The letltxmacro package

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Abstract

TeX's \let assignment does not work for IATeX 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/oberdiek/issues

1 Documentation

If someone wants to redefine a macro with using the old meaning, then one method is T_FX'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 LATEX defines an additional internal macro that is forgotten in the simple \let assignment of the example above.

```
\LetLtxMacro \{\langle new\ macro \rangle\}\ \{\langle old\ macro \rangle\}
```

Macro \LetLtxMacro behaves similar to TEX's \let assignment, but it takes care of macros that are defined by \LetLtxMacro behave 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.

```
\verb|\GlobalLetLtxMacro {|} \langle new\ macro | \} | \{ \langle old\ macro | \} |
```

Like \LetLtxMacro, but the $\langle new \ macro \rangle$ is defined globally. Since version 2016/05/16 v1.4.

1.1 Supported macro definition commands

```
\label{latex/base} $$ \newnormand, \enewnormand latex/base $$ \newnormand, \enewnormand latex/base latex/base $$ \newnormand latex/base latex
```

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]{%
               \c \@ifundefined{#1}{}{%
            9
                \Line{%
                  \space\space(\expandafter\string\csname#1\endcsname) = \%
           10
                  (\expandafter\meaning\csname#1\endcsname)%
           11
           12
           13 }%
           14 }
           15 \newcommand*{\ShowCmds}[1]{%
           16 \ShowCmdName{#1}%
               \ShowCmdName{#1}%
           17
              \ShowCmdName{\\#1}%
              \ShowCmdName{\#1}\%
           20 }
           21 \let\\\@backslashchar
\ShowDef
           22 \newcommand*{\ShowDef}[2]{%
               \begingroup
           23
                \left\langle \right\rangle
           24
                \newcommand*{\DefString}{#2}%
           25
                \@onelevel@sanitize\DefString
           27
                \Line{\DefString}%
           28
                #2%
           29
                \ShowCmds{#1}%
           30
               \endgroup
           31 }
           32 \typeout{}
           33 \Line{* LaTeX definitions:}
           34 \ShowDef{cmd}{%
           35
               \label{lem:lemmand} $$\operatorname{\cmd}[2][\operatorname{default}]{} %
           36 }
           37 \ShowDef{cmd}{%
               \DeclareRobustCommand{\cmd}{}%
           39 }
           40 \ \frac{1}{m}
           41 \DeclareRobustCommand{\cmd}[2][default]{}\%
           42 }
           43 \typeout{}
          The minimal version of package etoolbox is 2008/06/12 v1.6a because it fixes
          \robustify.
           44 \RequirePackage{etoolbox}[2008/06/12]%
           45 \setminus Line{}
           46 \Line{* etoolbox's robust definitions:}
           47 \ShowDef{cmd}{%
           48
               49 }
           50 \ShowDef{cmd}{%
               51
           52 }
           53 \land Line{}
           54 \Line{* etoolbox's \string\robustify:}
           55 \ShowDef{cmd}{%
              \label{lem:lemmand} $$\operatorname{\cmd}[2][default]{} %
           57 \robustify{\cmd}%
           58 }
           59 \ShowDef{cmd}{%
               \verb|\DeclareRobustCommand{\cmd}{} \ \%
           60
               \robustify{\cmd}%
           61
           62 }
           63 \ShowDef{cmd}{%
```

```
64 \DeclareRobustCommand{\cmd}[2][default]{} %
                            \robustify{\cmd}%
     65
    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) = (\lnmacro:[#1]#2->)
\DeclareRobustCommand {\cmd }{}
         (\cmd) = (\cmd) - \cmd_{\perp}
         (\cmd_{\sqcup}) = (\ln macro:->)
\DeclareRobustCommand {\cmd }[2][default]{}
         (\cmd) = (\cmd) - \cmd_{\perp}
         (\cmd_{\sqcup}) = (\cmd_{\sqcup} \cdot \cmd_{\sqcup} \cdot \cmd_{
         (\cmd_{\sqcup}) = (\ln macro:[#1]#2->)
* etoolbox's robust definitions:
\newrobustcmd {\cmd }{}
         (\cmd) = (\protected\long macro:->)
\newrobustcmd {\cmd }[2][default]{}
         (\cmd) = (\protected macro:->\@testopt \\cmd {default})
         (\cmd) = (\lnmatrix 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:->\Qprotected \cmd_{\cmd} \cmd_{\cmd} \default)
         (\cmd_{\sqcup}) = (\cmd_{\sqcup} \cdot \cmd_{\sqcup} \cdot \cmd_{
         (\cmd_{\sqcup}) = (\ln macro:[#1]#2->)
2.2 Package
     70 (*package)
2.2.1 Catcodes and identification
     71 \begingroup\catcode61\catcode48\catcode32=10\relax%
     72 \catcode13=5 % ^^M
     73 \endlinechar=13 %
     74 \catcode123=1 % {
     75 \catcode125=2 % }
     76 \catcode64=11 % @
     77 \def\x{\normalfont}
                                    \expandafter\edef\csname llm@AtEnd\endcsname{%
     78
                                                 \endlinechar=\the\endlinechar\relax
     79
                                                 \color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\t
     80
```

```
\catcode35=\the\catcode35\relax
                                                                                                                          82
                                                                                                                                                           \catcode61=\the\catcode61\relax
                                                                                                                          83
                                                                                                                                                           \colored{catcode64} \to \colored{catcode64}
                                                                                                                          84
                                                                                                                                                          \color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=\color=
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                                                                                                                          86
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                                                                                                                          87
                                                                                                                                                  }%
                                                                                                                                          }%
                                                                                                                          88
                                                                                                                          89 \x\catcode61\catcode48\catcode32=10\relax%
                                                                                                                          90 \catcode13=5 \% ^^M
                                                                                                                          91 \endlinechar=13 %
                                                                                                                          92 \catcode35=6 % #
                                                                                                                          93 \catcode64=11 % @
                                                                                                                          94 \catcode123=1 % {
                                                                                                                          95 \catcode125=2 % }
                                                                                                                          96 \def\TMP@EnsureCode#1#2{%
                                                                                                                          97
                                                                                                                                            \edef\llm@AtEnd{%
                                                                                                                          98
                                                                                                                                                    \llm@AtEnd
                                                                                                                                                   \color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\the\color=\t
                                                                                                                          99
                                                                                                                      100
                                                                                                                                           ጉ%
                                                                                                                                         \color= 1=\#2\relax
                                                                                                                      101
                                                                                                                     102 }
                                                                                                                      103 \TMP@EnsureCode{40}{12}% (
                                                                                                                      104 \TMP@EnsureCode{41}{12}%)
                                                                                                                      105 \TMP@EnsureCode{42}{12}% *
                                                                                                                      106 \TMP@EnsureCode{45}{12}% -
                                                                                                                      107 \TMP@EnsureCode{46}{12}\%.
                                                                                                                      108 \TMP@EnsureCode{47}{12}% /
                                                                                                                      109 \TMP@EnsureCode{58}{12}%:
                                                                                                                     110 \TMP@EnsureCode{62}{12}% >
                                                                                                                     111 \TMP@EnsureCode{91}{12}% [
                                                                                                                     112 \TMP@EnsureCode{93}{12}% ]
                                                                                                                     113 \edef\llm@AtEnd{%
                                                                                                                     114
                                                                                                                                            \llm@AtEnd
                                                                                                                     115 \escapechar\the\escapechar\relax
                                                                                                                     116 \noexpand\endinput
                                                                                                                      117 }
                                                                                                                      118 \escapechar=92 % '\\
                                                                                                                                      Package identification.
                                                                                                                     119 \NeedsTeXFormat{LaTeX2e}
                                                                                                                      120 \ProvidesPackage{letltxmacro}%
                                                                                                                     121 [2016/05/16 v1.5 Let assignment for LaTeX macros (HO)]
                                                                                                                     2.2.2 Main macros
                                             \LetLtxMacro
                                                                                                                     122 \newcommand*{\LetLtxMacro}{%
                                                                                                                                            \llm@ModeLetLtxMacro{}%
                                                                                                                     124 }
                 \GlobalLetLtxMacro
                                                                                                                     125 \newcommand*{\GlobalLetLtxMacro}{%
                                                                                                                      126 \llm@ModeLetLtxMacro\global
                                                                                                                     127 }
\llm@ModeLetLtxMacro
                                                                                                                     128 \newcommand*{\llm@ModeLetLtxMacro}[3]{%
                                                                                                                                            \edef\llm@escapechar{\the\escapechar}%
                                                                                                                      130
                                                                                                                                           \escapechar=-1 %
                                                                                                                                            \edef\reserved@a{%
                                                                                                                     131
                                                                                                                                                  \noexpand\protect
                                                                                                                     132
                                                                                                                     133
                                                                                                                                                   \expandafter\noexpand
                                                                                                                                                   \csname\string#3 \endcsname
                                                                                                                      134
```

\catcode32=\the\catcode32\relax

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```
\  \in \ \end{ar} \ \in \ \end{ar} \ \ar \ \end{ar} \ \end{
                                              136
                                                            #1\edef#2{%
                                              137
                                                                \noexpand\protect
                                              138
                                                                \expandafter\noexpand
                                              139
                                              140
                                                                \csname\string#2 \endcsname
                                              141
                                                            }%
                                              142
                                                            #1\expandafter\let
                                                            \csname\string#2 \expandafter\endcsname
                                             143
                                                            \csname\string#3 \endcsname
                                             144
                                                            \expandafter\llm@LetLtxMacro
                                             145
                                                                   \csname\string#2 \expandafter\endcsname
                                             146
                                                                   \csname\string#3 \endcsname{#1}%
                                             147
                                                         \else
                                             148
                                                            \label{llmQLetLtxMacro} $$\lim \mathbb{Z}_{\#3}_{\#1}\%$
                                             149
                                                         \fi
                                              150
                                                         \escapechar=\llm@escapechar\relax
                                              151
                                             152 }
\llm@LetLtxMacro
                                              153 \def\llm@LetLtxMacro#1#2#3{%
                                                         \escapechar=92 %
                                             154
                                                         \expandafter\llm@CheckParams\meaning#2:->\@nil{%
                                             155
                                              156
                                                             \begingroup
                                                                \def\@protected@testopt{%
                                              157
                                                                   \expandafter\@testopt\@gobble
                                              158
                                              159
                                                                \def\@testopt##1##2{%
                                              160
                                                                   \toks@={##2}%
                                              161
                                                               }%
                                             162
                                                                \let\llm@testopt\@empty
                                             163
                                             164
                                                                \left( x_{x}\right) 
                                             165
                                                                   \noexpand\@protected@testopt
                                              166
                                                                   \noexpand#2%
                                                                   \expandafter\noexpand\csname\string#2\endcsname
                                              167
                                              168
                                                                \expandafter\expandafter\expandafter\def
                                              169
                                              170
                                                                \expandafter\expandafter\y
                                             171
                                                                \expandafter\expandafter\expandafter{%
                                                                   \ensuremath{\verb| expandafter| llm@CarThree#2{}{}{}} llm@nil \\
                                             172
                                                               }%
                                             173
                                                               ifx\x\y
                                             174
                                                                   #2%
                                              175
                                             176
                                                                   \def\llm@testopt{%
                                              177
                                                                       \noexpand\@protected@testopt
                                              178
                                                                       \noexpand#1%
                                              179
                                                                   }%
                                              180
                                                                \else
                                              181
                                                                   \left( x_{x}\right) 
                                              182
                                                                      \noexpand\@testopt
                                                                      \expandafter\noexpand
                                             183
                                                                      \csname\string#2\endcsname
                                              184
                                             185
                                                                   \expandafter\expandafter\def
                                             186
                                                                   \expandafter\expandafter\y
                                             187
                                             188
                                                                   \expandafter\expandafter\expandafter{%
                                              189
                                                                      190
                                                                   }%
                                              191
                                                                   ifx\x\y
                                             192
                                                                      #2%
                                                                       \def\llm@testopt{%
                                             193
                                                                          \noexpand\@testopt
                                             194
                                                                      }%
                                              195
```

135 }%

```
\fi
                       196
                               \fi
                       197
                               \ifx\llm@testopt\@empty
                       198
                       199
                       200
                                \label{lim:grotected} $$\lim\Phi_{\color=0.05]} \otimes \color=0.05$
                       201
                                  \llm@testopt
                       202
                                  \expandafter\noexpand
                       203
                                  \csname\string#1\endcsname
                                  {\theta}\
                       204
                                }%
                       205
                       206
                             \expandafter\endgroup\ifx\llm@testopt\@empty
                       207
                               #3\left| +2\right| 
                       208
                             \else
                       209
                       210
                               #3\left(1+1\right)
                       211
                               #3\expandafter\let
                                  \verb|\csname| string #1 \le pandafter \le name
                       212
                                  \csname\string#2\endcsname
                       213
                       214
                             \fi
                       215
                           }{%
                             #3\left| +2\right| 
                       216
                           }%
                       217
                       218 }
 \llm@CheckParams
                       219 \def\llm@CheckParams#1:->#2\@nil{\%}
                       220 \begingroup
                             \left( x\{\#1\}\right)
                       221
                       222
                           \int \mathbb{Z} \
                       223
                             \endgroup
                             \label{lem:protected} $$\def\lm@protected{}% $$
                       224
                       225
                             \expandafter\@firstoftwo
                       226
                             \verb|\ifx\x| llm@protected macro| \\
                       227
                       228
                               \endgroup
                               \label{limoprotected} $$ \def\limoprotected{protected} % $$
                       229
                               \verb|\expandafter| expandafter| @first of two |
                       230
                       231
                             \else
                       232
                               \endgroup
                               233
                       234
                       235
                           \fi
                       236 }
         \llm@macro
                       237 \def\llm@macro{macro}
                       238 \@onelevel@sanitize\llm@macro
\llm@protectedmacro
                       239 \def\llm@protectedmacro{\protected macro}
                       240 \ensuremath{\verb|Qonelevel@sanitize|}llm@protectedmacro
     \llm@CarThree
                       241 \def\lm@CarThree#1#2#3#4\llm@nil{#1#2#3}%
       \llm@CarTwo
                       242 \def\llm@CarTwo#1#2#3\llm@nil{#1#2}%
                       243 \lm@AtEnd\%
                       244 (/package)
```

3 Test

3.1 Catcode checks for loading

```
245 (*test1)
246 \NeedsTeXFormat\{LaTeX2e\}
247 \setminus documentclass\{minimal\}
248 \makeatletter
249 \def\RestoreCatcodes{}
250 \count@=0 %
251 \loop
252 \edef\RestoreCatcodes{%
253
      \RestoreCatcodes
254
      \catcode\the\count@=\the\catcode\count@\relax
255 }%
256 \ifnum\count@<255 \%
257 \advance\count@\@ne
258 \repeat
259
260 \def\RangeCatcodeInvalid#1#2\%
261 \count@=#1\relax
262 \loop
     \catcode\count@=15 %
263
264 \ifnum\count@<#2\relax
265
    \advance\count@\@ne
266 \repeat
267 }
268 \def\Test{\%
269 \RangeCatcodeInvalid{0}{47}\%
270 \RangeCatcodeInvalid{58}{64}%
271 \RangeCatcodeInvalid{91}{96}%
272 \RangeCatcodeInvalid{123}{127}%
273 \catcode'\@=12 %
274 \catcode'\\=0 %
275 \catcode'\{=1 \%
276 \catcode'\}=2 %
277 \catcode'\#=6 \%
278 \catcode'\[=12 %
279 \catcode'\]=12 %
280 \catcode'\%=14 %
281 \catcode'\ =10 %
282 \catcode13=5 %
283 \RequirePackage{letltxmacro}[2016/05/16]\relax
284 \RestoreCatcodes
285 }
286 \Test
287 \csname @@end\endcsname
288 \end
289 \langle / \text{test1} \rangle
3.2 Package tests
290 (*test2)
291 \NeedsTeXFormat{LaTeX2e}
292 \setminus nofiles
293 \documentclass{minimal}
294
295 \usepackage{letltxmacro}[2016/05/16]
297 \usepackage{qstest}
298 \IncludeTests{*}
299 \LogTests{log}{*}{*}
```

```
300
301 \makeatletter
302
303 \det \text{TestDef} #1{\%}
            \begingroup
304
305
                \ensuremath{\texttt{Qmakeother}\\\\}
306
                \@makeother\ %
307
                \expandafter\@TestDef\csname #1\endcsname
308 }
309 \def\@TestDef#1#2{\%
                \ensuremath{\mbox{\mbox{$\sim$}}\ensuremath{\mbox{\mbox{$\sim$}}}\ensuremath{\mbox{\mbox{$\sim$}}}\ensuremath{\mbox{\mbox{$\sim$}}}\ensuremath{\mbox{\mbox{$\sim$}}}\ensuremath{\mbox{\mbox{$\sim$}}}\ensuremath{\mbox{\mbox{$\sim$}}}\ensuremath{\mbox{\mbox{$\sim$}}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath{\mbox{$\sim$}}\ensuremath
310
                \left( \frac{\#2}{\%} \right)
311
312
                ifx\a\b
                \else
313
                    \begin{array}{l} \text{typeout} 1 [\a] \end{array}
314
315
                    \typeout{2 [\b]}\%
316
317
            \endgroup
            \verb|\Expect*{\expandafter\strip@prefix\meaning\#1}*{\detokenize{\#2}}|%
318
319 }
320 \det \text{TestEquals} #1#2{\%}
            \Expect*{%
321
                \expandafter\ifx\csname#1\expandafter\endcsname
322
                                             \csname#2\endcsname
323
                   equals%
324
325
                \else
326
                   wrong%
327
                \fi
328
           }{equals}%
329 }
330 \def\SaveA{%
            \let\SavedA\TestA
331
332
            \expandafter\let\csname\string\SavedA\expandafter\endcsname
333
                                          \csname\string\TestA\endcsname
            \expandafter\let\csname SavedA \expandafter\endcsname
334
335
                                         \csname TestA \endcsname
336 }
337 \def\CheckA\{\%
           \TestEquals{SavedA}{TestA}\%
338
           \TestEquals{\string\SavedA}{\string\TestA}\%
339
           \TestEquals{SavedA }{TestA }%
340
341 }
342
343 \begin{qstest}{robust}{robust}
344
            \begingroup
345
                \DeclareRobustCommand*{\TestA}{Test}%
346
347
                \TestDef{TestA}{\protect \TestA }%
348
                \CheckA
                \verb|\DeclareRobustCommand{\TestA}{Test}|
349
                \SaveA
350
               \TestDef{TestA}{\protect \TestA }%
351
               \LetLtxMacro\TestB\TestA
352
               \TestDef{TestB}{\protect \TestB }%
353
354
               \TestEquals{TestB}{TestA}%
355
               \CheckA
356
               \GlobalLetLtxMacro\TestC\TestA
357
               \CheckA
358
           \endgroup
           \TestDef{TestC}{\protect \TestC }%
359
           \verb|\DeclareRobustCommand{\TestA}{Test}|
360
           \TestEquals{TestC }{TestA }%
```

```
362 \end{qstest}
363
364 \begin{qstest}{default}{default}
         \begingroup
            367
            \SaveA
368
            \TestDef
369
            {TestA}{\@protected@testopt \TestA \\TestA {\relax default \empty }}%
            \verb|\LetLtxMacro|\TestB|\TestA|
370
            \TestDef
371
           {TestB}{\@protected@testopt \TestB \\TestB {\relax default \empty }}%
372
            \CheckA
373
            \TestEquals{\string}\TestB}{\string}\TestA}\%
374
            \GlobalLetLtxMacro\TestC\TestA
375
           \CheckA
376
        \endgroup
377
378 \TestDef
379 {TestC}{\@protected@testopt \TestC \\TestC {\relax default \empty }}%
         380
         \verb|\TestEquals{\string\TestC}{\string\TestA}| % \label{testC} % $$ \columnwidth{\columnwidth} $$ \columnwidth $
381
382 \end{qstest}
383
384 \begin{qstest}{robustdefault}{robustdefault}
385
         \begingroup
            386
            \SaveA
387
388
            \LetLtxMacro\TestB\TestA
389
            \TestDef{TestB}{\protect \TestB }%
            \TestDef{TestB}{\@protected@testopt \TestB \\TestB {\default}}%
390
391
            \GlobalLetLtxMacro\TestC\TestA
392
393
           \CheckA
394
         \endgroup
         \TestDef{TestC}{\protect \TestC }%
        \TestDef{TestC }{\@protected@testopt \TestC \\TestC {\default }}%
397 \end{qstest}
399 \begin{qstest}{plain}{plain}
400 \LetLtxMacro\NewRelax\relax
401 \Expect*{\meaning\relax}*{\string\relax}%
402 \Expect*{\meaning\NewRelax}*{\string\relax}%
403 \LetLtxMacro\NewHbox\hbox
404 \Expect*{\meaning\hbox}*{\string\hbox}%
405 \Expect*{\meaning\NewHbox}*{\string\hbox}%
406 \LetLtxMacro\NewEmpty\empty
         \Expect*{\meaning\empty}{macro:->}%
408 \Expect*{\meaning\NewEmpty}{macro:->}%
        \def\TestA{\iffalse}%
409
410 \LetLtxMacro\TestB\TestA
411 \TestDef{TestB}{\iffalse }%
412 \TestEquals{TestA}{TestB}%
413 \end{qstest}
414 \usepackage{etoolbox}[2008/06/22]
416 \begin{qstest}{oldnewrobustcmd}{oldnewrobustcmd}
         \begingroup
417
            \protected\edef\TestA{%
418
              \noexpand\@protected@testopt
419
              \noexpand\TestA
420
              \expandafter\noexpand\csname\string\TestA\endcsname
421
422
              {\noexpand\default}%
423
           }%
```

```
\expandafter\protected\expandafter
424
      \def\csname\string\TestA\endcsname{TestA}%
425
426
      \LetLtxMacro\TestB\TestA
427
      \TestDef{TestB}{\@protected@testopt \TestB \\TestB {\default }}%
428
429
      \protected\edef\TestC{%
430
       \noexpand\@protected@testopt
431
       \noexpand\TestB
       \verb|\expandafter\\| no expand\\| csname\\| string\\| TestB\\| end csname\\|
432
       {\noexpand\default}%
433
     ት%
434
     \TestEquals{TestB}{TestC}%
435
      \CheckA
436
     \GlobalLetLtxMacro\TestD\TestA
437
438
     \CheckA
    \endgroup
439
    \TestDef{TestD}{\@protected@testopt \TestD \\TestD {\default }}%
440
    \protected\edef\TestC{%
441
      \noexpand\@protected@testopt
442
443
     \noexpand\TestD
      \expandafter\noexpand\csname\string\TestD\endcsname
444
     {\noexpand\default}%
445
446
    \TestEquals{TestD}{TestC}%
447
448 \end{qstest}
449
450 \begin{qstest}{newrobustcmd}{newrobustcmd}
    \begingroup
452
      \SaveA
453
      \LetLtxMacro\TestB\TestA
454
      \TestDef{TestB}{\@testopt \\TestB {\default }}%
455
456
      \protected\edef\TestC{%
457
       \noexpand\@testopt
       \expandafter\noexpand\csname\string\TestB\endcsname
458
459
       {\noexpand\default}%
460
      \TestEquals{TestB}{TestC}\%
461
462
     \CheckA
     \GlobalLetLtxMacro\TestD\TestA
463
     \CheckA
464
465
    \endgroup
    \TestDef{TestD}{\@testopt \\TestD {\default }}%
466
467
    \protected\edef\TestC{%
468
     \noexpand\@testopt
     \expandafter\noexpand\csname\string\TestD\endcsname
470
      {\noexpand\default}%
471
    }%
472
    \TestEquals{TestD}{TestC}%
473 \end{qstest}
474
475 \begin{qstest}{robustifyopt}{robustifyopt}
    476
    \TestDef{TestA}{\@protected@testopt \TestA \\TestA {\default }}%
477
    \robustify\TestA
478
479
    \TestDef{TestA}{\@protected@testopt \TestA \\TestA {\default }}%
480
    \protected\edef\TestC{%
481
      \noexpand\@protected@testopt
482
     \noexpand\TestA
     \verb|\expandafter\\| no expand\\| csname\\| string\\| TestA\\| end csname\\|
483
     {\noexpand\default}%
484
485 }%
```

```
\TestEquals{TestA}{TestC}%
486
487
    \SaveA
    \LetLtxMacro\TestB\TestA
488
    \TestDef{TestB}{\@protected@testopt \TestB \\TestB {\default }}%
489
    \protected\edef\TestC{%
490
      \noexpand\@protected@testopt
491
492
      \noexpand\TestB
493
      \expandafter\noexpand\csname\string\TestB\endcsname
494
      {\noexpand\default}%
    ጉ%
495
    \text{TestEquals}\{\text{TestB}\}\{\text{TestC}\}\%
496
    \CheckA
497
498 \end{qstest}
499
500 \begin{qstest}{robustifydeclare}{robustifydeclare}
    \DeclareRobustCommand\TestA{\iffalse}%
502
    \robustify\TestA
503 \SaveA
504 \quad \texttt{LetLtxMacro} \\ \texttt{TestA}
505
    \TestDef{TestB}{\iffalse }%
    % before etoolbox 2008/06/22: \protected\long\def
506
    % since etoolbox 2008/06/22: \protected\def
507
    \protected\def\TestC{\iffalse}%
508
    \TestEquals{TestB}{TestC}%
509
    \CheckA
510
511 \end{qstest}
512
513 \begin{qstest}{robustifydeclarelong}{robustifydeclarelong}
514
    515
    \robustify\TestA
516 \SaveA
517 \LetLtxMacro\TestB\TestA
518 \TestDef{TestB}{\iffalse }%
519 % before etoolbox 2008/06/22: \protected\long\def
520 % since etoolbox 2008/06/22: \protected\def
521 \protected\long\def\TestC#1{\iffalse}%
522 \TestEquals{TestB}{TestC}%
523 \CheckA
524 \end{qstest}
525 \csname @@end\endcsname
526 (/test2)
```

f 4 Installation

4.1 Download

Package. This package is available on CTAN¹:

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.

¹http://ctan.org/pkg/letltxmacro

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 TFX:

```
tex letltxmacro.dtx
```

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

```
\label{lettxmacro.sty} \begin{array}{ll} & \rightarrow \text{tex/latex/oberdiek/letltxmacro.sty} \\ \text{letltxmacro.pdf} & \rightarrow \text{doc/latex/oberdiek/letltxmacro.pdf} \\ \text{letltxmacro-showcases.tex} & \rightarrow \text{doc/latex/oberdiek/letltxmacro-showcases.tex} \\ \text{test/letltxmacro-test1.tex} & \rightarrow \text{doc/latex/oberdiek/test/letltxmacro-test1.tex} \\ \text{test/letltxmacro-test2.tex} & \rightarrow \text{doc/latex/oberdiek/test/letltxmacro-test2.tex} \\ \text{letltxmacro.dtx} & \rightarrow \text{source/latex/oberdiek/letltxmacro.dtx} \end{array}
```

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 (teTEX, mikTEX, ...) relies on file name databases, you must refresh these. For example, teTEX users run texhash or mktexlsr.

4.5 Some details for the interested

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

plain T_EX: 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 pdfIATEX:

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

5 Catalogue

The following XML file can be used as source for the TEX Catalogue. The elements caption and description are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is letltxmacro.xml.

```
527 (*catalogue)
528 <?xml version='1.0' encoding='us-ascii'?>
529 <!DOCTYPE entry SYSTEM 'catalogue.dtd'>
530 <entry datestamp='$Date$' modifier='$Author$' id='letltxmacro'>
    <name>letltxmacro</name>
531
    <caption>Let assignment for LaTeX macros.</caption>
532
    <authorref id='auth:oberdiek'/>
533
    <copyright owner='Heiko Oberdiek' year='2008,2010'/>
    cense type='lppl1.3'/>
    <version number='1.5'/>
536
537
    <description>
      TeX's <tt>\let</tt> assignment does not work for LaTeX macros
538
      with optional arguments or for macros that are defined
539
      as robust macros by <tt>\DeclareRobustCommand</tt>. This package
540
      defines <tt>\LetLtxMacro</tt> that also takes care of the involved
541
      internal macros.
542
543
      The package is part of the xref refid='oberdiek'>oberdiek
544
     bundle.
546 </description>
547 <documentation details='Package documentation'
548
       href='ctan:/macros/latex/contrib/oberdiek/letltxmacro.pdf'/>
549 <ctan file='true' path='/macros/latex/contrib/oberdiek/letltxmacro.dtx'/>
550 <miktex location='oberdiek'/>
551 <texlive location='oberdiek'/>
552 <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
553 </entry>
554 (/catalogue)
```

6 History

```
[2008/06/09 \text{ v}1.0]
```

• 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.

[2010/09/02 v1.4]

 \bullet \GlobalLetLtxMacro added.

[2016/05/16 v1.5]

• Documentation updates.

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\lim@escapechar 129, 151 \lim@GlobalTemp 200, 210 \lim@LetLtxMacro 145, 149, 153 \lim@macro 222, 237 \lim@ModeLetLtxMacro 123, 126, 128 \lim@nil 172, 189, 241, 242 \lim@protected 200, 224, 229 \lim@protectedmacro 227, 239 \lim@testopt 163, 176, 193, 198, 201, 207 \LogTests 299 \loop 251, 262 M \makeatletter 3, 248, 301 \meaning 11, 155, 310,	488, 501, 502, 504, 514, 515, 517 \TestB
\lim@escapechar 129, 151 \lim@GlobalTemp 200, 210 \lim@LetLtxMacro 145, 149, 153 \lim@macro 222, 237 \lim@ModeLetLtxMacro 123, 126, 128 \lim@nil 172, 189, 241, 242 \lim@protected 200, 224, 229 \lim@protectedmacro 227, 239 \lim@testopt 163, 176, 193, 198, 201, 207 \LogTests 299 \loop 251, 262 M \makeatletter 3, 248, 301	488, 501, 502, 504, 514, 515, 517 \TestB
\lim@escapechar 129, 151 \lim@GlobalTemp 200, 210 \lim@LetLtxMacro 145, 149, 153 \lim@macro 222, 237 \lim@ModeLetLtxMacro 123, 126, 128 \lim@nil 172, 189, 241, 242 \lim@protected 200, 224, 229 \lim@protected 200, 224, 229 \lim@protectedmacro 227, 239 \lim@testopt 163, 176, 193, 198, 201, 207 \LogTests 299 \loop 251, 262 M \makeatletter 3, 248, 301 \meaning 11, 155, 310, 318, 401, 402, 404, 405, 407, 408	488, 501, 502, 504, 514, 515, 517 \textbold{\text{TestB}} \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
\lim@escapechar 129, 151 \lim@GlobalTemp 200, 210 \lim@LetLtxMacro 145, 149, 153 \lim@macro 222, 237 \lim@ModeLetLtxMacro 123, 126, 128 \lim@nil 172, 189, 241, 242 \lim@protected 200, 224, 229 \lim@protected 200, 224, 229 \lim@protectedmacro 227, 239 \lim@testopt 163, 176, 193, 198, 201, 207 \LogTests 299 \loop 251, 262 M \makeatletter 3, 248, 301 \meaning 11, 155, 310, 318, 401, 402, 404, 405, 407, 408	488, 501, 502, 504, 514, 515, 517 \TestB
\lim@escapechar 129, 151 \lim@GlobalTemp 200, 210 \lim@LetLtxMacro 145, 149, 153 \lim@macro 222, 237 \lim@ModeLetLtxMacro 123, 126, 128 \lim@nil 172, 189, 241, 242 \lim@protected 200, 224, 229 \lim@protectedmacro 227, 239 \lim@testopt 163, 176, 193, 198, 201, 207 \LogTests 299 \loop 251, 262 M \makeatletter 3, 248, 301 \meaning 11, 155, 310, 318, 401, 402, 404, 405, 407, 408 N \NeedsTeXFormat 2, 119, 246, 291	488, 501, 502, 504, 514, 515, 517 \TestB \(\cdots \) 372, 374, 388, 389, 390, 410, 427, 428, 431, 432, 454, 458, 488, 489, 492, 493, 504, 517 \TestC \(\cdots \) 356, 359, 375, 379, 381, 392, 395, 396, 429, 441, 456, 467, 480, 490, 508, 521 \TestD \(\cdot \) 437, 440, 443, 444, 463, 469 \TestDef \(\cdot \) 303, 347, 351, 353, 359, 368, 371, 378, 389, 390, 395, 396, 411, 428, 440, 455, 466, 477, 479, 489, 505, 518 \TestEquals \(\cdot \) 320, 338, 339, 340, 354, 361, 374, 381, 412, 435, 447, 461, 472, 486, 496, 509, 522 \the \(\cdot \) \(\cdot \) 79, 80, 81, 82, 83, 84, 85, 86, 99, 115, 129, 204, 254 \TMP@EnsureCode 96, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112
\lim@escapechar 129, 151 \lim@GlobalTemp 200, 210 \lim@LetLtxMacro 145, 149, 153 \lim@macro 222, 237 \lim@ModeLetLtxMacro 123, 126, 128 \lim@nil 172, 189, 241, 242 \lim@protected 200, 224, 229 \lim@protectedmacro 227, 239 \lim@testopt 163, 176, 193, 198, 201, 207 \LogTests 299 \loop 251, 262 M \makeatletter 3, 248, 301 \meaning 11, 155, 310, 318, 401, 402, 404, 405, 407, 408 N \NeedsTeXFormat 2, 119, 246, 291 \newcommand 4, 7, 15, 22, 25,	488, 501, 502, 504, 514, 515, 517 \TestB \(\cdots \) 372, 374, 388, 389, 390, 410, 427, 428, 431, 432, 454, 458, 488, 489, 492, 493, 504, 517 \TestC \(\cdots \) 356, 359, 375, 379, 381, 392, 395, 396, 429, 441, 456, 467, 480, 490, 508, 521 \TestD \(\cdot \) 437, 440, 443, 444, 463, 469 \TestDef \(\cdot \) 303, 347, 351, 353, 359, 368, 371, 378, 389, 390, 395, 396, 411, 428, 440, 455, 466, 477, 479, 489, 505, 518 \TestEquals \(\cdot \) 320, 338, 339, 340, 354, 361, 374, 381, 412, 435, 447, 461, 472, 486, 496, 509, 522 \the \(\cdot \) \(\cdot \) 79, 80, 81, 82, 83, 84, 85, 86, 99, 115, 129, 204, 254 \TMP@EnsureCode 96, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112 \toks@ \(\cdot \) 161, 204
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\lm@escapechar 129, 151 \lm@GlobalTemp 200, 210 \llm@LetLtxMacro 145, 149, 153 \llm@macro 222, 237 \llm@ModeLetLtxMacro 123, 126, 128 \llm@nil 172, 189, 241, 242 \llm@protected 200, 224, 229 \llm@protectedmacro 227, 239 \llm@testopt 163, 176, 193, 198, 201, 207 \LogTests 299 \loop 251, 262 M \makeatletter 3, 248, 301 \meaning 11, 155, 310, 318, 401, 402, 404, 405, 407, 408 N \NeedsTeXFormat 2, 119, 246, 291 \newcommand 4, 7, 15, 22, 25, 35, 56, 122, 125, 128, 366, 380, 476	488, 501, 502, 504, 514, 515, 517 \TestB \(\cdots \) 372, 374, 388, 389, 390, 410, 427, 428, 431, 432, 454, 458, 488, 489, 492, 493, 504, 517 \TestC \(\cdots \) 356, 359, 375, 379, 381, 392, 395, 396, 429, 441, 456, 467, 480, 490, 508, 521 \TestD \(\cdot \) 437, 440, 443, 444, 463, 469 \TestDef \(\cdot \) 303, 347, 351, 353, 359, 368, 371, 378, 389, 390, 395, 396, 411, 428, 440, 455, 466, 477, 479, 489, 505, 518 \TestEquals \(\cdot \) 320, 338, 339, 340, 354, 361, 374, 381, 412, 435, 447, 461, 472, 486, 496, 509, 522 \the \(\cdot \) \(\cdot \) 79, 80, 81, 82, 83, 84, 85, 86, 99, 115, 129, 204, 254 \TMP@EnsureCode 96, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112 \toks@ \(\cdot \) \(\cdot \) 108, 109, 110, 111, 112 \toks@ \(\cdot \) \(\cdot \) 104, 315
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\lm@escapechar	488, 501, 502, 504, 514, 515, 517 \TestB \(\cdots \) 372, 374, 388, 389, 390, 410, 427, 428, 431, 432, 454, 458, 488, 489, 492, 493, 504, 517 \TestC \(\cdots \) 356, 359, 375, 379, 381, 392, 395, 396, 429, 441, 456, 467, 480, 490, 508, 521 \TestD \(\cdot \) 437, 440, 443, 444, 463, 469 \TestDef \(\cdot \) 303, 347, 351, 353, 359, 368, 371, 378, 389, 390, 395, 396, 411, 428, 440, 455, 466, 477, 479, 489, 505, 518 \TestEquals \(\cdot \) 320, 338, 339, 340, 354, 361, 374, 381, 412, 435, 447, 461, 472, 486, 496, 509, 522 \the \(\cdot \) \(\cdot \) 79, 80, 81, 82, 83, 84, 85, 86, 99, 115, 129, 204, 254 \TMP@EnsureCode 96, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112 \toks@ \(\cdot \) \(\cdot \) 108, 109, 110, 111, 112 \toks@ \(\cdot \) \(\cdot \) 104, 315
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