The **letltxmacro** package

Heiko Oberdiek*

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Abstract

\TeX's `\let` assignment does not work for \LaTeX\ 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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*Please report any issues at [https://github.com/ho-tex/letltxmacro/issues](https://github.com/ho-tex/letltxmacro/issues)
1 Documentation

If someone wants to redefine a macro with using the old meaning, then one method is \TeX’s command \texttt{\let}:

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

However, this method fails, if \texttt{\Macro} is defined by \texttt{\DeclareRobustCommand} and/or has an optional argument. In both cases \TeX defines an additional internal macro that is forgotten in the simple \texttt{\let} assignment of the example above.

\begin{verbatim}
\LetLtxMacro{(new macro)}{(old macro)}
\end{verbatim}

Macro \texttt{\LetLtxMacro} behaves similar to \TeX’s \texttt{\let} assignment, but it takes care of macros that are defined by \texttt{\DeclareRobustCommand} and/or have optional arguments. Example:

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

Then macro \texttt{\SavedMacro} only uses internal macro names that are derived from \texttt{\SavedMacro}’s macro name. Macro \texttt{\Macro} can now be redefined without affecting \texttt{\SavedMacro}.

\begin{verbatim}
\GlobalLetLtxMacro{(new macro)}{(old macro)}
\end{verbatim}

Like \texttt{\LetLtxMacro}, but the \texttt{(new macro)} is defined globally. Since version 2019/12/03 v1.4.

1.1 Supported macro definition commands

\begin{verbatim}
\newcommand, \renewcommand \ latex/base
\newenvironment, \renewenvironment \ latex/base
\DeclareRobustCommand \ latex/base
\newrobustcmd, \renewrobustcmd \ etoolbox
\robustify \ etoolbox 2008/06/22 v1.6
\end{verbatim}

2 Implementation

2.1 Show cases

2.1.1 letltxmacro-showcases.tex

\begin{verbatim}
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.
\end{verbatim}
\newcommand*{\Line}[1]{%  \typeout{\@percentchar#1}%
}  
newcommand*{\ShowCmdName}[1]{%  \ifundefined[1]{%  \Line{\space\space(\expandafter\string\csname#1\endcsname) = \%  \expandafter\meaning\csname#1\endcsname)%  \}%  \}%  \newcommand*{\ShowCmds}[1]{%  \ShowCmdName{#1}\ShowCmdName{#1 }\ShowCmdName{\#1}\ShowCmdName{\#1 }\}%  \let\\@backslashchar
\ShowDef
\newcommand*{\ShowDef}[2]{%  \begingroup\Line{}\newcommand*{\DefString}{#2}\@onelevel@sanitize\DefString\Line{\DefString}%  #2\ShowCmds{#1}\endgroup\}%  \typeout{}
\Line{* LaTeX definitions:}
\ShowDef{cmd}{% \newcommand{\cmd}[2][default]{}% \ShowDef{cmd}{% \DeclareRobustCommand{\cmd}{}% \ShowDef{cmd}{% \newrobustcmd{\cmd}[2][default]{}% \line{}% \Line{* etoolbox’s robust definitions:}
\ShowDef{cmd}{% \newrobustcmd{\cmd}{% \DeclareRobustCommand{\cmd}[2][default]{}% \ShowDef{cmd}{% \Line{* etoolbox’s \string\robustify:}
\ShowDef{cmd}{%}

The minimal version of package etoolbox is 2008/06/12 v1.6a because it fixes \robustify.
\RequirePackage{etoolbox}[2008/06/12]% \Line{}% \Line{* etoolbox’s robust definitions:}
\ShowDef{cmd}{% \newrobustcmd{\cmd}{% \Line{}% \ShowDef{cmd}{% \newrobustcmd{\cmd}[2][default]{}% \Line{}% \Line{* etoolbox’s \string\robustify:}
\ShowDef{cmd}{%
2.1.2 Result

* LaTeX definitions:

\newcommand{\cmd}[2][default]{} %
\robustify{\cmd}%

ShowDef{\cmd}%
\DeclareRobustCommand{\cmd}{} %
\robustify{\cmd}%

ShowDef{\cmd}%
\DeclareRobustCommand{\cmd}[2][default]{} %
\robustify{\cmd}%

\typeout{}
\@@end

⟨/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

(*package)
2.2.1 Catcodes and identification

\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \^^M
\endlinechar=13 %
\catcode123=1 % {
\catcode125=2 % }
\catcode64=11 % @
\def\x{%
  \expandafter\edef\csname llm@AtEnd\endcsname{%
    \endlinechar=\the\endlinechar\relax%
    \catcode13=\the\catcode13\relax%
    \catcode32=\the\catcode32\relax%
    \catcode35=\the\catcode35\relax%
    \catcode61=\the\catcode61\relax%
    \catcode64=\the\catcode64\relax%
    \catcode123=\the\catcode123\relax%
    \catcode125=\the\catcode125\relax%
}%
\x\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode64=11 % @
\catcode123=1 % {
\catcode125=2 % }
\def\TMP@EnsureCode#1#2{%
  \edef\llm@AtEnd{%
    \llm@AtEnd
    \catcode#1=\the\catcode#1\relax%
    \catcode#1=#2\relax%
  }%
  \catcode#1=#2\relax%
}%
\TMP@EnsureCode{40}{12}% (  
\TMP@EnsureCode{41}{12}% )  
\TMP@EnsureCode{42}{12}% *  
\TMP@EnsureCode{45}{12}% -  
\TMP@EnsureCode{46}{12}% .  
\TMP@EnsureCode{47}{12}% /  
\TMP@EnsureCode{58}{12}% :  
\TMP@EnsureCode{62}{12}% >  
\TMP@EnsureCode{91}{12}% [  
\TMP@EnsureCode{93}{12}% ]
\edef\llm@AtEnd{%
  \llm@AtEnd
  \escapechar=92 % '\\'
}
\escapechar=92 % '\\'
Package identification.
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{letltxmacro} [%
[2019/12/03 v1.6 Let assignment for LaTeX macros (HO)]

2.2.2 Main macros

\LetLtxMacro
\newcommand*{\LetLtxMacro}{%
\def\llm@testopt{% 
\noexpand\@protected@testopt 
\noexpand#1% 
}%
\else 
edef\x{% 
\noexpand\@testopt 
\expandafter\noexpand
\csname\string#2\endcsname 
}% 
\expandafter\expandafter\expandafter\def 
\expandafter\expandafter\expandafter\y 
\expandafter\llm@CarTwo#2{}\llm@nil 
}% 
\ifx\x\y 
#2% 
\def\llm@testopt{% 
\noexpand\@testopt 
}% 
\fi 
\fi 
\expandafter\endgroup\if\llm@testopt\@empty 
#3\let#1=#2\relax 
\else 
#3\let#1=#1\llm@GlobalTemp 
#3\expandafter\let 
\csname\string#2\endcsname 
\csname\string#1\endcsname 
}{\the\toks0}% 
\fi 
\fi 
\expandafter\endgroup\if\llm@testopt\@empty 
#3\let#1=#2\relax 
}\}% 
\def\llm@CheckParams#1:->#2\@nil{% 
\begingroup 
\def\x{#1} 
\ifx\x\llm@macro 
\endgroup 
\def\llm@protected{} 
\else 
\ifx\x\llm@protectedmacro 
\endgroup 
\def\llm@protected{\protected} 
\expandafter\expandafter\expandafter\@firstoftwo 
\else 
\ifx\x\llm@macro 
\endgroup 
\def\llm@protected{} 
\else 
\def\llm@protected{\protected} 
\expandafter\expandafter\expandafter\@firstoftwo 
\fi 
#3\let#1=#2\relax 
}\}% 
\llm@CheckParams
3 Installation

3.1 Download

Package. This package is available on CTAN\(^1\):  

Bundle. All the packages of the bundle ‘letltxmacro’ 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/letltxmacro.tds.zip

TDS refers to the standard “A Directory Structure for T\(\TeX\) Files” (CTAN:pkg/tds). Directories with \texttt{texmf} in their name are usually organized this way.

3.2 Bundle installation

Unpacking. Unpack the \texttt{letltxmacro.tds.zip} in the TDS tree (also known as \texttt{texmf} tree) of your choice. Example (linux):  
\texttt{unzip letltxmacro.tds.zip -d ~/texmf}

3.3 Package installation

Unpacking. The \texttt{.dtx} file is a self-extracting \texttt{docstrip} archive. The files are extracted by running the \texttt{.dtx} through plain T\(\TeX\):  
\texttt{tex letltxmacro.dtx}

\(^1\)CTAN:pkg/letltxmacro
TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as \texttt{texmf} tree):

\begin{verbatim}
letltxmacro.sty → tex/latex/letltxmacro/letltxmacro.sty
letltxmacro.pdf → doc/latex/letltxmacro/letltxmacro.pdf
letltxmacro-showcases.tex → doc/latex/letltxmacro/letltxmacro-showcases.tex
letltxmacro.dtx → source/latex/letltxmacro/letltxmacro.dtx
\end{verbatim}

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

3.4 Refresh file name databases

If your \TeX{} distribution (\TeX{} Live, \texttt{mikTeX}, \ldots) relies on file name databases, you must refresh these. For example, \TeX{} Live users run \texttt{texhash} or \texttt{mktexlsr}.

3.5 Some details for the interested

Unpacking with \LaTeX{}. The \texttt{.dtx} chooses its action depending on the format:

\texttt{plain \TeX{}}: Run \texttt{docstrip} and extract the files.

\texttt{\LaTeX{}}: Generate the documentation.

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

\begin{verbatim}
latex \let\install=y\input{letltxmacro.dtx}
\end{verbatim}

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

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

\begin{verbatim}
\PassOptionsToClass{a4paper}{article}
\end{verbatim}

An example follows how to generate the documentation with \texttt{pdflatex}:

\begin{verbatim}
pdflatex letltxmacro.dtx
makeindex -s gind.ist letltxmacro.idx
pdflatex letltxmacro.dtx
makeindex -s gind.ist letltxmacro.idx
pdflatex letltxmacro.dtx
\end{verbatim}

4 History

[2008/06/09 v1.0]

\begin{itemize}
\item First version.
\end{itemize}

[2008/06/12 v1.1]

\begin{itemize}
\item Support for \texttt{etoolbox}'s \texttt{\newrobustcmd} added.
\end{itemize}

[2008/06/13 v1.2]

\begin{itemize}
\item Support for \texttt{etoolbox}'s \texttt{\robustify} added.
\end{itemize}
5 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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\protected \ProvidesPackage \RequirePackage \reserved@a \robustify \ShowCmdName \ShowCmds \ShowDef \space\the \texttt{T} \texttt{R} \texttt{S} \texttt{X} \texttt{Y}\texttt{x}\texttt{y}