

# The letltxmacro package

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2008/06/24 v1.3

## Abstract

TeX's `\let` assignment does not work for L<sup>A</sup>T<sub>E</sub>X macros with optional arguments or for macros that are defined as robust macros by `\DeclareRobustCommand`. This package defines `\LetLtxMacro` that also takes care of the involved internal macros.

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## 1 Documentation

If someone wants to redefine a macro with using the old meaning, then one method is TeX's command `\let`:

```

\newcommand{\Macro}{\typeout{Test Macro}}
\let\SavedMacro=\Macro
\renewcommand{\Macro}{%
  \typeout{Begin}%
  \SavedMacro
  \typeout{End}%
}

```

However, this method fails, if `\Macro` is defined by `\DeclareRobustCommand` and/or has an optional argument. In both cases L<sup>A</sup>T<sub>E</sub>X defines an additional internal macro that is forgotten in the simple `\let` assignment of the example above.

`\LetLtxMacro {⟨new macro⟩} {⟨old macro⟩}`

Macro `\LetLtxMacro` behaves similar to T<sub>E</sub>X's `\let` assignment, but it takes care of macros that are defined by `\DeclareRobustCommand` and/or have optional arguments. Example:

```

\DeclareRobustCommand{\Macro}[1][default]{...}
\LetLtxMacro{\SavedMacro}{\Macro}

```

Then macro `\SavedMacro` only uses internal macro names that are derived from `\SavedMacro`'s macro name. Macro `\Macro` can now be redefined without affecting `\SavedMacro`.

## 1.1 Supported macro definition commands

<code>\newcommand</code> , <code>\renewcommand</code>	latex/base
<code>\newenvironment</code> , <code>\renewenvironment</code>	latex/base
<code>\DeclareRobustCommand</code>	latex/base
<code>\newrobustcmd</code> , <code>\renewrobustcmd</code>	etoolbox
<code>\robustify</code>	etoolbox 2008/06/22 v1.6

## 2 Implementation

### 2.1 Show cases

#### 2.1.1 letltxmacro-showcases.tex

```

1 (*showcases)
2 \NeedsTeXFormat{LaTeX2e}
3 \makeatletter

```

`\Line` The result is displayed by macro `\Line`. The percent symbol at line start allows easy grepping and inserting into the DTX file.

```

4 \newcommand*{\Line}[1]{%
5   \typeout{\@percentchar#1}%
6 }

7 \newcommand*{\ShowCmdName}[1]{%
8   \@ifundefined{#1}{}{%
9     \Line{%
10      \space\space(\expandafter\string\csname#1\endcsname) = %
11      (\expandafter\meaning\csname#1\endcsname)%
12    }%
13  }%
14 }

15 \newcommand*{\ShowCmds}[1]{%
16   \ShowCmdName{#1}%
17   \ShowCmdName{#1 }%
18   \ShowCmdName{\#1}%

```

```

19 \ShowCmdName{\#1 }%
20 }
21 \let\\@backslashchar

```

\ShowDef

```

22 \newcommand*\ShowDef}[2]{%
23 \begingroup
24 \Line{}%
25 \newcommand*\DefString{#2}%
26 \@onelevel@sanitize\DefString
27 \Line{\DefString}%
28 #2%
29 \ShowCmds{#1}%
30 \endgroup
31 }

32 \typeout{}
33 \Line{* LaTeX definitions:}
34 \ShowDef{cmd}{%
35 \newcommand{\cmd}[2][default]{}%
36 }
37 \ShowDef{cmd}{%
38 \DeclareRobustCommand{\cmd}{}%
39 }
40 \ShowDef{cmd}{%
41 \DeclareRobustCommand{\cmd}[2][default]{}%
42 }
43 \typeout{}

```

The minimal version of package etoolbox is 2008/06/12 v1.6a because it fixes \robustify.

```

44 \RequirePackage{etoolbox}[2008/06/12]%
45 \Line{}
46 \Line{* etoolbox's robust definitions:}
47 \ShowDef{cmd}{%
48 \newrobustcmd{\cmd}{}%
49 }
50 \ShowDef{cmd}{%
51 \newrobustcmd{\cmd}[2][default]{}%
52 }
53 \Line{}
54 \Line{* etoolbox's \string\robustify:}
55 \ShowDef{cmd}{%
56 \newcommand{\cmd}[2][default]{ } %
57 \robustify{\cmd}%
58 }
59 \ShowDef{cmd}{%
60 \DeclareRobustCommand{\cmd}{ } %
61 \robustify{\cmd}%
62 }
63 \ShowDef{cmd}{%
64 \DeclareRobustCommand{\cmd}[2][default]{ } %
65 \robustify{\cmd}%
66 }
67 \typeout{}
68 \@@end
69 </showcases>

```

### 2.1.2 Result

\* LaTeX definitions:

```
\newcommand {\cmd }[2][default]{}
```

```

(\cmd) = (macro:->\@protected@testopt \cmd \cmd {default})
(\cmd) = (\long macro:[#1]#2->)

\DeclareRobustCommand {\cmd }{}
(\cmd) = (macro:->\protect \cmd_ )
(\cmd_) = (\long macro:->)

\DeclareRobustCommand {\cmd }[2][default]{}
(\cmd) = (macro:->\protect \cmd_ )
(\cmd_) = (macro:->\@protected@testopt \cmd_ \cmd_ {default})
(\cmd_) = (\long macro:[#1]#2->)

* etoolbox's robust definitions:

\newrobustcmd {\cmd }{}
(\cmd) = (\protected\long macro:->)

\newrobustcmd {\cmd }[2][default]{}
(\cmd) = (\protected macro:->\@testopt \cmd {default})
(\cmd) = (\long macro:[#1]#2->)

* etoolbox's \robustify:

\newcommand {\cmd }[2][default]{} \robustify {\cmd }
(\cmd) = (\protected macro:->\@protected@testopt \cmd \cmd {default})
(\cmd) = (\long macro:[#1]#2->)

\DeclareRobustCommand {\cmd }{} \robustify {\cmd }
(\cmd) = (\protected macro:->)

\DeclareRobustCommand {\cmd }[2][default]{} \robustify {\cmd }
(\cmd) = (\protected macro:->\@protected@testopt \cmd_ \cmd_ {default})
(\cmd_) = (macro:->\@protected@testopt \cmd_ \cmd_ {default})
(\cmd_) = (\long macro:[#1]#2->)

```

## 2.2 Package

70 (\*package)

### 2.2.1 Catcodes and identification

```

71 \begingroup
72 \catcode123 1 % {
73 \catcode125 2 % }
74 \def\x{\endgroup
75 \expandafter\edef\csname llm@AtEnd\endcsname{%
76 \catcode35 \the\catcode35\relax
77 \catcode64 \the\catcode64\relax
78 \catcode123 \the\catcode123\relax
79 \catcode125 \the\catcode125\relax
80 }%
81 }%
82 \x
83 \catcode35 6 % #
84 \catcode64 11 % @
85 \catcode123 1 % {
86 \catcode125 2 % }
87 \def\TMP@EnsureCode#1#2{%
88 \edef\llm@AtEnd{%
89 \llm@AtEnd
90 \catcode#1 \the\catcode#1\relax
91 }%
92 \catcode#1 #2\relax

```

```

93 }
94 \TMP@EnsureCode{40}{12}% (
95 \TMP@EnsureCode{41}{12}% )
96 \TMP@EnsureCode{42}{12}% *
97 \TMP@EnsureCode{45}{12}% -
98 \TMP@EnsureCode{46}{12}% .
99 \TMP@EnsureCode{47}{12}% /
100 \TMP@EnsureCode{58}{12}% :
101 \TMP@EnsureCode{61}{12}% =
102 \TMP@EnsureCode{62}{12}% >
103 \edef\llm@AtEnd{%
104   \llm@AtEnd
105   \escapechar\the\escapechar\relax
106 }
107 \escapechar=92 % ‘\

Package identification.
108 \NeedsTeXFormat{LaTeX2e}
109 \ProvidesPackage{letltxmacro}%
110 [2008/06/24 v1.3 Let assignment for LaTeX macros (HO)]

```

## 2.2.2 Main macros

`\LetLtxMacro`

```

111 \newcommand*{\LetLtxMacro}[2]{%
112   \edef\reserved@a{%
113     \noexpand\protect
114     \expandafter\noexpand
115     \csname\expandafter@gobble\string#2 \endcsname
116   }%
117   \ifx\reserved@a#2\relax
118     \edef#1{%
119       \noexpand\protect
120       \expandafter\noexpand
121       \csname\expandafter@gobble\string#1 \endcsname
122     }%
123     \expandafter\let
124     \csname\expandafter@gobble\string#1 \expandafter\endcsname
125     \csname\expandafter@gobble\string#2 \endcsname
126     \expandafter\llm@LetLtxMacro
127     \csname\expandafter@gobble\string#1 \expandafter\endcsname
128     \csname\expandafter@gobble\string#2 \endcsname
129   \else
130     \llm@LetLtxMacro{#1}{#2}%
131   \fi
132 }

```

`\llm@LetLtxMacro`

```

133 \def\llm@LetLtxMacro#1#2{%
134   \expandafter\llm@CheckParams\meaning#2:->\@nil{%
135     \begingroup
136     \def\@protected@testopt{%
137       \expandafter\@testopt@gobble
138     }%
139     \def\@testopt##1##2{%
140       \toks@={##2}%
141     }%
142     \let\llm@testopt\@empty
143     \edef\x{%
144       \noexpand\@protected@testopt
145       \noexpand#2%
146       \expandafter\noexpand\csname\string#2\endcsname
147     }%
148     \expandafter\expandafter\expandafter\def

```



```

210     \fi
211 \fi
212 }

\llm@macro
213 \def\llm@macro{macro}
214 \@onelevel@sanitize\llm@macro

\llm@protectedmacro
215 \def\llm@protectedmacro{\protected macro}
216 \@onelevel@sanitize\llm@protectedmacro

\llm@CarThree
217 \def\llm@CarThree#1#2#3#4\llm@nil{#1#2#3}%

\llm@CarTwo
218 \def\llm@CarTwo#1#2#3\llm@nil{#1#2}%

219 \llm@AtEnd
220 \end{package}

```

## 3 Test

### 3.1 Catcode checks for loading

```

221 (*test1)
222 \NeedsTeXFormat{LaTeX2e}
223 \documentclass{minimal}
224 \makeatletter
225 \def\RestoreCatcodes{}
226 \count@=0 %
227 \loop
228   \edef\RestoreCatcodes{%
229     \RestoreCatcodes
230     \catcode\the\count@=\the\catcode\count@\relax
231   }%
232 \ifnum\count@<255 %
233   \advance\count@\@ne
234 \repeat
235
236 \def\RangeCatcodeInvalid#1#2{%
237   \count@=#1\relax
238   \loop
239     \catcode\count@=15 %
240   \ifnum\count@<#2\relax
241     \advance\count@\@ne
242   \repeat
243 }
244 \def\Test{%
245   \RangeCatcodeInvalid{0}{47}%
246   \RangeCatcodeInvalid{58}{64}%
247   \RangeCatcodeInvalid{91}{96}%
248   \RangeCatcodeInvalid{123}{127}%
249   \catcode'\@=12 %
250   \catcode'\=0 %
251   \catcode'\{=1 %
252   \catcode'\}=2 %
253   \catcode'\#=6 %
254   \catcode'\ [=12 %
255   \catcode'\]=12 %
256   \catcode'\%=14 %

```

```

257 \catcode'\ =10 %
258 \catcode13=5 %
259 \RequirePackage{letltxmacro}[2008/06/24]\relax
260 \RestoreCatcodes
261 }
262 \Test
263 \csname @@end\endcsname
264 \end
265 </test1>

```

### 3.2 Package tests

```

266 <*test2>
267 \NeedsTeXFormat{LaTeX2e}
268 \nofiles
269 \documentclass{minimal}
270
271 \usepackage{letltxmacro}[2008/06/24]
272
273 \usepackage{qstest}
274 \IncludeTests{*}
275 \LogTests{log}{*}{*}
276
277 \makeatletter
278
279 \def\TestDef#1{%
280   \begingroup
281     \@makeother\%
282     \@makeother\ %
283     \expandafter\@TestDef\csname #1\endcsname
284 }
285 \def\@TestDef#1#2{%
286   \edef\a{\expandafter\strip@prefix\meaning#1}%
287   \edef\b{\detokenize{#2}}%
288   \ifx\a\b
289     \else
290       \typeout{1 [\a]}%
291       \typeout{2 [\b]}%
292     \fi
293   \endgroup
294   \Expect*{\expandafter\strip@prefix\meaning#1}*{\detokenize{#2}}%
295 }
296 \def\TestEquals#1#2{%
297   \Expect*{%
298     \expandafter\ifx\csname#1\expandafter\endcsname
299       \csname#2\endcsname
300     equals%
301     \else
302     wrong%
303     \fi
304   }{equals}%
305 }
306 \def\SaveA{%
307   \let\SavedA\TestA
308   \expandafter\let\csname\string\SavedA\expandafter\endcsname
309     \csname\string\TestA\endcsname
310   \expandafter\let\csname SavedA \expandafter\endcsname
311     \csname TestA \endcsname
312 }
313 \def\CheckA{%
314   \TestEquals{SavedA}{TestA}%
315   \TestEquals{\string\SavedA}{\string\TestA}%
316   \TestEquals{SavedA }{TestA }%

```



```

317 }
318
319 \begin{qstest}{robust}{robust}
320 \DeclareRobustCommand*\TestA{\Test}%
321 \SaveA
322 \TestDef{TestA}{\protect \TestA }%
323 \CheckA
324 \DeclareRobustCommand{TestA}{Test}%
325 \SaveA
326 \TestDef{TestA}{\protect \TestA }%
327 \LetLtxMacro\TestB\TestA
328 \TestDef{TestB}{\protect \TestB }%
329 \TestEquals{TestB }{TestA }%
330 \CheckA
331 \end{qstest}
332
333 \begin{qstest}{default}{default}
334 \newcommand{TestA}[1][\relax default \empty]{TestA #1}%
335 \SaveA
336 \TestDef
337 {TestA}{\@protected@testopt \TestA \TestA {\relax default \empty }}%
338 \LetLtxMacro\TestB\TestA
339 \TestDef
340 {TestB}{\@protected@testopt \TestB \TestB {\relax default \empty }}%
341 \CheckA
342 \end{qstest}
343
344 \begin{qstest}{robustdefault}{robustdefault}
345 \DeclareRobustCommand{TestA}[1][\default]{TestA}%
346 \SaveA
347 \LetLtxMacro\TestB\TestA
348 \TestDef{TestB}{\protect \TestB }%
349 \TestDef{TestB }{\@protected@testopt \TestB \TestB {\default }}%
350 \CheckA
351 \end{qstest}
352
353 \begin{qstest}{plain}{plain}
354 \LetLtxMacro\NewRelax\relax
355 \Expect*{\meaning\relax}*{\string\relax}%
356 \Expect*{\meaning\NewRelax}*{\string\relax}%
357 \LetLtxMacro\NewHbox\hbox
358 \Expect*{\meaning\hbox}*{\string\hbox}%
359 \Expect*{\meaning\NewHbox}*{\string\hbox}%
360 \LetLtxMacro\NewEmpty\empty
361 \Expect*{\meaning\empty}{macro:->}%
362 \Expect*{\meaning\NewEmpty}{macro:->}%
363 \def\TestA{\iffalse}%
364 \LetLtxMacro\TestB\TestA
365 \TestDef{TestB}{\iffalse }%
366 \TestEquals{TestA}{TestB}%
367 \end{qstest}
368 \usepackage{etoolbox}[2008/06/22]
369
370 \begin{qstest}{oldnewrobustcmd}{oldnewrobustcmd}
371 \protected\edef\TestA{%
372 \noexpand\@protected@testopt
373 \noexpand\TestA
374 \expandafter\noexpand\csname\string\TestA\endcsname
375 {\noexpand\default}}%
376 }%
377 \expandafter\protected\expandafter
378 \def\csname\string\TestA\endcsname{TestA}%

```

```

379 \SaveA
380 \LetLtxMacro\TestB\TestA
381 \TestDef{TestB}{\@protected@testopt \TestB \TestB {\default }}%
382 \protected\edef\TestC{%
383 \noexpand\@protected@testopt
384 \noexpand\TestB
385 \expandafter\noexpand\csname\string\TestB\endcsname
386 {\noexpand\default}}%
387 }%
388 \TestEquals{TestB}{TestC}%
389 \CheckA
390 \end{qstest}
391
392 \begin{qstest}{newrobustcmd}{newrobustcmd}
393 \newrobustcmd{\TestA}[1][\default]{TestA}%
394 \SaveA
395 \LetLtxMacro\TestB\TestA
396 \TestDef{TestB}{\@testopt \TestB {\default }}%
397 \protected\edef\TestC{%
398 \noexpand\@testopt
399 \expandafter\noexpand\csname\string\TestB\endcsname
400 {\noexpand\default}}%
401 }%
402 \TestEquals{TestB}{TestC}%
403 \CheckA
404 \end{qstest}
405
406 \begin{qstest}{robustifyopt}{robustifyopt}
407 \newcommand{\TestA}[2][\default]{}%
408 \TestDef{TestA}{\@protected@testopt \TestA \TestA {\default }}%
409 \robustify\TestA
410 \TestDef{TestA}{\@protected@testopt \TestA \TestA {\default }}%
411 \protected\edef\TestC{%
412 \noexpand\@protected@testopt
413 \noexpand\TestA
414 \expandafter\noexpand\csname\string\TestA\endcsname
415 {\noexpand\default}}%
416 }%
417 \TestEquals{TestA}{TestC}%
418 \SaveA
419 \LetLtxMacro\TestB\TestA
420 \TestDef{TestB}{\@protected@testopt \TestB \TestB {\default }}%
421 \protected\edef\TestC{%
422 \noexpand\@protected@testopt
423 \noexpand\TestB
424 \expandafter\noexpand\csname\string\TestB\endcsname
425 {\noexpand\default}}%
426 }%
427 \TestEquals{TestB}{TestC}%
428 \CheckA
429 \end{qstest}
430
431 \begin{qstest}{robustifydeclare}{robustifydeclare}
432 \DeclareRobustCommand\TestA{\iffalse}%
433 \robustify\TestA
434 \SaveA
435 \LetLtxMacro\TestB\TestA
436 \TestDef{TestB}{\iffalse }%
437 % before etoolbox 2008/06/22: \protected\long\def
438 % since etoolbox 2008/06/22: \protected\def
439 \protected\def\TestC{\iffalse}%
440 \TestEquals{TestB}{TestC}%

```

```

441 \CheckA
442 \end{qstest}
443
444 \begin{qstest}{robustifydeclarelong}{robustifydeclarelong}
445 \DeclareRobustCommand\TestA[1]{\iffalse}%
446 \robustify\TestA
447 \SaveA
448 \LetLtxMacro\TestB\TestA
449 \TestDef{TestB}{\iffalse }%
450 % before etoolbox 2008/06/22: \protected\long\def
451 % since etoolbox 2008/06/22: \protected\def
452 \protected\long\def\TestC#1{\iffalse}%
453 \TestEquals{TestB}{TestC}%
454 \CheckA
455 \end{qstest}
456 \csname @@end\endcsname
457 </test2>

```

## 4 Installation

### 4.1 Download

**Package.** This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/letltxmacro.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/letltxmacro.pdf](#) Documentation.

**Bundle.** All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

*TDS* refers to the standard “A Directory Structure for  $\TeX$  Files” ([CTAN:tds/tds.pdf](#)). Directories with `texmf` in their name are usually organized this way.

### 4.2 Bundle installation

**Unpacking.** Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

**Script installation.** Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package `attachfile2` comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

### 4.3 Package installation

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

```
tex letltxmacro.dtx
```

---

<sup>1</sup><ftp://ftp.ctan.org/tex-archive/>

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

```
letltxmacro.sty      → tex/latex/oberdiek/letltxmacro.sty
letltxmacro.pdf      → doc/latex/oberdiek/letltxmacro.pdf
letltxmacro-showcases.tex → doc/latex/oberdiek/letltxmacro-showcases.tex
test/letltxmacro-test1.tex → doc/latex/oberdiek/test/letltxmacro-test1.tex
test/letltxmacro-test2.tex → doc/latex/oberdiek/test/letltxmacro-test2.tex
letltxmacro.dtx      → source/latex/oberdiek/letltxmacro.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`.

#### 4.4 Refresh file name databases

If your  $\TeX$  distribution (`te $\TeX$` , `mik $\TeX$` , ...) relies on file name databases, you must refresh these. For example, `te $\TeX$`  users run `texhash` or `mktextlsr`.

#### 4.5 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk letltxmacro.pdf unpack_files output .
```

**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{letltxmacro.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 the configuration file `ltxdoc.cfg`. For instance, put this 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 `pdf $\LaTeX$` :

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

## 5 History

[2008/06/09 v1.0]

- First version.

[2008/06/12 v1.1]

- Support for etoolbox's `\newrobustcmd` added.

[2008/06/13 v1.2]

- Support for etoolbox's `\robustify` added.

[2008/06/24 v1.3]

- Test file adapted for etoolbox 2008/06/22 v1.6.

## 6 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.

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