

# 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.

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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\EO@afterreverse#1{%
220   \EO@reverseback#1\@nil
221 }

\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.
222 \def\EO@reverseback#1#2#3\@nil{%
223   \EO@reverse#3\@nil\}\@firstofone
224   \ifnum#2#1<21 %
225     \EO@ord{#2#1}%
226   \else
227     #2\EO@ord{#1}%
228   \fi
229 }

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

```

## 3 Installation

### 3.1 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  $\TeX$  Files” ([CTAN:pkg/tds](#)). Directories with `texmf` in their name are usually organized this way.

### 3.2 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
```

### 3.3 Package installation

**Unpacking.** The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain  $\TeX$ :

```
tex engord.dtx
```

---

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



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

```
engord.sty → tex/generic/oberdiek/engord.sty
engord.pdf → doc/latex/oberdiek/engord.pdf
engord.dtx → source/latex/oberdiek/engord.dtx
```

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`.

### 3.4 Refresh file name databases

If your `TeX` distribution (`TeX Live`, `mikTeX`, ...) relies on file name databases, you must refresh these. For example, `TeX Live` users run `texhash` or `mktextlsr`.

### 3.5 Some details for the interested

**Unpacking with  $\LaTeX$ .** The `.dtx` chooses its action depending on the format:

**plain `TeX`:** 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{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 `pdf $\LaTeX$` :

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

## 4 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`.

---

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

## [2006/02/20 v1.2]

- Support for plain T<sub>E</sub>X.
- 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).

## [2008/08/11 v1.7]

- Code is not changed.
- URLs updated.

## [2010/03/01 v1.8]

- Compatibility with ini-T<sub>E</sub>X.

## [2016/05/16 v1.9]

- Documentation updates.

## 5 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; plain numbers refer to the code lines where the entry is used.

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