

# The engord package

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## Abstract

The package generates the suffix of English ordinal numbers. It can be used with plain and L<sup>A</sup>T<sub>E</sub>X formats.

## Contents

<b>1</b>	<b>Usage</b>	<b>2</b>
1.1	Package options . . . . .	2
1.2	Examples . . . . .	2
<b>2</b>	<b>Implementation</b>	<b>3</b>
2.1	Reload check and identification . . . . .	3
2.2	Help commands for plain compatibility . . . . .	4
2.3	User macros . . . . .	5
2.4	Suffix generation . . . . .	6
<b>3</b>	<b>Test</b>	<b>8</b>
3.1	Catcode checks for loading . . . . .	8
<b>4</b>	<b>Installation</b>	<b>10</b>
4.1	Download . . . . .	10
4.2	Bundle installation . . . . .	10
4.3	Package installation . . . . .	10
4.4	Refresh file name databases . . . . .	11
4.5	Some details for the interested . . . . .	11
<b>5</b>	<b>History</b>	<b>11</b>
	[2000/05/23 v1.0] . . . . .	11
	[2003/04/28 v1.1] . . . . .	11
	[2006/02/20 v1.2] . . . . .	11
	[2007/04/11 v1.3] . . . . .	12
	[2007/04/26 v1.4] . . . . .	12
	[2007/09/09 v1.5] . . . . .	12
	[2007/09/20 v1.6] . . . . .	12
	[2008/08/11 v1.7] . . . . .	12
	[2010/03/01 v1.8] . . . . .	12
	[2016/05/16 v1.9] . . . . .	12

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\*Please report any issues at <https://github.com/ho-tex/oberdiek/issues>

# 1 Usage

`\engord{<LATEX counter name>}`

It prints the value of the L<sup>A</sup>T<sub>E</sub>X counter as English ordinal number. It can be used in the same way as `\arabic`, `\roman`, or `\alph`. The command is not available in plain T<sub>E</sub>X.

`\engordnumber{<any TEX number>}`

It prints the number as English ordinal number.

`\engordletters{#1}`

This command formats the English ordinal letters after the number. It defaults to `\textsuperscript`.

`\engorderror{#1}`

It can be redefined, if an other error handling is wanted. The argument is a negative number or zero.

`\engordraisetrue`  
`\engordraisefalse`

These commands set the switch `\ifengordraise` that is asked by the default `\engordletters` before raising the ordinal letters.

## 1.1 Package options

**normal:** `\engordraisefalse`

**raise:** `\engordraisetrue`

Default is raise.

## 1.2 Examples

- ```
\usepackage[normal]{engord}
\engordnumber{1}   → 1st
\engordnumber{12}  → 12th
\engordnumber{123} → 123rd
\engord{page}      → 1st (if page has the value of one)
\engordraisetrue
\engordnumber{12}  → 12th
```
- The default output of a counter can be redefined:

```
\newcounter{mycounter}
\renewcommand{\theengcounter}{\engord{mycounter}}
```
- Because the implementation of `\engord` and `\engordnumber` is kept expandable, these commands can be used to make command names with an appropriate definition of `\engordletters`:

```
\renewcommand*{\engordletters}[1]{#1}
\@namedef{My\engordnumber{3}Command}{...}
```

This generates the command name ‘\My4rdCommand’. Since version 1.2 the redefinition can be dropped if the letters are not raised.

- If the letters should not be raised, use L<sup>A</sup>T<sub>E</sub>X package option `normal` or use

```
\engordraisefalse
```

Also `\engordletters` could be redefined for this purpose:

```
\renewcommand*{\engordletters}[1]{#1}
```

## 2 Implementation

### 2.1 Reload check and identification

```
1 \<*package>
```

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

```
2 \begingroup\catcode61\catcode48\catcode32=10\relax%
3 \catcode13=5 % ^M
4 \endlinechar=13 %
5 \catcode35=6 % #
6 \catcode39=12 % '
7 \catcode44=12 % ,
8 \catcode45=12 % -
9 \catcode46=12 % .
10 \catcode58=12 % :
11 \catcode64=11 % @
12 \catcode123=1 % {
13 \catcode125=2 % }
14 \expandafter\let\expandafter\x\csname ver@engord.sty\endcsname
15 \ifx\x\relax % plain-TeX, first loading
16 \else
17 \def\empty{}%
18 \ifx\x\empty % LaTeX, first loading,
19 % variable is initialized, but \ProvidesPackage not yet seen
20 \else
21 \expandafter\ifx\csname PackageInfo\endcsname\relax
22 \def\x#1#2{%
23 \immediate\write-1{Package #1 Info: #2.}%
24 }%
25 \else
26 \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
27 \fi
28 \x{engord}{The package is already loaded}%
29 \aftergroup\endinput
30 \fi
31 \fi
32 \endgroup%
```

Package identification:

```
33 \begingroup\catcode61\catcode48\catcode32=10\relax%
34 \catcode13=5 % ^M
35 \endlinechar=13 %
36 \catcode35=6 % #
37 \catcode39=12 % '

```

```

38 \catcode40=12 % (
39 \catcode41=12 % )
40 \catcode44=12 % ,
41 \catcode45=12 % -
42 \catcode46=12 % .
43 \catcode47=12 % /
44 \catcode58=12 % :
45 \catcode64=11 % @
46 \catcode91=12 % [
47 \catcode93=12 % ]
48 \catcode123=1 % {
49 \catcode125=2 % }
50 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
51   \def\x#1#2#3[#4]{\endgroup
52     \immediate\write-1{Package: #3 #4}%
53     \xdef#1[#4]%
54   }%
55 \else
56   \def\x#1#2[#3]{\endgroup
57     #2[#{#3}]%
58     \ifx#1\@undefined
59       \xdef#1[#3]%
60     \fi
61     \ifx#1\relax
62       \xdef#1[#3]%
63     \fi
64   }%
65 \fi
66 \expandafter\x\csname ver@engord.sty\endcsname
67 \ProvidesPackage{engord}%
68 [2016/05/16 v1.9 Provides English ordinal numbers (H0)]%

```

## 2.2 Help commands for plain compatibility

```

69 \begingroup\catcode61\catcode48\catcode32=10\relax%
70 \catcode13=5 % ^~M
71 \endlinechar=13 %
72 \catcode123=1 % {
73 \catcode125=2 % }
74 \catcode64=11 % @
75 \def\x{\endgroup
76   \expandafter\edef\csname EO@AtEnd\endcsname{%
77     \endlinechar=\the\endlinechar\relax
78     \catcode13=\the\catcode13\relax
79     \catcode32=\the\catcode32\relax
80     \catcode35=\the\catcode35\relax
81     \catcode61=\the\catcode61\relax
82     \catcode64=\the\catcode64\relax
83     \catcode123=\the\catcode123\relax
84     \catcode125=\the\catcode125\relax
85   }%
86 }%
87 \x\catcode61\catcode48\catcode32=10\relax%
88 \catcode13=5 % ^~M
89 \endlinechar=13 %
90 \catcode35=6 % #
91 \catcode64=11 % @
92 \catcode123=1 % {
93 \catcode125=2 % }

```

```

94 \def\TMP@EnsureCode#1#2{%
95   \edef\EO@AtEnd{%
96     \EO@AtEnd
97     \catcode#1=\the\catcode#1\relax
98   }%
99   \catcode#1=#2\relax
100 }
101 \TMP@EnsureCode{33}{12}% !
102 \TMP@EnsureCode{36}{3}% $
103 \TMP@EnsureCode{39}{12}% '
104 \TMP@EnsureCode{42}{12}% *
105 \TMP@EnsureCode{46}{12}% .
106 \TMP@EnsureCode{47}{12}% /
107 \TMP@EnsureCode{60}{12}% <
108 \TMP@EnsureCode{91}{12}% [
109 \TMP@EnsureCode{93}{12}% ]
110 \TMP@EnsureCode{94}{7}% ^ (superscript)
111 \TMP@EnsureCode{96}{12}% `
112 \edef\EO@AtEnd{\EO@AtEnd\noexpand\endinput}
\EO@def Definitions, \newcommand does not exist in plain TEX.
113 \begingroup\expandafter\expandafter\expandafter\endgroup
114 \expandafter\ifx\csname newcommand\endcsname\relax
115   \def\EO@def{\def}%
116 \else
117   \def\EO@def#1{%
118     \newcommand*{#1}{}%
119     \def#1%
120   }%
121 \fi

122 \begingroup\expandafter\expandafter\expandafter\endgroup
123 \expandafter\ifx\csname RequirePackage\endcsname\relax
124   \input infwarerr.sty\relax
125   \input ltxcmds.sty\relax
126 \else
127   \RequirePackage{infwarerr}[2007/09/09]%
128   \RequirePackage{ltxcmds}[2016/05/16]%
129 \fi

```

## 2.3 User macros

`\ifengordraise` The switch `\ifengordraise`, whether the ordinal letters are raised or not. Default is raised because of compatibility.

```

130 \ltx@newif\ifengordraise
131 \engordraisetrue

```

In L<sup>A</sup>T<sub>E</sub>X this also can be controlled by option `normal` or `raise`.

```

132 \begingroup\expandafter\expandafter\expandafter\endgroup
133 \expandafter\ifx\csname DeclareOption\endcsname\relax
134 \else
135   \DeclareOption{normal}{\engordraisefalse}%
136   \DeclareOption{raise}{\engordraisetrue}%
137   \ProcessOptions*\relax
138 \fi

```

`\engordletters` `\engordletters` is called with one argument, the english ordinal letters, and contains the code to format them. It defaults to `\textsuperscript` depending on `\ifengordraise`.

```

139 \expandafter\ifx\csname engordletters\endcsname\relax
140   \EO@def\engordletters{%
141     \ifengordraise
142       \expandafter\engordtextsuperscript
143     \fi
144   }%
145 \fi

```

`\engordtextsuperscript` For plain T<sub>E</sub>X the definition is quite ugly, redefine `\engordtextsuperscript` if you have a better one.

```

146 \expandafter\ifx\csname engordtextsuperscript\endcsname\relax
147   \begingroup\expandafter\expandafter\expandafter\endgroup
148   \expandafter\ifx\csname textsuperscript\endcsname\relax
149     \def\engordtextsuperscript#1{%
150       \relax
151       \ifmmode
152         ^{\rm#1}%
153       \else
154         $^{\rm#1}$%
155       \fi
156     }%
157   \else
158     \def\engordtextsuperscript{\textsuperscript}%
159   \fi
160 \fi

```

`\engorderror` `\engorderror` is called, if the number is zero or negative.

```

161 \expandafter\ifx\csname engorderror\endcsname\relax
162   \EO@def\engorderror#1{%
163     #1\engordletters{!ERROR!}%
164     \@PackageWarning{engord}{%
165       `#1' is not an ordinal number%
166     }%
167   }%
168 \fi

```

`\engord` `\engord` expects a L<sup>A</sup>T<sub>E</sub>X counter name as argument and calls `\engordnumber`. It is defined only, if L<sup>A</sup>T<sub>E</sub>X is used.

```

169 \begingroup\expandafter\expandafter\expandafter\endgroup
170 \expandafter\ifx\csname newcounter\endcsname\relax
171 \else
172   \EO@def\engord#1{%
173     \engordnumber{\value{#1}}%
174   }%
175 \fi

```

`\engordnumber` `\engordnumber` is the user command to print a number as english ordinal number. The argument can be any T<sub>E</sub>X number like explicit numbers, register values, ...

In a safe way it converts the T<sub>E</sub>X number argument into a form that only consists of decimal digits.

```

176 \EO@def\engordnumber#1{%
177   \expandafter\EO@number\expandafter{\number#1}%
178 }

```

## 2.4 Suffix generation

`\EO@number` `\EO@number` expects a number with decimal digits as argument and looks at the size of the number and the count of the digits:

```

179 \def\EO@number#1{%
180   \ifnum#1<1 % handle the error case
181     \engorderror{#1}%
182   \else
183     \ifnum#1<21 %
184       \EO@ord{#1}%
185     \else
186       \ifnum#1<100 %
187         \EO@twodigits#1%
188       \else
189         \@ReturnAfterFi{%
190           \EO@reverse#1\@nil{}}\EO@afterreverse
191         }%
192       \fi
193     \fi
194   \fi
195 }

```

`\@ReturnAfterFi` An internal help macro to prevent a too deep `\if` nesting.

```

196 \long\def\@ReturnAfterFi#1\fi{\fi#1}

```

`\EO@ord` `\EO@ord` prints the number with ord letters.

**#1:** decimal digits,  $\#1 < 21$

```

197 \def\EO@ord#1{%
198   #1%
199   \expandafter\engordletters
200   \ifcase#1{th}\or
201     {st}\or
202     {nd}\or
203     {rd}\else
204     {th}%
205   \fi
206 }

```

`\EO@twodigits` `\EO@twodigits` expects a number with two digits,  
 $20 < \text{number} < 100$

```

207 \def\EO@twodigits#1#2{%
208   #1\EO@ord{#2}%
209 }

```

`\EO@reverse` `\EO@reverse` reverses the digits of the number.

**#1:** next digit

**#2:** rest of the digits

**#3:** already reversed digits

**#4:** next command to call with the reversed number as argument

```

210 \def\EO@reverse#1#2\@nil#3#4{%
211   \ifx\#2\%
212     #4{#1#3}%
213   \else
214     \@ReturnAfterFi{%
215       \EO@reverse#2\@nil{#1#3}{#4}%
216     }%
217   \fi
218 }

```

`\EO@afterreverse` `\EO@afterreverse` calls `\EO@reverseback` so that `\EO@reverseback` can inspect the digits of the number.

```

219 \def\E0@afterreverse#1{%
220   \E0@reverseback#1\@nil
221 }

\E0@reverseback \E0@reverseback reverses the reversion.
#1: the last digit of the number
#2: the second last digit of the number
#3: first digits of the number in reversed order, it is not empty, because
\E0@reverseback is only called with numbers > 100.
222 \def\E0@reverseback#1#2#3\@nil{%
223   \E0@reverse#3\@nil{}\@firstofone
224   \ifnum#2#1<21 %
225     \E0@ord{#2#1}%
226   \else
227     #2\E0@ord{#1}%
228   \fi
229 }

230 \EO@AtEnd%
231 \</package>

```

### 3 Test

#### 3.1 Catcode checks for loading

```

232 \*test1)
233 \catcode`\{=1 %
234 \catcode`\}=2 %
235 \catcode`\#=6 %
236 \catcode`\@=11 %
237 \expandafter\ifx\csname count@\endcsname\relax
238   \countdef\count@=255 %
239 \fi
240 \expandafter\ifx\csname @gobble\endcsname\relax
241   \long\def\@gobble#1{%
242 \fi
243 \expandafter\ifx\csname @firstofone\endcsname\relax
244   \long\def\@firstofone#1{#1}%
245 \fi
246 \expandafter\ifx\csname loop\endcsname\relax
247   \expandafter\@firstofone
248 \else
249   \expandafter\@gobble
250 \fi
251 {%
252   \def\loop#1\repeat{%
253     \def\body{#1}%
254     \iterate
255   }%
256   \def\iterate{%
257     \body
258     \let\next\iterate
259   \else
260     \let\next\relax
261   \fi
262   \next

```



```

263 }%
264 \let\repeat=\fi
265 }%
266 \def\RestoreCatcodes{}
267 \count@=0 %
268 \loop
269 \edef\RestoreCatcodes{%
270 \RestoreCatcodes
271 \catcode\the\count@=\the\catcode\count@\relax
272 }%
273 \ifnum\count@<255 %
274 \advance\count@ 1 %
275 \repeat
276
277 \def\RangeCatcodeInvalid#1#2{%
278 \count@=#1\relax
279 \loop
280 \catcode\count@=15 %
281 \ifnum\count@<#2\relax
282 \advance\count@ 1 %
283 \repeat
284 }
285 \def\RangeCatcodeCheck#1#2#3{%
286 \count@=#1\relax
287 \loop
288 \ifnum#3=\catcode\count@
289 \else
290 \errmessage{%
291 Character \the\count@\space
292 with wrong catcode \the\catcode\count@\space
293 instead of \number#3%
294 }%
295 \fi
296 \ifnum\count@<#2\relax
297 \advance\count@ 1 %
298 \repeat
299 }
300 \def\space{ }
301 \expandafter\ifx\csname LoadCommand\endcsname\relax
302 \def\LoadCommand{\input engord.sty\relax}%
303 \fi
304 \def\Test{%
305 \RangeCatcodeInvalid{0}{47}%
306 \RangeCatcodeInvalid{58}{64}%
307 \RangeCatcodeInvalid{91}{96}%
308 \RangeCatcodeInvalid{123}{255}%
309 \catcode`\@=12 %
310 \catcode`\=0 %
311 \catcode`\%=14 %
312 \LoadCommand
313 \RangeCatcodeCheck{0}{36}{15}%
314 \RangeCatcodeCheck{37}{37}{14}%
315 \RangeCatcodeCheck{38}{47}{15}%
316 \RangeCatcodeCheck{48}{57}{12}%
317 \RangeCatcodeCheck{58}{63}{15}%
318 \RangeCatcodeCheck{64}{64}{12}%
319 \RangeCatcodeCheck{65}{90}{11}%
320 \RangeCatcodeCheck{91}{91}{15}%

```

```

321 \RangeCatcodeCheck{92}{92}{0}%
322 \RangeCatcodeCheck{93}{96}{15}%
323 \RangeCatcodeCheck{97}{122}{11}%
324 \RangeCatcodeCheck{123}{255}{15}%
325 \RestoreCatcodes
326 }
327 \Test
328 \csname @@end\endcsname
329 \end
330 </test1>

```

## 4 Installation

### 4.1 Download

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

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

[CTAN:macros/latex/contrib/oberdiek/engord.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:pkg/tds](#)). 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
```

### 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 engord.dtx
```

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

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

---

<sup>1</sup>[CTAN:pkg/engord](#)

## 4.4 Refresh file name databases

If your T<sub>E</sub>X distribution (T<sub>E</sub>X Live, mikT<sub>E</sub>X, ...) relies on file name databases, you must refresh these. For example, T<sub>E</sub>X Live users run `texhash` or `mktexlsr`.

## 4.5 Some details for the interested

**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{engord.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 engord.dtx
makeindex -s gind.ist engord.idx
pdflatex engord.dtx
makeindex -s gind.ist engord.idx
pdflatex engord.dtx
```

## 5 History

[2000/05/23 v1.0]

- First public release, published in newsgroup `de.comp.text.tex`:  
“Re: Ordinalzahlen in LaTeX?”<sup>2</sup>

[2003/04/28 v1.1]

- Bug fix for 30, 40, 50, ..., 100, 130, ...
- `\ordletters` renamed to documented `\engordletters`.

[2006/02/20 v1.2]

- Support for plain T<sub>E</sub>X.
- Switch `\ifengordraise` added.
- Package options `raise` and `normal` added.
- DTX framework.

---

<sup>2</sup>Url: <https://groups.google.com/group/de.comp.text.tex/msg/738e2cb4c51759d6>

[2007/04/11 v1.3]

- Line ends sanitized.

[2007/04/26 v1.4]

- Use of package infwarerr.

[2007/09/09 v1.5]

- Catcode section added.

[2007/09/20 v1.6]

- Short description fixed (George White).

[2008/08/11 v1.7]

- Code is not changed.
- URLs updated.

[2010/03/01 v1.8]

- Compatibility with ini-TeX.

[2016/05/16 v1.9]

- Documentation updates.

## 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.

| Symbols                       |                              | C                           |                                                                                                                                                                                                                                                              |
|-------------------------------|------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>\#</code>               | 235                          | <code>\catcode</code>       | 2, 3, 5, 6, 7, 8, 9, 10,<br>11, 12, 13, 33, 34, 36, 37, 38, 39,<br>40, 41, 42, 43, 44, 45, 46, 47, 48,<br>49, 69, 70, 72, 73, 74, 78, 79, 80,<br>81, 82, 83, 84, 87, 88, 90, 91, 92,<br>93, 97, 99, 233, 234, 235, 236,<br>271, 280, 288, 292, 309, 310, 311 |
| <code>\%</code>               | 311                          | <code>\count@</code>        | 238, 267,<br>271, 273, 274, 278, 280, 281,<br>282, 286, 288, 291, 292, 296, 297                                                                                                                                                                              |
| <code>\@</code>               | 236, 309                     | <code>\countdef</code>      | 238                                                                                                                                                                                                                                                          |
| <code>\@PackageWarning</code> | 164                          | <code>\csname</code>        | 14, 21, 50, 66, 76, 114,<br>123, 133, 139, 146, 148, 161,<br>170, 237, 240, 243, 246, 301, 328                                                                                                                                                               |
| <code>\@ReturnAfterFi</code>  | 189, <u>196</u> , 214        |                             |                                                                                                                                                                                                                                                              |
| <code>\@firstofone</code>     | 223, 244, 247                |                             |                                                                                                                                                                                                                                                              |
| <code>\@gobble</code>         | 241, 249                     |                             |                                                                                                                                                                                                                                                              |
| <code>\@nil</code>            | 190, 210, 215, 220, 222, 223 |                             |                                                                                                                                                                                                                                                              |
| <code>\@undefined</code>      | 58                           |                             |                                                                                                                                                                                                                                                              |
| <code>\%</code>               | 211, 310                     |                             |                                                                                                                                                                                                                                                              |
| <code>\{</code>               | 233                          |                             |                                                                                                                                                                                                                                                              |
| <code>\}</code>               | 234                          |                             |                                                                                                                                                                                                                                                              |
| A                             |                              | D                           |                                                                                                                                                                                                                                                              |
| <code>\advance</code>         | 274, 282, 297                | <code>\DeclareOption</code> | 135, 136                                                                                                                                                                                                                                                     |
| <code>\aftergroup</code>      | 29                           |                             |                                                                                                                                                                                                                                                              |
| B                             |                              | E                           |                                                                                                                                                                                                                                                              |
| <code>\body</code>            | 253, 257                     | <code>\empty</code>         | 17, 18                                                                                                                                                                                                                                                       |

|                                           |                                                                                                    |  |  |                                                                      |                                                      |
|-------------------------------------------|----------------------------------------------------------------------------------------------------|--|--|----------------------------------------------------------------------|------------------------------------------------------|
| <code>\end</code> .....                   | 329                                                                                                |  |  | <b>N</b>                                                             |                                                      |
| <code>\endcsname</code> .                 | 14, 21, 50, 66, 76, 114,<br>123, 133, 139, 146, 148, 161,<br>170, 237, 240, 243, 246, 301, 328     |  |  | <code>\newcommand</code> .....                                       | 118                                                  |
| <code>\endinput</code> .....              | 29, 112                                                                                            |  |  | <code>\next</code> .....                                             | 258, 260, 262                                        |
| <code>\endlinechar</code> .....           | 4, 35, 71, 77, 89                                                                                  |  |  | <code>\number</code> .....                                           | 177, 293                                             |
| <code>\engord</code> .....                | 2, 169                                                                                             |  |  | <b>P</b>                                                             |                                                      |
| <code>\engorderror</code> .....           | 2, 161, 181                                                                                        |  |  | <code>\PackageInfo</code> .....                                      | 26                                                   |
| <code>\engordletters</code> .....         | 2, 139, 163, 199                                                                                   |  |  | <code>\ProcessOptions</code> .....                                   | 137                                                  |
| <code>\engordnumber</code> .....          | 2, 173, 176                                                                                        |  |  | <code>\ProvidesPackage</code> .....                                  | 19, 67                                               |
| <code>\engordraisefalse</code> .....      | 2, 135                                                                                             |  |  | <b>R</b>                                                             |                                                      |
| <code>\engordraisetrue</code> .....       | 2, 131, 136                                                                                        |  |  | <code>\RangeCatcodeCheck</code> .....                                |                                                      |
| <code>\engordtextsuperscript</code> ..... | 142, 146                                                                                           |  |  | . 285, 313, 314, 315, 316, 317,<br>318, 319, 320, 321, 322, 323, 324 |                                                      |
| <code>\EO@afterreverse</code> .....       | 190, 219                                                                                           |  |  | <code>\RangeCatcodeInvalid</code> .....                              |                                                      |
| <code>\EO@AtEnd</code> .....              | 95, 96, 112, 230                                                                                   |  |  | ..... 277, 305, 306, 307, 308                                        |                                                      |
| <code>\EO@def</code> .....                | 113, 140, 162, 172, 176                                                                            |  |  | <code>\repeat</code> .....                                           | 252, 264, 275, 283, 298                              |
| <code>\EO@number</code> .....             | 177, 179                                                                                           |  |  | <code>\RequirePackage</code> .....                                   | 127, 128                                             |
| <code>\EO@ord</code> .....                | 184, 197, 208, 225, 227                                                                            |  |  | <code>\RestoreCatcodes</code> ..                                     | 266, 269, 270, 325                                   |
| <code>\EO@reverse</code> .....            | 190, 210, 223                                                                                      |  |  | <code>\rm</code> .....                                               | 152, 154                                             |
| <code>\EO@reverseback</code> .....        | 220, 222                                                                                           |  |  | <b>S</b>                                                             |                                                      |
| <code>\EO@twodigits</code> .....          | 187, 207                                                                                           |  |  | <code>\space</code> .....                                            | 291, 292, 300                                        |
| <code>\errmessage</code> .....            | 290                                                                                                |  |  | <b>T</b>                                                             |                                                      |
| <b>I</b>                                  |                                                                                                    |  |  | <code>\Test</code> .....                                             | 304, 327                                             |
| <code>\ifcase</code> .....                | 200                                                                                                |  |  | <code>\textsuperscript</code> .....                                  | 158                                                  |
| <code>\ifengordraise</code> .....         | 130, 141                                                                                           |  |  | <code>\the</code> .....                                              | 77, 78, 79,<br>80, 81, 82, 83, 84, 97, 271, 291, 292 |
| <code>\ifmmode</code> .....               | 151                                                                                                |  |  | <code>\TMP@EnsureCode</code> .....                                   |                                                      |
| <code>\ifnum</code> .....                 | 180,<br>183, 186, 224, 273, 281, 288, 296                                                          |  |  | ..... 94, 101, 102, 103, 104,<br>105, 106, 107, 108, 109, 110, 111   |                                                      |
| <code>\ifx</code> ...                     | 15, 18, 21, 50, 58, 61, 114,<br>123, 133, 139, 146, 148, 161,<br>170, 211, 237, 240, 243, 246, 301 |  |  | <b>V</b>                                                             |                                                      |
| <code>\immediate</code> .....             | 23, 52                                                                                             |  |  | <code>\value</code> .....                                            | 173                                                  |
| <code>\input</code> .....                 | 124, 125, 302                                                                                      |  |  | <b>W</b>                                                             |                                                      |
| <code>\iterate</code> .....               | 254, 256, 258                                                                                      |  |  | <code>\write</code> .....                                            | 23, 52                                               |
| <b>L</b>                                  |                                                                                                    |  |  | <b>X</b>                                                             |                                                      |
| <code>\LoadCommand</code> .....           | 302, 312                                                                                           |  |  | <code>\x</code> 14, 15, 18, 22, 26, 28, 51, 56, 66, 75, 87           |                                                      |
| <code>\loop</code> .....                  | 252, 268, 279, 287                                                                                 |  |  |                                                                      |                                                      |
| <code>\ltx@newif</code> .....             | 130                                                                                                |  |  |                                                                      |                                                      |