

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^AT_EX formats.

Contents

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

1 Usage

`\engord{<LATEX counter name>}`

It prints the value of the L^AT_EX 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_EX.

`\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^AT_EX 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^AT_EX.

```
2 \begingroup
3 \catcode44 12 % ,
4 \catcode45 12 % -
5 \catcode46 12 % .
6 \catcode58 12 % :
7 \catcode64 11 % @
8 \expandafter\let\expandafter\x\csname ver@engord.sty\endcsname
9 \ifcase 0%
10 \ifx\x\relax % plain
11 \else
12 \ifx\x\empty % LaTeX
13 \else
14 1%
15 \fi
16 \fi
17 \else
18 \catcode35 6 % #
19 \catcode123 1 % {
20 \catcode125 2 % }
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 \endgroup
30 \expandafter\endinput
31 \fi
32 \endgroup
```

Package identification:

```
33 \begingroup
34 \catcode35 6 % #
35 \catcode40 12 % (
36 \catcode41 12 % )
37 \catcode44 12 % ,
38 \catcode45 12 % -
39 \catcode46 12 % .
40 \catcode47 12 % /
41 \catcode58 12 % :
42 \catcode64 11 % @
43 \catcode123 1 % {
44 \catcode125 2 % }
45 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
46 \def\x#1#2#3[#4]{\endgroup
47 \immediate\write-1{Package: #3 #4}%
48 \xdef#1{#4}%
49 }%
50 \else
51 \def\x#1#2[#3]{\endgroup
52 #2[#3]}%
53 \ifx#1\relax
54 \xdef#1{#3}%
55 \fi
56 }%
```

```

57 \fi
58 \expandafter\x\csname ver@engord.sty\endcsname
59 \ProvidesPackage{engord}%
60 [2007/09/20 v1.6 Provides English ordinal numbers (H0)]

```

2.2 Help commands for plain compatibility

```

61 \begingroup
62 \catcode123 1 % {
63 \catcode125 2 % }
64 \def\x{\endgroup
65 \expandafter\edef\csname EO@AtEnd\endcsname{%
66 \catcode35 \the\catcode35\relax
67 \catcode64 \the\catcode64\relax
68 \catcode123 \the\catcode123\relax
69 \catcode125 \the\catcode125\relax
70 }%
71 }%
72 \x
73 \catcode35 6 % #
74 \catcode64 11 % @
75 \catcode123 1 % {
76 \catcode125 2 % }
77 \def\TMP@EnsureCode#1#2{%
78 \edef\EO@AtEnd{%
79 \EO@AtEnd
80 \catcode#1 \the\catcode#1\relax
81 }%
82 \catcode#1 #2\relax
83 }
84 \TMP@EnsureCode{33}{12}% !
85 \TMP@EnsureCode{36}{3}% $
86 \TMP@EnsureCode{39}{12}% '
87 \TMP@EnsureCode{42}{12}% *
88 \TMP@EnsureCode{46}{12}% .
89 \TMP@EnsureCode{47}{12}% /
90 \TMP@EnsureCode{60}{12}% <
91 \TMP@EnsureCode{94}{7}% ^ (superscript)
92 \TMP@EnsureCode{96}{12}% '

```

\EO@def Definitions, \newcommand does not exist in plain-TeX.

```

93 \begingroup\expandafter\expandafter\expandafter\endgroup
94 \expandafter\ifx\csname newcommand\endcsname\relax
95 \def\EO@def{\def}%
96 \else
97 \def\EO@def#1{%
98 \newcommand*{#1}{}%
99 \def#1%
100 }%
101 \fi

102 \begingroup\expandafter\expandafter\expandafter\endgroup
103 \expandafter\ifx\csname RequirePackage\endcsname\relax
104 \input infwarerr.sty\relax
105 \else
106 \RequirePackage{infwarerr}[2007/09/09]%
107 \fi

```

2.3 User macros

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

```

108 \newif\ifengordraise
109 \engordraisetrue

```

In L^AT_EX this also can be controlled by option normal or raise.

```

110 \begingroup\expandafter\expandafter\expandafter\endgroup
111 \expandafter\ifx\csname DeclareOption\endcsname\relax
112 \else
113   \DeclareOption{normal}{\engordraisefalse}%
114   \DeclareOption{raise}{\engordraisetrue}%
115   \ProcessOptions*\relax
116 \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`.

```

117 \expandafter\ifx\csname engordletters\endcsname\relax
118   \EO@def\engordletters{%
119     \ifengordraise
120       \expandafter\engordtextsuperscript
121     \fi
122   }%
123 \fi

```

\engordtextsuperscript For plain-T_EX the definition is quite ugly, redefine `\engordtextsuperscript` if you have a better one.

```

124 \expandafter\ifx\csname engordtextsuperscript\endcsname\relax
125   \begingroup\expandafter\expandafter\expandafter\endgroup
126   \expandafter\ifx\csname textsuperscript\endcsname\relax
127     \def\engordtextsuperscript#1{%
128       \relax
129       \ifmmode
130         ^{\rm#1}%
131       \else
132         ${\rm#1}$%
133       \fi
134     }%
135   \else
136     \def\engordtextsuperscript{\textsuperscript}%
137   \fi
138 \fi

```

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

```

139 \expandafter\ifx\csname engorderror\endcsname\relax
140   \EO@def\engorderror#1{%
141     #1\engordletters{!ERROR!}%
142     \@PackageWarning{engord}{%
143       ‘#1’ is not an ordinal number%
144     }%
145   }%
146 \fi

```

\engord `\engord` expects a L^AT_EX counter name as argument and calls `\engordnumber`. It is defined only, if L^AT_EX is used.

```

147 \begingroup\expandafter\expandafter\expandafter\endgroup
148 \expandafter\ifx\csname newcounter\endcsname\relax
149 \else
150   \EO@def\engord#1{%
151     \engordnumber{\value{#1}}%
152   }%
153 \fi

```

\engordnumber `\engordnumber` is the user command to print a number as english ordinal number. The argument can be any T_EX number like explicit numbers, register values, ...

In a safe way it converts the \TeX number argument into a form that only consists of decimal digits.

```

154 \EO@def\engordnumber#1{%
155   \expandafter\EO@number\expandafter{\number#1}%
156 }

```

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:

```

157 \def\EO@number#1{%
158   \ifnum#1<1 % handle the error case
159     \engorderror{#1}%
160   \else
161     \ifnum#1<21 %
162       \EO@ord{#1}%
163     \else
164       \ifnum#1<100 %
165         \EO@twodigits#1%
166       \else
167         \@ReturnAfterFi{%
168           \EO@reverse#1\@nil}\EO@afterreverse
169         }%
170       \fi
171     \fi
172   \fi
173 }

```

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

```

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

```

\EO@ord \EO@ord prints the number with ord letters.
 #1: decimal digits, #1 < 21

```

175 \def\EO@ord#1{%
176   #1%
177   \expandafter\engordletters
178   \ifcase#1{th}\or
179     {st}\or
180     {nd}\or
181     {rd}\else
182     {th}%
183   \fi
184 }

```

\EO@twodigits \EO@twodigits expects a number with two digits,
 20 < number < 100

```

185 \def\EO@twodigits#1#2{%
186   #1\EO@ord{#2}%
187 }

```

\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

```

188 \def\EO@reverse#1#2\@nil#3#4{%
189   \ifx\#2\%
190     #4{#1#3}%
191   \else
192     \@ReturnAfterFi{%
193       \EO@reverse#2\@nil{#1#3}{#4}%

```

```

194     }%
195   \fi
196 }

\EO@afterreverse \EO@afterreverse calls \EO@reverseback so that \EO@reverseback can inspect
the digits of the number.
197 \def\EO@afterreverse#1{%
198   \EO@reverseback#1\@nil
199 }

\EO@reverseback \EO@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
\EO@reverseback is only called with numbers > 100.
200 \def\EO@reverseback#1#2#3\@nil{%
201   \EO@reverse#3\@nil{}\@firstofone
202   \ifnum#2#1<21 %
203     \EO@ord{#2#1}%
204   \else
205     #2\EO@ord{#1}%
206   \fi
207 }

208 \EO@AtEnd
209 \end{package}

```

3 Test

3.1 Catcode checks for loading

```

210 \test1
211 \catcode'\{=1 %
212 \catcode'\}=2 %
213 \catcode'\#=6 %
214 \catcode'\@=11 %
215 \expandafter\ifx\csname count@\endcsname\relax
216   \countdef\count@=255 %
217 \fi
218 \expandafter\ifx\csname @gobble\endcsname\relax
219   \long\def\@gobble#1{}%
220 \fi
221 \expandafter\ifx\csname @firstofone\endcsname\relax
222   \long\def\@firstofone#1{#1}%
223 \fi
224 \expandafter\ifx\csname loop\endcsname\relax
225   \expandafter\@firstofone
226 \else
227   \expandafter\@gobble
228 \fi
229 {%
230   \def\loop#1\repeat{%
231     \def\body{#1}%
232     \iterate
233   }%
234   \def\iterate{%
235     \body
236     \let\next\iterate
237   \else
238     \let\next\relax
239   \fi

```

```

240     \next
241 }%
242 \let\repeat=\fi
243 }%
244 \def\RestoreCatcodes{}
245 \count@=0 %
246 \loop
247   \edef\RestoreCatcodes{%
248     \RestoreCatcodes
249     \catcode\the\count@=\the\catcode\count@\relax
250   }%
251 \ifnum\count@<255 %
252   \advance\count@ 1 %
253 \repeat
254
255 \def\RangeCatcodeInvalid#1#2{%
256   \count@=#1\relax
257   \loop
258     \catcode\count@=15 %
259   \ifnum\count@<#2\relax
260     \advance\count@ 1 %
261   \repeat
262 }
263 \expandafter\ifx\csname LoadCommand\endcsname\relax
264   \def\LoadCommand{\input engord.sty\relax}%
265 \fi
266 \def\Test{%
267   \RangeCatcodeInvalid{0}{47}%
268   \RangeCatcodeInvalid{58}{64}%
269   \RangeCatcodeInvalid{91}{96}%
270   \RangeCatcodeInvalid{123}{255}%
271   \catcode'\@=12 %
272   \catcode'\=0 %
273   \catcode'\{=1 %
274   \catcode'\}=2 %
275   \catcode'\#=6 %
276   \catcode'\[=12 %
277   \catcode'\]=12 %
278   \catcode'\%=14 %
279   \catcode'\ =10 %
280   \catcode13=5 %
281   \LoadCommand
282   \RestoreCatcodes
283 }
284 \Test
285 \csname @@end\endcsname
286 \end
287 </test1>

```

4 Installation

4.1 Download

Package. This package is available on CTAN¹:

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

[CTAN:macros/latex/contrib/oberdiek/engord.pdf](http://ctan.org/macros/latex/contrib/oberdiek/engord.pdf) Documentation.

¹[ftp://ftp.ctan.org/tex-archive/](http://ftp.ctan.org/tex-archive/)

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_EX 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_EX:

```
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`.

4.4 Refresh file name databases

If your T_EX distribution (teT_EX, miK_TE_X, ...) relies on file name databases, you must refresh these. For example, teT_EX users run `texhash` or `mktexlsr`.

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 engord.pdf unpack_files output .
```

Unpacking with L^AT_EX. The `.dtx` chooses its action depending on the format:
plain-T_EX: Run `docstrip` and extract the files.

L^AT_EX: Generate the documentation.

If you insist on using L^AT_EX for `docstrip` (really, `docstrip` does not need L^AT_EX), 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^AT_EX:

```
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.

[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_EX.
- Switch `\ifengordraise` added.
- Package options `raise` and `normal` added.
- DTX framework.

[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).

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	
\#	213, 275
\%	278
\@	214, 271
\@PackageWarning	142
\@ReturnAfterFi	167, <u>174</u> , 192
\@firstofone	201, 222, 225
\@gobble	219, 227
\@nil	168, 188, 193, 198, 200, 201
\[276
\	189, 272
\{	211, 273
\}	212, 274
\]	277
_	279
A	
\advance	252, 260
B	
\body	231, 235
C	
\catcode	3, 4, 5, 6, 7, 18, 19, 20, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 62, 63, 66, 67, 68, 69, 73, 74, 75, 76, 80, 82, 211, 212, 213, 214, 249, 258, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280
\count@	216, 245, 249, 251, 252, 256, 258, 259, 260
\countdef	216
\csname	8, 21, 45, 58, 65, 94, 103, 111, 117, 124, 126, 139, 148, 215, 218, 221, 224, 263, 285
D	
\DeclareOption	113, 114
E	
\empty	12
\end	286
\endcsname	8, 21, 45, 58, 65, 94, 103, 111, 117, 124, 126, 139, 148, 215, 218, 221, 224, 263, 285
\endinput	30
\engord	1, <u>147</u>
\engorderror	2, <u>139</u> , 159
\engordletters	2, <u>117</u> , 141, 177
\engordnumber	2, 151, <u>154</u>
\engordraisefalse	2, 113
\engordraisetrue	2, 109, 114
\engordtextsuperscript	120, <u>124</u>
\EO@afterreverse	168, <u>197</u>
\EO@AtEnd	78, 79, 208
\EO@def	93, 118, 140, 150, 154
\EO@number	155, <u>157</u>
\EO@ord	162, <u>175</u> , 186, 203, 205
\EO@reverse	168, <u>188</u> , 201
\EO@reverseback	198, <u>200</u>
\EO@twodigits	165, <u>185</u>
I	
\ifcase	9, 178
\ifengordraise	<u>108</u> , 119
\ifmmode	129
\ifnum	158, 161, 164, 202, 251, 259
\ifx	10, 12, 21, 45, 53, 94, 103, 111, 117, 124, 126, 139, 148, 189, 215, 218, 221, 224, 263
\immediate	23, 47
\input	104, 264
\iterate	232, 234, 236
L	
\LoadCommand	264, 281
\loop	230, 246, 257
N	
\newcommand	98
\newif	108
\next	236, 238, 240
\number	155
P	
\PackageInfo	26
\ProcessOptions	115
\ProvidesPackage	59
R	
\RangeCatcodeInvalid	255, 267, 268, 269, 270
\repeat	230, 242, 253, 261
\RequirePackage	106
\RestoreCatcodes	244, 247, 248, 282
\rm	130, 132
T	
\Test	266, 284
\textsuperscript	136
\the	66, 67, 68, 69, 80, 249
\TMP@EnsureCode	77, 84, 85, 86, 87, 88, 89, 90, 91, 92
V	
\value	151
W	
\write	23, 47
X	
\x	8, 10, 12, 22, 26, 28, 46, 51, 58, 64, 72