\cyra\cyrv\cyrl\cyre\cym\cyrii\cyre}}}%
246     \let\tocname=\contentsname
247     \def\listfigurename{%
248     {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk\cyrhrdsn\
249     \cyri\cyrl\cyrl\cyryu\cyrs\cyrt\cyrr\cyra\cyrc\cyrii\cyrishrt}}% <-
- Списокъ иллюстрацій
250     \def\listtablename{%
251     {\cyr\CYRS\cyrp\cyri\cyrs\cyro\cyrk\cyrhrdsn\
252     \cyrt\cyra\cyrb\cyrl\cyri\cyrc\cyrhrdsn}}%      <-
- Списокъ таблицъ
253     \def\indexname{%
254     {\cyr\CYRP\cyrr\cyre\cyrd\cym\cyryat\cyrt\cyrn\cyrery\cyrishrt\space
255     \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl\cyrsftsn}}%      <-
- Предмѣтный указатель, есть \cyryat в кодировке X2
256     \def\authorname{%
257     {\cyr\CYRI\cym\cyre\cyrn\cyrn\cyro\cyrishrt\
258     \cyru\cyrk\cyra\cyrz\cyra\cyrt\cyre\cyrl\cyrsftsn}}%
259     \def\figurename{{\cyr\CYRR\cyri\cyrs.}}%
260     \def\tablename{{\cyr\CYRT\cyra\cyrb\cyrl\cyri\cyrc\cyra}}%
261     \def\partname{{\cyr\CYRCH\cyra\cyrs\cyrt\cyrsftsn}}%

```

```

262 \def\enclname{\cyr\cyrv\cyrk\cyrl.}%
263 \def\ccname{\cyr\cyri\cyrs\cyrh.}%
264 \def\headtoname{\cyr\cyrv\cyrh.}%
265 \def\pagename{\cyr\cyrs.}%
266 \def\seename{\cyr\cyrs\cyrm.}%
267 \def\alsoname{\cyr\cyrs\cyrm.\ \cyrt\cyra\cyrk\cyrzh\cyre}}%
268 \def\proofname{\cyr\CYRD\cyro\cyrk\cyra\cyrz\cyra\cyrt
269 \cyre\cyrl\cyrsftsn\cyrs\cyrt\cyrv\cyro}}%
270 \def\glossaryname{\cyr\CYRS\cyrl\cyro\cyrv\cyra\cyrr\cyrsftsn\
271 \cyrt\cyre\cyrr\cyrm\cyri\cyrn\cyro\cyrv}}% <-- Needs translation
272 }%
273 \fi

```

### 6.5.2 Date in Russian

**\daterussian** The macro **\daterussian** is used to reset the macro **\today** in Russian.

```

274 \if@uni@ode
275 \addto\daterussian{%
276 \def\today{\number\day~\ifcase\month\or
277 января\or
278 февраля\or
279 марта\or
280 апреля\or
281 мая\or
282 июня\or
283 июля\or
284 августа\or
285 сентября\or
286 октября\or
287 ноября\or
288 декабря\fi
289 \space \number\year~г.}}
290 \def\daterussian@ancient{%
291 \def\today{\number\day~\ifcase\month\or%
292 января\or
293 февраля\or
294 марта\or
295 апреля\or
296 мая\or
297 июня\or
298 июля\or
299 августа\or
300 сентября\or
301 октября\or
302 ноября\or
303 декабря\fi%
304 \space \number\year~г.}}
305 \else
306 \def\daterussian{%
307 \def\today{\number\day~\ifcase\month\or
308 \cyrya\cyrn\cyrv\cyra\cyrr\cyrya\or
309 \cyrf\cyre\cyrv\cyrr\cyra\cyrl\cyrya\or

```

```

310 \cyr\cyra\cyrr\cyrt\cyra\or
311 \cyra\cyrp\cyrr\cyre\cyrl\cyrya\or
312 \cyr\cyra\cyrya\or
313 \cyr\cyryu\cyrn\cyrya\or
314 \cyr\cyryu\cyrl\cyrya\or
315 \cyra\cyrv\cyrg\cyru\cyrs\cyrt\cyra\or
316 \cyrs\cyre\cyrn\cyrt\cyrya\cyrb\cyrr\cyrya\or
317 \cyro\cyrk\cyrt\cyrya\cyrb\cyrr\cyrya\or
318 \cyrn\cyro\cyrya\cyrb\cyrr\cyrya\or
319 \cyrd\cyre\cyrk\cyra\cyrb\cyrr\cyrya\fi
320 \space \number\year~\cyrg.}}
321 \def\daterussian@ancient{%
322 \def\today{\number\day~\ifcase\month\or
323 \cyrya\cyrn\cyrv\cyra\cyrr\cyrya\or
324 \cyrf\cyre\cyrv\cyrr\cyra\cyrl\cyrya\or
325 \cyr\cyra\cyrr\cyrt\cyra\or
326 \cyra\cyrp\cyrr\cyre\cyrl\cyrya\or
327 \cyr\cyra\cyrya\or
328 \cyr\cyryu\cyrn\cyrya\or
329 \cyr\cyryu\cyrl\cyrya\or
330 \cyra\cyrv\cyrg\cyru\cyrs\cyrt\cyra\or
331 \cyrs\cyre\cyrn\cyrt\cyrya\cyrb\cyrr\cyrya\or
332 \cyro\cyrk\cyrt\cyrya\cyrb\cyrr\cyrya\or
333 \cyrn\cyro\cyrya\cyrb\cyrr\cyrya\or
334 \cyrd\cyre\cyrk\cyra\cyrb\cyrr\cyrya\fi
335 \space \number\year~\cyrg.}}
336 \fi

```

### 6.5.3 Hyphenation patterns

Russian hyphenation patterns are automatically activated every time Russian language is selected via `\selectlanguage`, `\foreignlanguage` or equivalent command. But we need to declare values of `\lefthyphenmin` and `\righthyphenmin`; both are set to 2.

As of v.1.2 we removed a definition for `\englishhyphenmins`. It is not deal of `russianb.ldf`.

```

337 \providehyphenmins{\CurrentOption}{\tw@\tw@}
338 \providehyphenmins{russian}{\tw@\tw@}

```

### 6.5.4 Extra definitions

`\extrasrussian` The macro `\extrasrussian` performs extra definitions in addition to resetting the caption names and date. The macro `\noextrasrussian` is used to cancel the actions of `\extrasrussian`.

First, we instruct `babel` to switch font encoding using earlier defined macros `\cyrillictext` and `\latintext`.

```

339 \addto\extrasrussian{\cyrillictext}
340 \addto\noextrasrussian{\latintext}

```

Second, we specify that the Russian group of shorthands should be used.

```

341 \addto\extrasrussian{\languageshorthands{russian}}

```

```

342 \addto\extrasrussian{\bbl@activate{''}}
343 \addto\noextrasrussian{\bbl@deactivate{''}}

```

Now the action `\extrasrussian` has to execute is to make sure that the command `\frenchspacing` is in effect. If this is not the case the execution of `\noextrasrussian` will switch it off again.

```

344 \addto\extrasrussian{\bbl@frenchspacing}
345 \addto\noextrasrussian{\bbl@nonfrenchspacing}

```

## 6.6 Alphabetic counters

Do we need to reset `\@alph` and `\@Alph`? They are used in the  $\text{\LaTeX}$  core to define the macros `\alph` and `\Alph`, respectively, which type a counter with a corresponding letter of Latin alphabet. We just want to make sure that correct `\latinencoding` is used instead of `\latinencoding` to typeset the counter. Starting from v.1.2 we do not reset these macros since all Cyrillic encoding but X2 do have Latin letters. When using the X2 encoding user must himself take care about selecting correct encoding when he switches his keyboard. Our decision is motivated as follows. If selected Cyrillic font is visually different from Latin font, the macro `\@alph` and `\@Alph` will produce visually different output from surrounding text if they are used with Russian text, which is completely legitimate.

Notice for commented code:

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)`.

Note added on 2013/03/22: `{\fontencoding{\latinencoding}\selectfont}` rises an error with recent version of `microtype` package after the `\appendix` declaration (which resets `\thechapter` to `\@Alph{c@chapter}`). Most languages do not reset `\@alph` and `\@Alph` macros and only `ukrainian` and `bulgarian` add `\fontencoding` to `\@alph` and `\@Alph`.

Since v.1.3 we do not reset `\@alph` and `\@Alph` here. Resetting `\fontencoding` in `\@alph` and `\@Alph` causes an error if the package `smartref` is loaded and a `\sref` occurs after the `\appendix` declaration which resets `\thechapter` to `\@Alph{c@chapter}`.

```

346 %\def\@alph#1{{\fontencoding{\latinencoding}\selectfont
347 % \ifcase#1\or
348 %   a\or b\or c\or d\or e\or f\or g\or h\or
349 %   i\or j\or k\or l\or m\or n\or o\or p\or
350 %   q\or r\or s\or t\or u\or v\or w\or x\or
351 %   y\or z\else\@ctrerr\fi}}%
352 %\def\@Alph#1{{\fontencoding{\latinencoding}\selectfont
353 % \ifcase#1\or
354 %   A\or B\or C\or D\or E\or F\or G\or H\or
355 %   I\or J\or K\or L\or M\or N\or O\or P\or
356 %   Q\or R\or S\or T\or U\or V\or W\or X\or
357 %   Y\or Z\else\@ctrerr\fi}}%

```

We add new enumeration style for Russian manuscripts with Cyrillic letters.

`\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.

```

358 \def\Asbuk#1{\expandafter\russian@Alph\csname c@#1\endcsname}
359 \if@uni@ode
360   \def\russian@Alph#1{\ifcase#1\or
361     A\or Б\or В\or Г\or Д\or Е\or Ж\or
362     З\or И\or К\or Л\or М\or Н\or О\or
363     П\or Р\or С\or Т\or У\or Ф\or Х\or
364     Ц\or Ч\or Ш\or Щ\or Э\or Ю\or Я\else\@ctrerr\fi}
365 \else
366   \def\russian@Alph#1{\ifcase#1\or
367     \CYRA\or\CYRB\or\CYRV\or\CYRG\or\CYRD\or\CYRE\or\CYRZH\or
368     \CYRZ\or\CYRI\or\CYRK\or\CYRL\or\CYRM\or\CYRN\or\CYRO\or
369     \CYRP\or\CYRR\or\CYRS\or\CYRT\or\CYRU\or\CYRF\or\CYRH\or
370     \CYRC\or\CYRCH\or\CYRSH\or\CYRSHCH\or\CYREREV\or\CYRYU\or
371     \CYRYA\else\@ctrerr\fi}
372 \fi

```

**\asbuk** The macro **\asbuk** is similar to **\alph**; it produces lowercase Russian letters.

```

373 \def\asbuk#1{\expandafter\russian@alph\csname c@#1\endcsname}
374 \if@uni@ode
375   \def\russian@alph#1{\ifcase#1\or
376     а\or б\or в\or г\or д\or е\or ж\or
377     з\or и\or к\or л\or м\or н\or о\or
378     п\or р\or с\or т\or у\or ф\or х\or
379     ц\or ч\or ш\or щ\or э\or ю\or я\else\@ctrerr\fi}
380 \else
381   \def\russian@alph#1{\ifcase#1\or
382     \cyra\or\cyrb\or\cyrv\or\cyrg\or\cyrd\or\cyre\or\cyrz\or
383     \cyrz\or\cyri\or\cyrk\or\cyrl\or\cyrm\or\cyrn\or\cyro\or
384     \cyrp\or\cyrr\or\cyrs\or\cyrt\or\cyru\or\cyrf\or\cyrh\or
385     \cyrc\or\cyrch\or\cyrsh\or\cyrshch\or\cyrerev\or\cyryu\or
386     \cyrya\else\@ctrerr\fi}
387 \fi

```

Babel 3.9 has introduced a notion of a language attribute. An **ancient** attribute changes default behavior, which uses modern Russian spelling, and activates an alternative set of captions and date macros suitable for typesetting ancient Slavonic and Church books.

```

388 \bbl@declare@ttribute{russian}{ancient}{%
389   \PackageInfo{babel}{Russian attribute set to ancient}}%
390 \let\captionrussian=\captionrussian@ancient
391 \let\daterussian=\daterussian@ancient
392 }

```

We don't want for long internal macros to waste memory. So we declare them to be usable within the preamble only.

```

393 \@onlypreamble\captionrussian@ancient
394 \@onlypreamble\daterussian@ancient

```

## 6.7 Cyrillic math

For compatibility with older Russian packages we could define the `\No` macro. However the Russian number sign is now superseded with `\textnumero`. Moreover, it can be found of Russian keyboard. Therefore we discard `\No` since v.1.2.

```
%\DeclareRobustCommand{\No}{%
%  \ifmmode{\nfss@text{\textnumero}}\else\textnumero\fi}
%
```

As of version 1.2 the macros `\cyrmath..` are not supported any more. They requires package `textmath` which is not available now. Instead of `\cyrmath..` it is advised to use corresponding `\text..` commands; they do work in math mode.

```
395%\RequirePackage{textmath}
396%  \@ifundefined{sym\cyrillicencoding letters}{}{%
397%  \SetSymbolFont{\cyrillicencoding letters}{bold}\cyrillicencoding
398%    \rmdefault\bfdefault\updefault
399%  \DeclareSymbolFontAlphabet\cyrmathrm{\cyrillicencoding letters}
```

And we need few commands to switch to different variants.

```
400%\DeclareMathAlphabet\cyrmathbf\cyrillicencoding
401%  \rmdefault\bfdefault\updefault
402%\DeclareMathAlphabet\cyrmathsf\cyrillicencoding
403%  \sfdefault\mddefault\updefault
404%\DeclareMathAlphabet\cyrmathit\cyrillicencoding
405%  \rmdefault\mddefault\itdefault
406%\DeclareMathAlphabet\cyrmathtt\cyrillicencoding
407%  \ttdefault\mddefault\updefault
408%
409%\SetMathAlphabet\cyrmathsf{bold}\cyrillicencoding
410%  \sfdefault\bfdefault\updefault
411%\SetMathAlphabet\cyrmathit{bold}\cyrillicencoding
412%  \rmdefault\bfdefault\itdefault
413%}
```

```
\sh We also define few math operator names according to Russian typesetting
\ch traditions. Some math functions in Russian math books have names different from
\tg English writings. For example, \sinh in Russian is called \sh. Special consideration
\ctg needs the macro \th that conflicts with the text symbol \th defined in Latin 1
\arctg encoding:
\arcctg
\th
\cth
\cosec
414 \def\sh{\mathop{\operator@font sh}\nolimits}
415 \def\ch{\mathop{\operator@font ch}\nolimits}
416 \def\tg{\mathop{\operator@font tg}\nolimits}
417 \def\ctg{\mathop{\operator@font ctg}\nolimits}
418 \def\arctg{\mathop{\operator@font arctg}\nolimits}
419 \def\arcctg{\mathop{\operator@font arcctg}\nolimits}
420 \addto\extrasrussian{%
421   \babel@save{\th}%
422   \let\ltx@th\th
423   \def\th{\textormath{\ltx@th}%
424     {\mathop{\operator@font th}\nolimits}}%
425 }
```

```

426 \def\cth{\mathop{\operator@font cth}\nolimits}
427 \def\cosec{\mathop{\operator@font cosec}\nolimits}

\nod Finally, we define some rare Russian mathematical symbols:
\nok 428 \def\Prob{\mathop{\kern\z@\mathsf{P}}\nolimits}
\prog 429 \def\Variance{\mathop{\kern\z@\mathsf{D}}\nolimits}
\nod 430 \if@uni@ode
\nok 431 \def\nod{\mathop{\mathrm{н.о.д.}}\nolimits}
\nok 432 \def\nok{\mathop{\mathrm{н.о.к.}}\nolimits}
\Prog 433 \def\NOD{\mathop{\mathrm{НОД}}\nolimits}
434 \def\NOK{\mathop{\mathrm{НОК}}\nolimits}
435 \def\proj{\mathop{\mathrm{\Pi p}}\nolimits}
436 \else
437 \def\nod{\mathop{\mathrm{cyrn.\cyro.\cyrd.}}\nolimits}
438 \def\nok{\mathop{\mathrm{cyrn.\cyro.\cyrk.}}\nolimits}
439 \def\NOD{\mathop{\mathrm{CYRN\CYRO\CYRD}}\nolimits}
440 \def\NOK{\mathop{\mathrm{CYRN\CYRO\CYRK}}\nolimits}
441 \def\Proj{\mathop{\mathrm{CYRP\cyrr}}\nolimits}
442 \fi

```

## 6.8 Final settings

The macro `\ldf@finish` does work needed at the end of each `.ldf` file. This includes resetting the category code of the `@`-sign, loading a local configuration file, and preparing the language to be activated at `\begin{document}` time.

```
443 \ldf@finish{russian}
```

</code>

## Change History

russianb-1.1a	initial checks . . . . . 8
General: use <code>\russianhyphenmins</code>	russianb-1.1e
to store the correct values . . . . 20	General: Added closing brace to
Use the new mechanism for	second argument of <code>\LdfInit</code> . . 8
dealing with active characters . 13	russianb-1.1f
russianb-1.1b	General: Add macro for <code>thinspace</code>
General: Added switch to LWN	between initials . . . . . 15
encoding . . . . . 20	Added definitions of Cyrillic
russianb-1.1c	emdash stuff and <code>thinspace</code> . . . . 8
General: Replaced <code>\undefined</code> with	Added switch for <code>doublequote</code>
<code>\@undefined</code> and <code>\empty</code> with	shorthands . . . . . 13
<code>\@empty</code> for consistency with	russianb-1.1k
<code>ℒ<sub>TEX</sub></code> . . . . . 8	General: replaced all <code>\penalty\@M</code>
russianb-1.1d	with <code>\nobreak</code> . . . . . 8
General: Moved the definition	russianb-1.1l
of <code>\atcatcode</code> right to the	General: Made not using <code>inputenc</code> a
beginning. . . . . 8	warning instead of an error . . . 13
Now use <code>\ldf@finish</code> to wrap up 24	russianb-1.1m
Now use <code>\LdfInit</code> to perform	General: Now use <code>\providehyphenmins</code>



to provide a default value . . . .	20	Unicode code-points added for LuaLaTeX . . . . .	16, 19
russianb-1.1o		Warning is added if <code>\cyrdash</code> defined . . . . .	15
General: <code>\latintext</code> is already defined by the core of babel . . .	12	<code>\latinencoding:</code> Removed	
<code>\textlatin</code> already defined by the core of babel . . . . .	13	<code>\latinencoding</code> . . . . .	9
russianb-1.2		russianb-1.2a	
General: <code>\englishhyphenmins</code> is removed . . . . .	20	General: Indentation of 1st paragraph removed . . . . .	8
<code>\lat</code> removed . . . . .	12	russianb-1.3	
Added EU1 and EU2 encodings . . .	13	General: Removed <code>\@alph</code> and <code>\@Alph</code> . . . . .	21
Change definition of <code>\th</code> only for this language . . . . .	23	Removed switch for doublequote shorthands . . . . .	13
Check for LuaTeX . . . . .	8	russianu-1.2b	
EU1 and EU2 encodings added . . .	10	General: Renamed to russianu to work with babel-beta 3.9 . . . . .	8
Removed <code>\English</code> macro . . . . .	12	russianu-1.3b	
Removed LWN encoding . . . . .	13	General: Renamed to russianb to work with babel 3.9 . . . . .	8
Removed test for present of encoding files . . . . .	11		

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