

# The ltxcmds package

Heiko Oberdiek  
<oberdiek@uni-freiburg.de>

2009/08/05 v1.0

## Abstract

The package `ltxcmds` exports some utility macros from the L<sup>A</sup>T<sub>E</sub>X kernel into a separate namespace and also provides them for other formats such as plain-T<sub>E</sub>X.

## Contents

<b>1</b>	<b>Documentation</b>	<b>2</b>
1.1	Introduction . . . . .	2
1.2	Argument killers . . . . .	2
1.3	Argument grabbers . . . . .	2
1.4	List helpers . . . . .	2
1.5	Tail recursion . . . . .	2
1.6	Empty macro . . . . .	2
1.7	Characters . . . . .	2
1.8	Command definitions . . . . .	3
<b>2</b>	<b>Implementation</b>	<b>3</b>
2.1	Identification . . . . .	3
2.2	Argument killers . . . . .	4
2.3	Argument grabbers . . . . .	5
2.4	List helpers . . . . .	5
2.5	Tail recursion . . . . .	5
2.6	Empty macro . . . . .	5
2.7	Characters . . . . .	5
2.8	Command definitions . . . . .	6
<b>3</b>	<b>Test</b>	<b>6</b>
3.1	Catcode checks for loading . . . . .	6
<b>4</b>	<b>Installation</b>	<b>8</b>
4.1	Download . . . . .	8
4.2	Bundle installation . . . . .	8
4.3	Package installation . . . . .	8
4.4	Refresh file name databases . . . . .	8
4.5	Some details for the interested . . . . .	9
<b>5</b>	<b>History</b>	<b>9</b>
	[2009/08/05 v1.0] . . . . .	9
<b>6</b>	<b>Index</b>	<b>9</b>

# 1 Documentation

## 1.1 Introduction

Many of my packages also support other formats such as plain- $\text{\TeX}$ . Because I am rather familiar with the utility macros from  $\text{\LaTeX}$ 's kernel (e.g.  $\text{\@gobble}$ ,  $\text{\@firstoftwo}$ ), I found myself rewriting them again and again, because they are lacking in plain- $\text{\TeX}$ .

Therefore this package provides often used macros and similar ones with the name prefix  $\text{\ltx@}$ . This avoids also faulty redefinitions. I remember an example where a package redefined  $\text{\@firstoftwo}$  with forgetting  $\text{\long}$ .

## 1.2 Argument killers

$\text{\ltx@gobble} \{ \langle 1 \rangle \}$	$\rightarrow$
$\text{\ltx@gobbletwo} \{ \langle 1 \rangle \} \{ \langle 2 \rangle \}$	$\rightarrow$
$\text{\ltx@gobblethree} \{ \langle 1 \rangle \} \{ \langle 2 \rangle \} \{ \langle 3 \rangle \}$	$\rightarrow$
$\text{\ltx@gobblefour} \{ \langle 1 \rangle \} \{ \langle 2 \rangle \} \{ \langle 3 \rangle \} \{ \langle 4 \rangle \}$	$\rightarrow$

## 1.3 Argument grabbers

$\text{\ltx@firstofone} \{ \langle 1 \rangle \}$	$\rightarrow$	$\langle 1 \rangle$
$\text{\ltx@firstoftwo} \{ \langle 1 \rangle \} \{ \langle 2 \rangle \}$	$\rightarrow$	$\langle 1 \rangle$
$\text{\ltx@secondoftwo} \{ \langle 1 \rangle \} \{ \langle 2 \rangle \}$	$\rightarrow$	$\langle 2 \rangle$

## 1.4 List helpers

$\text{\ltx@car} \{ \langle 1 \rangle \} \dots \text{\@nil}$	$\rightarrow$	$\langle 1 \rangle$
$\text{\ltx@cdr} \{ \langle 1 \rangle \} \dots \text{\@nil}$	$\rightarrow$	$\dots$

## 1.5 Tail recursion

$\text{\ltx@ReturnAfterFi} \{ \langle 1 \rangle \} \text{\fi}$	$\rightarrow$	$\text{\fi} \langle 1 \rangle$
$\text{\ltx@ReturnAfterElseFi} \{ \langle 1 \rangle \} \text{\else} \{ \langle 2 \rangle \} \text{\fi}$	$\rightarrow$	$\text{\fi} \langle 1 \rangle$

## 1.6 Empty macro

$\text{\ltx@empty}$
---------------------

## 1.7 Characters

$\text{\ltx@space}$
$\text{\ltx@percentchar}$
$\text{\ltx@backslashchar}$

## 1.8 Command definitions

`\ltx@ifundefined {<cmd>} {<yes>} {<no>}`

If  $\varepsilon$ -TeX is available, `\ifcsname` is used that does not have the side effect of defining undefined commands with meaning of `\relax`.

`\ltx@LocalExpandAfter`

It expands the token after the next token but in a local context. That is the difference to `\expandafter`. The local context discards the side effect of `\csname` and let the command undefined after the expansion step.

## 2 Implementation

### 2.1 Identification

```
1 (*package)
```

Reload check, especially if the package is not used with L<sup>A</sup>T<sub>E</sub>X.

```
2 \begingroup
3   \catcode44 12 % ,
4   \catcode45 12 % -
5   \catcode46 12 % .
6   \catcode58 12 % :
7   \catcode64 11 % @
8   \catcode123 1 % {
9   \catcode125 2 % }
10  \expandafter\let\expandafter\x\csname ver@ltxcmds.sty\endcsname
11  \ifx\x\relax % plain-TeX, first loading
12  \else
13    \def\empty{}%
14    \ifx\x\empty % LaTeX, first loading,
15      % variable is initialized, but \ProvidesPackage not yet seen
16    \else
17      \catcode35 6 % #
18      \expandafter\ifx\csname PackageInfo\endcsname\relax
19        \def\x#1#2{%
20          \immediate\write-1{Package #1 Info: #2.}%
21        }%
22      \else
23        \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
24      \fi
25      \x{ltxcmds}{The package is already loaded}%
26      \aftergroup\endinput
27    \fi
28  \fi
29 \endgroup
```

Package identification:

```
30 \begingroup
31   \catcode35 6 % #
32   \catcode40 12 % (
33   \catcode41 12 % )
34   \catcode44 12 % ,
35   \catcode45 12 % -
36   \catcode46 12 % .
37   \catcode47 12 % /
38   \catcode58 12 % :
39   \catcode64 11 % @
40   \catcode91 12 % [
```

```

41 \catcode93 12 % ]
42 \catcode123 1 % {
43 \catcode125 2 % }
44 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
45   \def\x#1#2#3[#4]{\endgroup
46     \immediate\write-1{Package: #3 #4}%
47     \xdef#1{#4}%
48   }%
49 \else
50   \def\x#1#2[#3]{\endgroup
51     #2[#3]}%
52   \ifx#1\undefined
53     \xdef#1{#3}%
54   \fi
55   \ifx#1\relax
56     \xdef#1{#3}%
57   \fi
58 }%
59 \fi
60 \expandafter\x\csname ver@ltxcmds.sty\endcsname
61 \ProvidesPackage{ltxcmds}%
62 [2009/08/05 v1.0 Some LaTeX kernel commands for general use (H0)]
63 \begingroup
64 \catcode123 1 % {
65 \catcode125 2 % }
66 \def\x{\endgroup
67   \expandafter\edef\csname ltx@AtEnd\endcsname{%
68     \catcode35 \the\catcode35\relax
69     \catcode64 \the\catcode64\relax
70     \catcode123 \the\catcode123\relax
71     \catcode125 \the\catcode125\relax
72   }%
73 }%
74 \x
75 \catcode35 6 % #
76 \catcode64 11 % @
77 \catcode123 1 % {
78 \catcode125 2 % }
79 \def\TMP@EnsureCode#1#2{%
80   \edef\ltx@AtEnd{%
81     \ltx@AtEnd
82     \catcode#1 \the\catcode#1\relax
83   }%
84   \catcode#1 #2\relax
85 }
86 \TMP@EnsureCode{61}{12}% =
87 \TMP@EnsureCode{96}{12}% ‘

```

## 2.2 Argument killers

\ltx@gobble

```
88 \long\def\ltx@gobble#1{}
```

\ltx@gobbletwo

```
89 \long\def\ltx@gobbletwo#1#2{}
```

\ltx@gobblethree

```
90 \long\def\ltx@gobblethree#1#2#3{}
```

\ltx@gobblefour

```
91 \long\def\ltx@gobblefour#1#2#3#4{}
```

## 2.3 Argument grabbers

```
\ltx@firstofone
92 \long\def\ltx@firstofone#1{#1}

\ltx@firstoftwo
93 \long\def\ltx@firstoftwo#1#2{#1}

\ltx@secondoftwo
94 \long\def\ltx@secondoftwo#1#2{#2}
```

## 2.4 List helpers

```
\ltx@car
95 \long\def\ltx@car#1#2\@nil{#1}

\ltx@cdr
96 \long\def\ltx@cdr#1#2\@nil{#2}
```

## 2.5 Tail recursion

```
\ltx@ReturnAfterFi
97 \long\def\ltx@ReturnAfterFi#1\fi{#1}

\ltx@ReturnAfterElseFi
98 \long\def\ltx@ReturnAfterFi#1\else#2\fi{#1}
```

## 2.6 Empty macro

```
\ltx@empty
99 \def\ltx@empty{}
```

## 2.7 Characters

```
\ltx@space
100 \def\ltx@space{ }

\ltx@percentchar
101 \begingroup
102 \lccode'0='%\relax
103 \lowercase{\endgroup
104 \def\ltx@percentchar{0}%
105 }

\ltx@backslashchar
106 \begingroup
107 \lccode'0='\\ \relax
108 \lowercase{\endgroup
109 \def\ltx@backslashchar{0}%
110 }
```

## 2.8 Command definitions

`\ltx@ifundefined`

```
111 \begingroup\expandafter\expandafter\expandafter\endgroup
112 \expandafter\ifx\csname ifcsname\endcsname\relax
113   \def\ltx@ifundefined#1{%
114     \expandafter\ifx\csname #1\endcsname\relax
115       \expandafter\ltx@firstoftwo
116     \else
117       \expandafter\ltx@secondoftwo
118     \fi
119   }%
120   \expandafter\ltx@gobble
121 \else
122   \expandafter\ltx@firstofone
123 \fi
124 {%
125   \def\ltx@ifundefined#1{%
126     \ifcsname #1\endcsname
127       \expandafter\ltx@secondoftwo
128     \else
129       \expandafter\ltx@firstoftwo
130     \fi
131   }%
132 }
```

`\ltx@LocalExpandAfter`

```
133 \def\ltx@LocalExpandAfter{%
134   \begingroup
135     \expandafter\expandafter\expandafter
136   \endgroup
137   \expandafter
138 }

139 \ltx@AtEnd
140 </package>
```

## 3 Test

### 3.1 Catcode checks for loading

```
141 <test1>
142 \catcode'\{=1 %
143 \catcode'\}=2 %
144 \catcode'\#=6 %
145 \catcode'\@=11 %
146 \expandafter\ifx\csname count@\endcsname\relax
147   \countdef\count@=255 %
148 \fi
149 \expandafter\ifx\csname @gobble\endcsname\relax
150   \long\def\@gobble#1{}%
151 \fi
152 \expandafter\ifx\csname @firstofone\endcsname\relax
153   \long\def\@firstofone#1{#1}%
154 \fi
155 \expandafter\ifx\csname loop\endcsname\relax
156   \expandafter\@firstofone
157 \else
158   \expandafter\@gobble
159 \fi
160 {%
```

```

161 \def\loop#1\repeat{%
162   \def\body{#1}%
163   \iterate
164 }%
165 \def\iterate{%
166   \body
167   \let\next\iterate
168   \else
169     \let\next\relax
170   \fi
171   \next
172 }%
173 \let\repeat=\fi
174 }%
175 \def\RestoreCatcodes{}
176 \count@=0 %
177 \loop
178   \edef\RestoreCatcodes{%
179     \RestoreCatcodes
180     \catcode\the\count@=\the\catcode\count@\relax
181   }%
182   \ifnum\count@<255 %
183     \advance\count@ 1 %
184   \repeat
185
186 \def\RangeCatcodeInvalid#1#2{%
187   \count@=#1\relax
188   \loop
189     \catcode\count@=15 %
190     \ifnum\count@<#2\relax
191       \advance\count@ 1 %
192     \repeat
193 }
194 \expandafter\ifx\csname LoadCommand\endcsname\relax
195   \def\LoadCommand{\input ltxcmds.sty\relax}%
196 \fi
197 \def\Test{%
198   \RangeCatcodeInvalid{0}{47}%
199   \RangeCatcodeInvalid{58}{64}%
200   \RangeCatcodeInvalid{91}{96}%
201   \RangeCatcodeInvalid{123}{255}%
202   \catcode'\@=12 %
203   \catcode'\=0 %
204   \catcode'\{=1 %
205   \catcode'\}=2 %
206   \catcode'\#=6 %
207   \catcode'\[=12 %
208   \catcode'\]=12 %
209   \catcode'\%=14 %
210   \catcode'\ =10 %
211   \catcode\l3=5 %
212   \LoadCommand
213   \RestoreCatcodes
214 }
215 \Test
216 \csname @@end\endcsname
217 \end
218 </test1>

```

## 4 Installation

### 4.1 Download

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

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

[CTAN:macros/latex/contrib/oberdiek/ltxcmds.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 T<sub>E</sub>X 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-T<sub>E</sub>X:

```
tex ltxcmds.dtx
```

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

<code>ltxcmds.sty</code>	→ <code>tex/generic/oberdiek/ltxcmds.sty</code>
<code>ltxcmds.pdf</code>	→ <code>doc/latex/oberdiek/ltxcmds.pdf</code>
<code>test/ltxcmds-test1.tex</code>	→ <code>doc/latex/oberdiek/test/ltxcmds-test1.tex</code>
<code>ltxcmds.dtx</code>	→ <code>source/latex/oberdiek/ltxcmds.dtx</code>

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 T<sub>E</sub>X distribution (teT<sub>E</sub>X, miK<sub>T</sub>E<sub>X</sub>, ...) relies on file name databases, you must refresh these. For example, teT<sub>E</sub>X users run `texhash` or `mktextlsr`.

---

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



## 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 ltxcmds.pdf unpack_files output .
```

**Unpacking with L<sup>A</sup>T<sub>E</sub>X.** The `.dtx` chooses its action depending on the format:

**plain-T<sub>E</sub>X:** Run `docstrip` and extract the files.

**L<sup>A</sup>T<sub>E</sub>X:** Generate the documentation.

If you insist on using L<sup>A</sup>T<sub>E</sub>X for `docstrip` (really, `docstrip` does not need L<sup>A</sup>T<sub>E</sub>X), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{ltxcmds.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 pdfL<sup>A</sup>T<sub>E</sub>X:

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

## 5 History

[2009/08/05 v1.0]

- First version.

## 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; numbers in roman refer to the code lines where the entry is used.

Symbols		
<code>\#</code>	144, 206	<code>\_</code> 210
<code>\%</code>	102, 209	
<code>\@</code>	145, 202	<b>A</b>
<code>\@firstofone</code>	153, 156	<code>\advance</code> 183, 191
<code>\@gobble</code>	150, 158	<code>\aftergroup</code> 26
<code>\@nil</code>	95, 96	<b>B</b>
<code>\@undefined</code>	52	<code>\body</code> 162, 166
<code>\[</code>	207	
<code>\]</code>	107, 203	<b>C</b>
<code>\{</code>	142, 204	<code>\catcode</code> 3, 4, 5, 6, 7, 8, 9, 17, 31, 32,
<code>\}</code>	143, 205	33, 34, 35, 36, 37, 38, 39, 40, 41,
<code>\]</code>	208	42, 43, 64, 65, 68, 69, 70, 71, 75,

76, 77, 78, 82, 84, 142, 143, 144, 145, 180, 189, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211	\ltx@firstoftwo ..... <u>93</u> , <u>115</u> , <u>129</u>
\count@ ..... 147, 176, 180, 182, 183, 187, 189, 190, 191	\ltx@gobble ..... <u>2</u> , <u>88</u> , <u>120</u>
\countdef ..... 147	\ltx@gobblefour ..... <u>91</u>
\csname .... 10, 18, 44, 60, 67, 112, 114, 146, 149, 152, 155, 194, 216	\ltx@gobblethree ..... <u>90</u>
	\ltx@gobbletwo ..... <u>89</u>
	\ltx@ifundefined ..... <u>3</u> , <u>111</u>
	\ltx@LocalExpandAfter ..... <u>3</u> , <u>133</u>
	\ltx@percentchar ..... <u>101</u>
	\ltx@ReturnAfterElseFi ..... <u>98</u>
	\ltx@ReturnAfterFi ..... <u>2</u> , <u>97</u> , <u>98</u>
	\ltx@secondoftwo ..... <u>94</u> , <u>117</u> , <u>127</u>
	\ltx@space ..... <u>2</u> , <u>100</u>
<b>E</b>	<b>N</b>
\empty ..... 13, 14	\next ..... 167, 169, 171
\end ..... 217	
\endcsname 10, 18, 44, 60, 67, 112, 114, 126, 146, 149, 152, 155, 194, 216	
\endinginput ..... 26	
<b>I</b>	<b>P</b>
\ifcsname ..... 126	\PackageInfo ..... 23
\ifnum ..... 182, 190	\ProvidesPackage ..... 15, 61
\ifx ..... 11, 14, 18, 44, 52, 55, 112, 114, 146, 149, 152, 155, 194	
\immediate ..... 20, 46	<b>R</b>
\input ..... 195	\RangeCatcodeInvalid ..... ..... 186, 198, 199, 200, 201
\iterate ..... 163, 165, 167	\repeat ..... 161, 173, 184, 192
<b>L</b>	\RestoreCatcodes .. 175, 178, 179, 213
\lccode ..... 102, 107	
\LoadCommand ..... 195, 212	<b>T</b>
\loop ..... 161, 177, 188	\Test ..... 197, 215
\lowercase ..... 103, 108	\the ..... 68, 69, 70, 71, 82, 180
\ltx@AtEnd ..... 80, 81, 139	\TMP@EnsureCode ..... 79, 86, 87
\ltx@backslashchar ..... <u>106</u>	<b>W</b>
\ltx@car ..... <u>2</u> , <u>95</u>	\write ..... 20, 46
\ltx@cdr ..... <u>96</u>	
\ltx@empty ..... <u>2</u> , <u>99</u>	<b>X</b>
\ltx@firstofone ..... <u>2</u> , <u>92</u> , <u>122</u>	\x 10, 11, 14, 19, 23, 25, 45, 50, 60, 66, 74