The **romanbar** package

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Abstract

This LaTeX package allows to write Roman numbers (or any other text) with bars. (Additionally, commands for converting Arabic numbers into Roman ones are provided and an `\ifnumeric` test function.)

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Save per page about 200 ml water, 2 g CO_2 and 2 g wood:
Therefore please print only if this is really necessary.

Contents

1 Introduction

This LaTeX package allows to write Roman numbers (or any other text) with bars. (Additionally, command for converting Arabic numbers into Roman ones are provided and an \ifnumeric test function.)

2 Usage

Just load the package placing

> \usepackage{romanbar}

in the preamble of your LaTeX 2_ε source file.

\Romanbar{...} then produces a Roman number with bars (please see the example file). \ifnumeric{test}{true}{false} tests for test being numeric. \romannum{...} turns an Arabic number into a lowercase Roman one, and \Romannum{...} turns an Arabic number into an uppercase Roman one.

Options

options   The romanbar package takes no options.

3 Alternatives

- the original code written by Prof. Enrico Gregorio
  (http://profs.sci.univr.it/~gregorio/),
  http://tex.stackexchange.com/questions/24065/roman-numerals-formatting/24084#24084

  ```
  \def\barroman#1{\sbox0{#1}\dimen0=\dimexpr\wd0+1pt\relax
    \makebox[\dimen0]{\rlap{\vrule width\dimen0 height 0.06ex depth 0.06ex}%
      \rlap{\vrule width\dimen0 height\dimexpr\ht0+0.03ex\relax
            depth\dimexpr-\ht0+0.09ex\relax}%
      \kern.5pt#1\kern.5pt}}

  \barroman{I} \barroman{XI}
  ```

- Some fonts provide single characters for Roman numerals, cf. e.g. http://tex.stackexchange.com/questions/38695/using-unicode-roman-numerals-in-xetex.

(You programmed or found another alternative, which is available at CTAN:?
OK, send an e-mail to me with the name, location at CTAN:, and a short notice,
and I will probably include it in the list above.)

4 Example

```
 1 ⟨*example⟩
 2 \documentclass[british]{article}[2007/10/19]% v1.4h
 3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
 4 \usepackage[extension=pdf,%
 5  plainpages=false,%
 6  pdfpagelabels=true,%
 7  hyperindex=false,%
 8  pdflang={en},%
 9  pdftitle={romanbar package example},%
10  pdfauthor={H.-Martin Muench},%
11  pdfsubject={Example for the romanbar package},%
12  pdfkeywords={LaTeX, romanbar, roman, Roman, bars, H.-Martin Muench},%
13  pdfview={XYZ null null 1},%
14  pdfstartview={XYZ null null 1},%
15  pdfpagelayout=SinglePage]{hyperref}[2011/12/04]% v6.82m
16 \usepackage{romanbar}[2012/01/01]% v1.0f
17 \gdef\unit#1{\mathord{\thinspace\mathrm{#1}}}%
18 \listfiles
19 \begin{document}
20 \pagenumbering{arabic}
21 \section*{Example for romanbar}
22
23 This example demonstrates the use of package\newline
24 \textsf{romanbar}, v1.0f as of 2012/01/01 (HMM).\newline
25 There are no options to be used.\newline
26
27 \noindent For more details please see the documentation!\newline
28
29 \noindent Save per page about $200\unit{ml}$ water,
30 $2\unit{g}$ CO$_{2}$ and $2\unit{g}$ wood:\newline
31 Therefore please print only if this is really necessary.\newline
32
33 \noindent This package provides the command \verb|\Romanbar|
34 to print bars below and over the following:
35
36 \begin{description}
37 \item[-] Roman numbers: \verb|\Romanbar{MMXII}| prints \Romanbar{MMXII}
38
39 \item[-] Arabic numbers turned into upper-case Roman numbers:\newline
40         \verb|\Romanbar{2012}| prints \Romanbar{2012}
41
42 \item[-] negative Arabic numbers turned into upper-case Roman numbers
43         \newline
44         (although historically there were no negative Roman numbers):
45         \newline
46         \verb|\Romanbar{-12}| prints \Romanbar{-12}
47
48 \item[-] zero Arabic number ($0$; although historically
49         there was no Roman zero):\newline
50         \verb|\Romanbar{0}| prints \Romanbar{0}
51
52 \item[-] some arbitrary text:
53         \verb|\Romanbar{Caesar}| prints \Romanbar{Caesar}\newline
54         (with descenders: \Romanbar{AgjpqyW})
55
56
```

```
57 \newcounter{example}
58 \setcounter{example}{21}
59
60 \item[-] some counter's value:
61         \verb|\Romanbar{\theexample}| prints \Romanbar{\theexample}
62         \newline
63         (where the value of \texttt{example} is \theexample)
64
65 \item[-] Arabic numbers, without turning them into upper-case Roman
66         numbers:\newline
67         \verb|\Romanbar{\relax 2012}| prints \Romanbar{\relax  2012}
68 \end{description}
69
70 Special care was taken for "L" (50), e.\,g. in 555/DLV: \Romanbar{555}.\\
71
72
73 \verb|\romannum{...}| converts an Arabic number into a lower-case Roman one,
74 e.\,g. \verb|\romannum{2012}| prints \romannum{2012}, and
75 \verb|\Romannum{...}| converts an Arabic number into an upper-case Roman one,
76 e.\,g. \verb|\Romannum{2012}| prints \Romannum{2012}.
77
78 \end{document}
79 ⟨/example⟩
```

5 The implementation

We start off by checking that we are loading into LATEX 2$_\varepsilon$ and announcing the name and version of this package.

```
80 ⟨*package⟩
```

```
81 \NeedsTeXFormat{LaTeX2e}[2011/06/27]
82 \ProvidesPackage{romanbar}[2012/01/01 v1.0f
83           Roman numbers with bars (HMM)]
84
```

A short description of the romanbar package:

```
85 %% Allows to write Roman numbers (or any other text) with bars
86 %% and to convert Arabic numbers into Roman ones.
```

A last information for the user:

```
87 %% romanbar may work with earlier versions of LaTeX,
88 %% but this was not tested. Please consider updating
89 %% your LaTeX to the most recent version
90 %% (if it is not already the most recent version).
91
```

See subsection 6.1 about how to get it.

There are no options to be processed.

A command to gobble a possible minus sign is needed and \gobbleminus from http://www.tex.ac.uk/cgi-bin/texfaq2html?label=isitanum is used.

```
92 \def\gobbleminus#1{\ifx-#1\else#1\fi}
93 %% from http://www.tex.ac.uk/cgi-bin/texfaq2html?label=isitanum
94
```

We want to test whether the argument passed to \Romanbar is numeric and therefore define \ifnumeric{test}{true}{false}, where test is to be analysed, true is the code to be executed, if test is numeric, and false is the code to be executed, if test is not numeric. This is done similar to http://tex.stackexchange.com/a/17119.

```
95 \newcommand{\ifnumeric}[3]{%
96 %% similar to http://tex.stackexchange.com/a/17119
97 \sbox\z@{\@tempcnta=0\gobbleminus#1\relax}%
98 \ifdim\wd0>\z@\relax#3% is not numeric
99 \else#2% is numeric
100 \fi%
101 }
102
```

We define \r@iseL to raise any L (50), otherwise a good deal of the horizontal part of the letter would be swallowed by the lower bar under the "number".

```
103 \def\r@iseL#1{\ifx @#1% then terminate
104 \else%
105 \if L#1\raisebox{0.05ex}{L}\else #1\fi%
106 \expandafter\r@iseL%
107 \fi%
108 }
109
```

We define the `\Romanbar` command.

```
110 \DeclareRobustCommand{\Romanbar}[1]{%
111 \ifnumeric{#1}{% is numeric
```

If its parameter is numeric, the temporary counter `\@tempcnta` is set to the value.

```
112 \@tempcnta=#1\relax%
```

Normally there are no non-positive Roman numbers, therefore we do some trick similar to `\XRoman` from the http://ctan.org/pkg/pageslts package.

```
113 %% similar to \XRoman from the http:ctan.org/pkg/pageslts package
114 \ifnum\@tempcnta<1%
115   \ifnum #1>0%
116     \relax \Roman@bar{\Roman{#1}}%
117   \else%
118     \ifnum #1<0%
119      -\Roman@bar{\expandafter\@slowromancap\romannumeral\number-#1@%
120      }%
121     \else%
122       \Roman@bar{0}%
123     \fi%
124   \fi%
125 \else\Roman@bar{\@Roman\@tempcnta}%
126 \fi%
127 }{% is not numeric
128 \Roman@bar{#1}%
129 }%
130 }
131
```

Whether it is numeric or not, in the end `\Roman@bar` is applied to it.

```
132 \DeclareRobustCommand{\Roman@bar}[1]{% #1 is in Roman, i.e. MMXII
133 %% (or any other text, "Caesar" would work, too).
134 %% similar to code of  by Prof. Enrico Gregorio (egreg) at
135 %% http://tex.stackexchange.com/questions/24065/roman-numerals-formatting/24084#24084
136 \@bsphack%
137 \edef\romanbartmp{#1}%
138 %% height:
139 \sbox0{\textsf{\romanbartmp}}%
140 %% top line:
141 %% + top of top line:
142 \@tempdima=\ht0%
143 \advance\@tempdima+0.05ex%0.03
144 \dimen1=\@tempdima%
145 %% + bottom of top line:
146 \@tempdima=-\ht0%
147 \advance\@tempdima+0.05ex%0.07
148 \dimen2=\@tempdima%
149 %% width:
150 \sbox0{\textsf{\expandafter\r@iseL\romanbartmp @}}%
151 \@tempdima=\wd0%
152 \advance\@tempdima+1pt%
153 \dimen0=\@tempdima%
154 \@esphack%
155 \makebox[\dimen0]{%
156 \rlap{\vrule width\dimen0 height\dimen1 depth\dimen2}% top    line
157 \rlap{\vrule width\dimen0 height 0.06ex depth 0.03ex}% bottom line
158 \kern0.5pt\textsf{\expandafter\r@iseL\romanbartmp @}\kern0.5pt}%
```

```
159 }
160
```

While it is not needed for the bars, it is sometimes asked for a command to convert an Arabic number into a Roman one. `\roman{...}` can only be applied to a counter, i.e. `\roman{12}` does not work, but

```
\newcounter{examplecounter}
\setcounter{examplecounter}{12}
\roman{examplecounter}
```

would be necessary. Further non-negative values would not work. `\romannum` accepts any number as argument. (If the argument is no number, an error message is given and the argument printed (executed) without applying anything to it.)

```
161 \DeclareRobustCommand{\romannum}[1]{%
162 \ifnumeric{#1}{% is numeric
163 \@tempcnta=#1\relax%
164 %% similar to \xroman from the http://ctan.org/pkg/pageslts package
165 \ifnum\@tempcnta<1%
166   \ifnum #1>0%
167     \relax \roman{#1}%
168   \else%
169     \ifnum #1<0%
170      -\romannumeral\number-#1@%
171     \else%
172       0%
173     \fi%
174   \fi%
175 \else\@roman\@tempcnta%
176 \fi%
177 }{% is not numeric
178 \PackageError{romanbar}{%
179 Argument of \string\romannum\space is not a number}{%
180 The command \string\romannum\space converts an Arabic number into a%
181  lower-case Roman one,\MessageBreak%
182 but the used argument of \string\romannum\space is not an Arabic number%
183  but\MessageBreak%
184 '#1',\MessageBreak%
185 which will now be printed unchanged.}%
186 #1%
187 }%
188 }
189
```

The same for upper-case Roman numbers, `\Romannum` instead of `\Roman`:

```
190 \DeclareRobustCommand{\Romannum}[1]{%
191 \ifnumeric{#1}{% is numeric
192 \@tempcnta=#1\relax%
193 %% similar to \XRoman from the http://ctan.org/pkg/pageslts package
194 \ifnum\@tempcnta<1%
195   \ifnum #1>0%
196     \relax \Roman{#1}%
197   \else%
198     \ifnum #1<0%
199      -\expandafter\@slowromancap\romannumeral\number-#1@%
200     \else%
201       0%
202     \fi%
203   \fi%
```

```
204 \else\@Roman\@tempcnta%
205 \fi%
206 }{% is not numeric
207 \PackageError{romanbar}{%
208 Argument of \string\Romannum\space is not a number}{%
209 The command \string\Romannum\space converts an Arabic number into an%
210  upper-case Roman one,\MessageBreak%
211 but the used argument of \string\Romannum\space is not an Arabic number%
212  but\MessageBreak%
213 '#1'.}%
214 #1%
215 }%
216 }
217
218 ⟨/package⟩
```

6 Installation

6.1 Downloads

Everything should be available on CTAN:, http://www.ctan.org/tex-archive/, but may need additional packages themselves.

romanbar.dtx   For unpacking the `romanbar.dtx` file and constructing the documentation it is required:

- TeX Format LaTeX 2_ε, http://www.CTAN.org/

- document class ltxdoc, 2007/11/11, v2.0u, http://ctan.org/pkg/ltxdoc

- package holtxdoc, 2011/02/04, v0.21, http://ctan.org/pkg/holtxdoc

- package hypdoc, 2010/03/26, v1.9, http://ctan.org/pkg/hypdoc

romanbar.sty   The `romanbar.sty` for LaTeX 2_ε (i.e. each document using the romanbar package) requires:

- TeXFormat LaTeX 2_ε, http://www.CTAN.org/

romanbar-example.tex   The `romanbar-example.tex` requires the same files as all documents using the romanbar package and additionally:

- class article, 2007/10/19, v1.4h, from classes.dtx:
  CTAN:macros/latex/base/classes.dtx

- package romanbar, 2012/01/01, v1.0f,
  http://ctan.org/pkg/romanbar
  CTAN:macros/latex/contrib/romanbar/ (Well, it is the example file for this package, and because you are reading the documentation for the romanbar package, it can be assumed that you already have some version of it – is it the current one?)

Alternative   As possible alternative package in section 3 there is listed

- none.

Oberdiek   All packages of HEIKO OBERDIEK's bundle 'oberdiek' (especially holtxdoc) are
holtxdoc   also available in a TDS compliant ZIP archive:
CTAN:install/macros/latex/contrib/oberdiek.tds.zip.
It is probably best to download and use this, because the packages in there are quite probably both recent and compatible among themselves.

hyperref   hyperref is not included in that bundle and needs to be downloaded separately,
http://mirror.ctan.org/install/macros/latex/contrib/hyperref.tds.zip.

Münch   A hyperlinked list of my (other) packages can be found at http://www.Uni-Bonn.de/~uzs5pv/LaTeX.html.

6.2   Package, unpacking TDS

Package.   This package should become available on CTAN: soon:

CTAN:macros/latex/contrib/romanbar/romanbar.dtx
　　　The source file.

CTAN:macros/latex/contrib/romanbar/romanbar.pdf
　　　The documentation.

CTAN:macros/latex/contrib/romanbar/romanbar-example.pdf
　　　The compiled example file, as it should look like.

CTAN:macros/latex/contrib/romanbar/README
　　　The README file.

There is also a romanbar.tds.zip available:

CTAN:install/macros/latex/contrib/romanbar.tds.zip
　　　Everything in TDS compliant, compiled format.

which additionally contains

romanbar.ins	The installation file.
romanbar.drv	The driver to generate the documentation.
romanbar.sty	The .style file.
romanbar-example.tex	The example file.

For required other packages, please see the preceding subsection.

Unpacking.   The .dtx file is a self-extracting docstrip archive. The files are extracted by running the ..dtx through plain TeX:

```
tex romanbar.dtx
```

　About generating the documentation see paragraph 6.4 below.

TDS.   Now the different files must be moved into the different directories in your installation TDS tree (also known as texmf tree):

romanbar.sty	→ tex/latex/romanbar/romanbar.sty
romanbar.pdf	→ doc/latex/romanbar/romanbar.pdf
romanbar-example.tex	→ doc/latex/romanbar/romanbar-example.tex
romanbar-example.pdf	→ doc/latex/romanbar/romanbar-example.pdf
romanbar.dtx	→ source/latex/romanbar/romanbar.dtx

If you have a docstrip.cfg that configures and enables docstrip's TDS installing feature, then some files can already be in the right place, see the documentation of docstrip.

6.3   Refresh file name databases

If your TeX distribution (teTeX, mikTeX,...) relies on file name databases, you must refresh these. For example, teTeX users run texhash or mktexlsr.

6.4 Some details for the interested

Unpacking with LaTeX. The `.dtx` chooses its action depending on the format:

plain TeX: Run docstrip and extract the files.

LaTeX: Generate the documentation.

If you insist on using LaTeX for docstrip (really, docstrip does not need LaTeX), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{romanbar.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by a configuration file `ltxdoc.cfg`. For instance, put the following line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdfLaTeX:

```
pdflatex romanbar.dtx
makeindex -s gind.ist romanbar.idx
pdflatex romanbar.dtx
makeindex -s gind.ist romanbar.idx
pdflatex romanbar.dtx
```

6.5 Compiling the example

The example file, romanbar-example.tex, can be compiled via
`(pdf)(la)tex romanbar-example.tex`.

7 Acknowledgements

I would like to thank HEIKO OBERDIEK for providing the hyperref as well as a lot (!) of other useful packages (from which I also got everything I know about creating a file in `.dtx` format, ok, say it: copying), Prof. ENRICO GREGO-RIO (egreg) for his answer http://tex.stackexchange.com/questions/24065/roman-numerals-formatting/24084#24084, the news:comp.text.tex and news:de.comp.text.tex newsgroups as well as http://tex.stackexchange.com for their help in all things TeX.

8 History

[2011/07/25 v1.0a]

- First code by Prof. ENRICO GREGORIO (egreg) at
  [http://tex.stackexchange.com/questions/24065/](http://tex.stackexchange.com/questions/24065/roman-numerals-formatting/24084#24084)
  [roman-numerals-formatting/24084#24084](http://tex.stackexchange.com/questions/24065/roman-numerals-formatting/24084#24084)

[2011/07/26 v1.0b]

- Packed into a `.sty` file.

- Removed the requirement of ε-TeX for the package.

[2011/08/25 v1.0c]

- Renamed romanbar package.

- Minor details.

[2011/09/16 v1.0d]

- Made commands robust.

- Minor details.

[2011/12/16 v1.0e]

- Additionally accepts now Arabic numbers and converts them to Roman
  ones with bars.

- Also non-positive numbers are now accepted.

[2012/01/01 v1.0f]

- Added `\romannum` and `\Romannum` to convert Arabic to Roman numbers
  (without bars).

- `\r@iseL`.

- Created a `dtx`, example, and README.

- Upload to CTAN:.

When you find a mistake or have a suggestion for an improvement of this package, please send an e-mail to the maintainer, thanks! (Please see BUG REPORTS in the README.)

9 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; plain numbers refer to the code lines where the entry is used.