The Serbian Cyrillic Language in the babel system

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Serbian Cyrillic Language

The file serbianc.dtx defines all the language definition macros for Serbian language, typeset in a Cyrillic script.

For this language the character " is made active. In table 1 an overview is given of its purpose. One of the reasons for this is that, in the Serbian language, some special characters are used.

"- An explicit hyphen sign, allowing hyphenation in the rest of the word; inserts a hyphen which is repeated at the beginning of the next line (recommended to use for compound words with hyphen).
"| Disables ligature at this position.
"" Similar to "- but prints no hyphen sign.
"~ Compound word mark without a breakpoint, prints hyphen prohibiting hyphenation at the point.
"= A compound word mark with a breakpoint, prints hyphen allowing hyphenation in the composing words.
"' German opening double quote (looks like „).
"' German closing double quote (looks like “).
"' (if the quotes attribute is used) Closing double quote (looks like ”).
"< French opening double quote (looks like <<).
"> French closing double quote (looks like >>).

Table 1: The extra definitions made by serbianc.ldf

Macro \today prints the date in Serbian. Alternatively, if attribute datei is used, \today prints the current date, but prints ‘jyun’ and ‘jyul’ for ‘June’ and ‘July’. If you prefer to use ‘jyun’ and ‘jyul’ instead of default ‘jyn’ and ‘jyl’, use the datei attribute. Also, the \today* macro prints the date without dot after the year (used when after the date is the punctuation mark, such as comma). Alternatively, the commands \todayRoman and \todayRoman* print the current date using Roman numerals for months.

The alphabetical enumerations in texts use the Cyrillic alphabet and alphabetic order (all 30 letters of the Serbian language are used). Also, the Serbian language allows enumeration with the Latin alphabet. If the Latin alphabet is used in the enumeration the letters q, w, x and y are omitted by the rules of the Serbian language (22 letters are used in that case). However, if the user wants to use the English alphabet for the enumeration (26 letters), this option is also available. One can manually switch the enumeration alphabet with the commands \enumCyr, \enumLat and \enumEng. This commands can be used after the \begin{document} when the serbianc language is active. In

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principle, enumerations are a matter for class and style designers but the same can be said also about things, other than enumerations, such as names of sections and bibliography lists.

Apart from defining shorthands, we need to make sure that the first paragraph of each section is indented. Furthermore, the following new math operators are defined: \(\sin\), \(\cos\), \(\tan\), \(\sec\), \(\csc\), \(\arcsin\), \(\arccos\), \(\arctan\), \(\arcsec\), \(\arccosec\), \(\sinh\), \(\cosh\), \(\tanh\), \(\csch\), \(\coth\), \(\arcsinh\), \(\arccosh\), \(\artanh\), \(\arccsch\), \(\mathcal{ZD}\), \(\mathcal{NZD}\), \(\mathcal{NZS}\). Cyrillic letters in math mode can be typed with the aid of text commands such as \textbf, \textsf, \textit, \texttt, e.t.c.

By default, ekavian spelling is enabled. Ijekavian spelling can be enabled by setting the attribute to ijekav. To set an attribute, put the \languageattribute macro within a document preamble after babel, for example,

```latex
\languageattribute{Serbian}{ijekav}
```

Setting the ijekav attribute changes the built-in strings (caption names). For example, the part will be entitled as ‘Део’ by default and as ‘Дио’ if the Serbian language attribute is set to ijekav. Same result can be achieved using a modifier as follows:

```latex
\languageattribute{Serbian}{ijekav}(babel)
```

Using a modifier in a package option is often better. A modifier is set after the language name, and is prefixed with a dot (only when the language is set as package option — neither global options nor the main key accept them). Also, it’s possible to use more than one attribute:

```latex
\languageattribute{Serbian}{ijekav.datei.quotes}(babel)
```

The file `serbianc.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.

For LuaLaTeX or XeLaTeX one needs to load the \fontspec package. The following example shows how to load Computer Modern Unicode (CMU) fonts (which is a part of all modern \LaTeX distributions), and also to get correct italic shape of the letters 6, r, a, n and τ for Serbian language:

```latex
\usepackage{fontspec}
\defaultfontfeatures{Ligatures=(TeX),Language=Serbian,Script=Cyrillic}
\setmainfont{CMU Serif}
\setsansfont{CMU Sans Serif}
\setmonofont{CMU Typewriter Text}
\languageattribute{Serbian}{ijekav}(babel)
```

The code

The macro \LdfInit takes care of preventing this file from loading more than once, checking the category code of the Θ sign, etc.

```latex
1 ⟨∗code⟩
2 \LdfInit{serbian}{captionsserbian}

First, we check if LuaLaTeX or XeLaTeX is running. If it is, we set the boolean key \if@srbc@uni@ode to true. It will be used to eliminate \cyr... commands, which were introduced in \LaTeX2e to handle various Cyrillic input encodings. With the introduction of Unicode, \LaTeX is moving to universal input encoding, so we consider these \cyr... commands obsolete. However, they are still preserved for backward compatibility in case \LaTeX or PDF\LaTeX are running.

3 \ifdefined\if@srbc@uni@ode
4 \PackageError{ babel}{if@srbc@uni@ode already defined.}
```
Check if hyphenation patterns for the Serbian language have been loaded in \texttt{language.dat}. Namely, we check for the existence of \texttt{l@serbianc}. If it is not defined, we declare Serbian as dialect for the default language number 0, which is almost certainly English.

\texttt{\ifx\l@serbianc\@undefined \@nopatterns{Serbianc} \addialect\l@serbianc0 \fi}

There is a limited list of encodings appropriate for Serbian Cyrillic text. We will look at which one of them is declared and keep its name in the macro \texttt{cyrillicencoding}. The correct 7-bit Cyrillic encoding is \texttt{OT2}. The correct 8-bit Cyrillic encodings are \texttt{T2A} (default for 8-bit compilers) and \texttt{X2}. The correct utf8 encodings are \texttt{TU} (default for Xe\LaTeX{} and Lua\LaTeX{}), \texttt{EU1} (obsolete, formerly used for Xe\LaTeX{}), \texttt{EU2} (obsolete, formerly used for Lua\LaTeX{}).

In 8-bit (\LaTeX{}) mode, the user may choose a different non-unicode Cyrillic encoding—\texttt{X2} or \texttt{OT2}. If one wants to use another font encoding rather than default (\texttt{T2A}), he or she has to load the corresponding file \texttt{before babel.sty}.

Remember that, for the Serbian language, the \texttt{T2A} encoding is better than \texttt{X2}, because \texttt{X2} does not contain Latin letters, and users should pay attention and switch the language every time they want to type a Latin word inside a Serbian phrase or vice versa.

We parse the \texttt{\cdp@list} containing encodings known to \LaTeX{} in the order in which they have been loaded by the time \texttt{babel} is called. We set the \texttt{cyrillicencoding} to the last loaded encoding in the list of supported Cyrillic encodings: \texttt{OT2}, \texttt{X2}, \texttt{T2A}. In Unicode mode, \texttt{cyrillicencoding} is set to \texttt{TU} by \texttt{fontspec}. Nevertheless, here we provide similar definitions; 8-bit encodings are kept for Unicode compilers (Lua\LaTeX{} and Xe\LaTeX{}) since they can run in compatibility (8-bit) mode.

\texttt{\def\@setcyrillicencoding{%}
  \def\sce@a##1##2{%}
    \edef\sce@b{##1}%
    \edef\sce@c{##2}%
    \ifx\sce@b\sce@c
      \let\cyrillicencoding\sce@c
    \fi}
  \def\cdp@elt##1##2##3##4{%}
    \sce@a{##1}{OT2}%
    \sce@a{##1}{X2}%
    \sce@a{##1}{T2A}%
    \if@srbc@uni@ode
      \sce@a{##1}{TU}%
    \fi}
  \cdp@list
}
\ifx\cyrillicencoding\undefined
  \@setcyrillicencoding
\fi
\@onlypreamble\@setcyrillicencoding
\@onlypreamble\sce@a
\@onlypreamble\sce@c
\ifx\cyrillicencoding\undefined
  \if@srbc@uni@ode
    \edef\cyrillicencoding{TU}%
  \else
    \edef\cyrillicencoding{T2A}%
  \fi
\else
  \edef\cyrillicencoding{T2A}%
\fi

We define the macro \Serbianc simply as an alias for \selectlanguage{serbianc}.

We define \cyrillictext and its alias \cyr; these macros are intended for use within the babel macros and do not perform the complete change of the language.

In particular, they do not change the captions and the name of current language stored in the macro \languagename. This inconsistency might break some assumptions embedded into babel. For example, the \iflanguage macro will fail.

Furthermore, \cyrillictext does not activate shorthands, so "<", "">", "", etc. will not work.

Lastly, \cyrillictext does not write its trace to .aux file, which might result in wrong typesetting of table of contents, list of tables and list of figures in multilingual documents.

For 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 \Serbianc or the command \foreignlanguage defined in the babel core; their functionality is similar to \selectlanguage{serbianc}, but they do not change caption names, dates and shorthands.

\begin{verbatim}
52 \DeclareRobustCommand{\cyrillictext}{%  
53 \fontencoding\cyrillicencoding\selectfont  
54 \let\encodingdefault\cyrillicencoding  
55 \expandafter\set@hyphenmins\serbianchyphenmins  
56 \language\l@serbianc}  
57 \let\cyr\cyrillictext
\end{verbatim}

The macro \textcyrillic takes an argument which is then typeset using the \cyrillictext declaration.

\begin{verbatim}
58 \DeclareTextFontCommand{\textcyrillic}{\cyrillictext}
\end{verbatim}

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. We save the original double quote character in the \dq macro to keep it available. The shorthand "- should be used in places where a word contains an explicit hyphenation character. According to the rules of the Serbian 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.

\begin{verbatim}
59 \initiate@active@char{"}  
60 \begingroup \catcode'|12  
61 \def\reserved@a{\endgroup  
62 \def\SSS{\mathchar"7019 }  
63 \def\dq{"})
64 \reserved@a
65 \declare@shorthand{serbianc}{{"}}{\quotedblbase}  
66 \declare@shorthand{serbianc}{{'}}{\textquotedblleft}  
67 \declare@shorthand{serbianc}{{"<}}{\guillemotleft}  
68 \declare@shorthand{serbianc}{{">}}{\guillemotright}  
69 \declare@shorthand{serbianc}{{""}}{\hskip\z@skip}  
70 \declare@shorthand{serbianc}{{"~}}{\textormath{\leavevmode\hbox{-}}{-}}  
71 \declare@shorthand{serbianc}{{"=}}{\nobreak-\hskip\z@skip}  
72 \declare@shorthand{serbianc}{{"|}}{\textormath{\nobreak\discretionary{-}{}{\kern.03em}\allowhyphens}{}  
73 \declare@shorthand{serbianc}{{"-}}{\nobreak\discretionary{-}{}{-}\bbl@allowhyphens}
\end{verbatim}
The \cyrdash macro will be defined if it hadn’t already been defined in a fontenc file. For T2A and X2 fonts, cyrdash will be placed in the code of the English emdash.

\ProvideTextCommandDefault{\cyrdash}{\hbox to.8em{--\hss--}}

The macro \captionsserbianc defines all strings used in the four standard documentclasses provided by \LaTeX.

\if@srbc@uni@ode
\addto\captionsserbianc{%
  \def\prefacename{Предговор}%
  \def\refname{Литература}%
  \def\abstractname{Сажетак}%
  \def\bibname{Библиографиjа}%
  \def\chaptername{Глава}%
  \def\appendixname{Додатак}%
  \def\contentsname{Садржаj}%
  \def\listfigurename{Списак слика}%
  \def\listtablename{Списак табела}%
  \def\indexname{Индекс}%
  \def\figurename{Слика}%
  \def\tablename{Табела}%
  \def\partname{Део}%
  \def\enclname{Прилози}%
  \def\ccname{Копиjе}%
  \def\headtoname{Прима}%
  \def\pagename{страна}%
  \def\seename{види}%
  \def\alsoname{види такође}%
  \def\proofname{Доказ}%
  \def\glossaryname{Речник}%
}\let\captionsserbianc@ijekav=\captionsserbianc
\addto\captionsserbianc@ijekav{%
  \def\partname{Дио}%
  \def\glossaryname{Рjечник}%;
}\else
\addto\captionsserbianc{%
  \def\prefacename{{\cyr\cyrp\cyrr\cyre\cyrd\cyrg\cyro\cyrv\cyro\cyrr}}%
  \def\refname{{\cyr\cyrl\cyri\cyrt\cyre\cyrl\cyra\cyrt\cyru\cyrr\cyra}}%
  \def\abstractname{{\cyr\cyrs\cyra\cyrzh\cyre\cyrt\cyra\cyrk}}%
  \def\bibname{{\cyr\cyrb\cyri\cyrb\cyrl\cyri\cyro\cyrg\cyrr\cyra\cyrf\cyri\cyrje\cyra}}%
  \def\chaptername{{\cyr\cyrg\cyrl\cyra\cyrv\cyra}}%
  \def\appendixname{{\cyr\cyrd\cyro\cyrd\cyra\cyrt\cyra\cyrk}}%
  \def\contentsname{{\cyr\cyrs\cyra\cyrd\cyrr\cyrzh\cyra\cyrje}}%
  \def\listfigurename{{\cyr\cyrs\cyrp\cyri\cyrs\cyra\cyrk\cyrs\cyrl\cyri\cyrk\cyra}}%
  \def\listtablename{{\cyr\cyrs\cyrp\cyri\cyrs\cyra\cyrk\cyrt\cyra\cyrb\cyre\cyrl\cyra}}%
  \def\indexname{{\cyr\cyri\cyrn\cyrd\cyre\cyrk\cyrs}}%
  \def\figurename{{\cyr\cyrs\cyrl\cyri\cyrk\cyra}}%
  \def\tablename{{\cyr\cyrt\cyra\cyrb\cyre\cyrl\cyra}}%
  \def\partname{{\cyr\cyrd\cyre\cyro}}%
  \def\enclname{{\cyr\cyrp\cyrr\cyri\cyrl\cyro\cyrz\cyri}}%
  \def\ccname{{\cyr\cyrk\cyro\cyrp\cyri\cyrje\cyre}}%
  \def\headtoname{{\cyr\cyrp\cyrr\cyri\cyrl\cyro\cyrz\cyri}}%
  \def\pagename{{\cyr\cyrcs\cyrt\cyrr\cyra\cyrn\cyri\cyrk\cyra}}%
  \def\seename{{\cyr\cyrcs\cyrt\cyrr\cyra\cyrn\cyri\cyrd\cyri}}%
  \def\alsoname{{\cyr\cyrcs\cyrt\cyrr\cyra\cyrn\cyri\cyrd\cyri\cyrt\cyra\cyrdje\cyre}}%
  \def\proofname{{\cyr\cyrd\cyro\cyrb\cyre\cyrl\cyra\cyrt\cyra\cyrz}}%
  \def\glossaryname{{\cyr\cyrr\cyre\cyrch\cyrn\cyri\cyrk}}%;
}\let\captionsserbianc@ijekav=\captionsserbianc
\fi
\endinput
The macro \dateserbianc redefines the commands \today, \today*, \todayRoman and \todayRoman* to produce Serbian dates.

\if@srbc@uni@ode
\addto\dateserbianc{\def\month@serbianc{% ifcase\month or jануар or фебруар or март or април or маj or jун or jул or август or септембар or октобар or новембар or децембар fi}% \def\today{\number\day.~\month@serbianc\ \number\year\@ifstar{}{.}}% \def\todayRoman{\number\day.~\@Roman\month~\number\year\@ifstar{}{.}}% \let\dateserbianc@datei=\dateserbianc% \addto\dateserbianc@datei{% \ifnum\month=6 jуни\else \ifnum\month=7 jули\else \month@serbianc\fi\fi% \def\today{\number\day.~\month@serbianc@datei\ \number\year\@ifstar{}{.}}}% \else \def\dateserbianc{% \def\month@serbianc{% ifcase\month or \cyrje\cyra\cyre\cyri\cyro or \cyrf\cyre\cyrb\cyrr\cyra\cyre\cyri\cyro or \cyrm\cyra\cyrr\cyrt or \cyra\cyrp\cyrr\cyri\cyrl or \cyrm\cyra\cyre\cyri or \cyje\cyru\cyrn\or \cyre\cyru\cyrl\or \cyra\cyrv\cyrg\cyru\cyrs\cyrt\or \cyrs\cyre\cyrt\cyre\cyrm\cyrb\cyrr\cyra\cyre\cyri\cyro or \cyro\cyrk\cyre\cyrm\cyrb\cyrr\cyra\cyre\cyri\cyro or \cyrm\cyro\cyre\cyrm\cyrb\cyrr\cyra\cyre\cyri\cyro or \cyrd\cyre\cyrc\cyre\cyrm\cyrb\cyrr\cyra\cyre\cyri\cyro% \def\today{\number\day.~\month@serbianc\ \number\year\@ifstar{}{.}}% \def\todayRoman{\number\day.~\@Roman\month~\number\year\@ifstar{}{.}}% % \let\dateserbianc=\dateserbianc% \addto\dateserbianc@datei{% \ifnum\month=6 \cyre\cyru\cyrn\or \else \ifnum\month=7 \cyre\cyru\cyrl\cyri\else \month@serbianc\fi\fi% \def\today{\number\day.~\month@serbianc\datei\ \number\year\@ifstar{}{.}}}% \else \fi
\fi

The Serbian hyphenation patterns can be used with \lefthyphenmin and \righthyphenmin set to 2. (Actually, the “official” definition allows even one character for \lefthyphen, but it is recommended to use the value two for the better results.)

\providehyphenmins{\CurrentOption}{\tw@\tw@}
\providehyphenmins{serbianc}{\tw@\tw@}
We instruct babel to switch font encoding using earlier defined macros \cyrillictext and \latintext.

\addto\extrasserbianc{\cyrillictext}
\addto\noextrasserbianc{\latintext}

Also, we specify that the Serbian group of shorthands should be used.

\addto\extrasserbianc{\languageshorthands{serbianc}}
\addto\extrasserbianc{\bbl@activate{"}}
\addto\extrasserbianc{\bbl@deactivate{"}}

Serbian typesetting requires frenchspacing. So, we add commands to \extrasserbianc and \noextrasserbianc to turn it on and off, respectively.

\addto\extrasserbianc{\bbl@frenchspacing}
\addto\noextrasserbianc{\bbl@nonfrenchspacing}

In Serbian, the first paragraph of each section should be indented.

\let\@aifORI\@afterindentfalse
\def\bbl@serbiancindent{\let\@afterindentfalse\@afterindenttrue\@afterindenttrue}
\def\bbl@nonserbiancindent{\let\@afterindentfalse\@aifORI\@afterindentfalse}
\addto\extrasserbianc{\bbl@serbiancindent}
\addto\noextrasserbianc{\bbl@nonserbiancindent}

We redefine the macro \Alph, which now produces (uppercase) Cyrillic letters instead of Latin ones when Serbian is switched on. Also we will define Serbian Latin and English alphabets so the user can choose which alphabet to use through the commands \enumCyr, \enumLat and \enumEng (or even to switch from one enumeration to another).

\newcount\srbc@lettering \srbc@lettering=\z@
\addto\extrasserbianc{\babel@save\@Alph \let\@Alph\srbc@Alph}
\def\srbc@Alph#1{\ifcase\srbc@lettering
\if@srbc@uni@ode
\ifcase#1\or А\or Б\or В\or Г\or Д\or Е\or Ж\or З\or И\or Ј\or К\or Л\or М\or Н\or П\or С\or Т\or Ъ\or Ф\or Х\or Ц\or Ч\or Џ\or Ш\else\@ctrerr\fi
\else
\ifcase#1\or А\or Б\or В\or Г\or Д\or Е\or Ж\or З\or И\or Ј\or К\or Л\or М\or Н\or П\or С\or Т\or Ъ\or Ф\or Х\or Ц\or Ч\or Џ\or Ш\else\@ctrerr\fi
\or
\ifcase#1\or 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 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\@ctrerr\fi
\fi\fi
\fi}

We will do the same thing with the macro \alph.

\addto\extrasserbianc{\babel@save\@alph \let\@alph\srbc@alph}
\def\srbc@alph#1{\ifcase\srbc@lettering
\if@srbc@uni@ode
\ifcase#1\or а\or б\or в\or г\or д\or е\or ж\or з\or и\or Ј\or к\or л\or м\or н\or п\or с\or т\or Ъ\or ф\or х\or ц\or ч\or Џ\or ш\else\@ctrerr\fi
\else
\ifcase#1\or 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 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\@ctrerr\fi
\fi\fi
\fi}

The same thing will be done with the macro \alpheq.
An **ijekav** attribute changes the default behavior and activates an alternative set of captions suitable for typesetting in ijekavian dialect. The **quotes** attribute changes the \" shorthand to produce \" as closing quotation mark, instead of the traditional \" quotation mark of Serbian language. Also, the **datei** attribute will produce ‘јун’ and ‘јун’ instead ‘јун’ and ‘јул’ for date.

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.

```latex
\def\sh{\mathop{\text{sh}}\nolimits}
\def\ch{\mathop{\text{ch}}\nolimits}
\def\tg{\mathop{\text{tg}}\nolimits}
\def\ctg{\mathop{\text{ctg}}\nolimits}
\def\arctg{\mathop{\text{arctg}}\nolimits}
\def\arcctg{\mathop{\text{arcctg}}\nolimits}
\def\cosec{\mathop{\text{cosec}}\nolimits}
\def\arcsec{\mathop{\text{arcsec}}\nolimits}
\def\arccosec{\mathop{\text{arccosec}}\nolimits}
\def\sech{\mathop{\text{sech}}\nolimits}
```

```latex
\addto\extrasserbianc{\let\ltx@th\th\let\th{\text{th}}\nolimits}
\def\cth{\mathop{\text{cth}}\nolimits}
\def\arsh{\mathop{\text{arsh}}\nolimits}
\def\arch{\mathop{\text{arch}}\nolimits}
\def\arth{\mathop{\text{arth}}\nolimits}
\def\arcth{\mathop{\text{arcth}}\nolimits}
\def\sech{\mathop{\text{sech}}\nolimits}
```

```latex
\def\sh{\text{sh}}\nolimits}
\def\ch{\text{ch}}\nolimits}
\def\tg{\text{tg}}\nolimits}
\def\ctg{\text{ctg}}\nolimits}
\def\arctg{\text{arctg}}\nolimits}
\def\arcctg{\text{arcctg}}\nolimits}
\def\cosec{\text{cosec}}\nolimits}
\def\arcsec{\text{arcsec}}\nolimits}
\def\arccosec{\text{arccosec}}\nolimits}
\def\sech{\text{sech}}\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.

\ldf@finish{serbianc}

\end{verbatim}