

The `engord` package

Heiko Oberdiek*

2016/05/16 v1.9

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	5
2.4	Suffix generation	6
3	Installation	7
3.1	Download	7
3.2	Bundle installation	8
3.3	Package installation	8
3.4	Refresh file name databases	8
3.5	Some details for the interested	8
4	History	9
	[2000/05/23 v1.0]	9
	[2003/04/28 v1.1]	9
	[2006/02/20 v1.2]	9
	[2007/04/11 v1.3]	9
	[2007/04/26 v1.4]	9
	[2007/09/09 v1.5]	9
	[2007/09/20 v1.6]	9
	[2008/08/11 v1.7]	9
	[2010/03/01 v1.8]	9
	[2016/05/16 v1.9]	9
5	Index	9

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.

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

`\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 `LATEX` 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 T<sub>E</sub>X.

```

113 \begingroup\expandafter\expandafter\expandafter\endgroup
114 \expandafter\ifx\csname newcommand\endcsname\relax
115 \def\EO@def{\def}%

```

```

116 \else
117 \def\E0@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 \E0@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 < 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.

---

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

**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](http://ctan.org/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](http://ctan.org/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 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):

```
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 T<sub>E</sub>X distribution (T<sub>E</sub>X Live, MiK<sub>T</sub><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`.

### 3.5 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
```



## 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`.

[2006/02/20 v1.2]

- Support for plain `TEX`.
- 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 `iniTEX`.

[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.

---

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

|                                                            |                                     |  |  |
|------------------------------------------------------------|-------------------------------------|--|--|
| <code>\@ReturnAfterFi</code> . . . . .                     | 189, <u>196</u> , 214               |  |  |
| <code>\@firstofone</code> . . . . .                        | 223                                 |  |  |
| <code>\@nil</code> . . . . .                               | 190, 210, 215, 220, 222, <u>223</u> |  |  |
| <code>\@undefined</code> . . . . .                         | 58                                  |  |  |
| <code>\@</code> . . . . .                                  | 211                                 |  |  |
| <b>A</b>                                                   |                                     |  |  |
| <code>\aftergroup</code> . . . . .                         | 29                                  |  |  |
| <b>C</b>                                                   |                                     |  |  |
| <code>\catcode</code> 2, 3, 5, 6, 7, 8, 9, 10, 11, 12,     |                                     |  |  |
| 13, 33, 34, 36, 37, 38, 39, 40, 41,                        |                                     |  |  |
| 42, 43, 44, 45, 46, 47, 48, 49, 69,                        |                                     |  |  |
| 70, 72, 73, 74, 78, 79, 80, 81, 82,                        |                                     |  |  |
| 83, 84, 87, 88, 90, 91, 92, 93, 97, 99                     |                                     |  |  |
| <code>\csname</code> . . . . .                             | 14, 21, 50, 66, 76, 114,            |  |  |
| 123, 133, 139, 146, 148, 161, 170                          |                                     |  |  |
| <b>D</b>                                                   |                                     |  |  |
| <code>\DeclareOption</code> . . . . .                      | 135, 136                            |  |  |
| <b>E</b>                                                   |                                     |  |  |
| <code>\empty</code> . . . . .                              | 17, 18                              |  |  |
| <code>\endcsname</code> . . . . .                          | 14, 21, 50, 66, 76, 114,            |  |  |
| 123, 133, 139, 146, 148, 161, 170                          |                                     |  |  |
| <code>\endinput</code> . . . . .                           | 29, 112                             |  |  |
| <code>\endlinechar</code> . . . . .                        | 4, 35, 71, 77, 89                   |  |  |
| <code>\engord</code> . . . . .                             | 1, <u>169</u>                       |  |  |
| <code>\engorderror</code> . . . . .                        | 2, <u>161</u> , 181                 |  |  |
| <code>\engordletters</code> . . . . .                      | 2, <u>139</u> , 163, 199            |  |  |
| <code>\engordnumber</code> . . . . .                       | 2, 173, <u>176</u>                  |  |  |
| <code>\engordraisefalse</code> . . . . .                   | 2, 135                              |  |  |
| <code>\engordraisetrue</code> . . . . .                    | 2, 131, 136                         |  |  |
| <code>\engordtextsuperscript</code> . . . . .              | 142, <u>146</u>                     |  |  |
| <code>\EO@afterreverse</code> . . . . .                    | 190, <u>219</u>                     |  |  |
| <code>\EO@AtEnd</code> . . . . .                           | 95, 96, 112, 230                    |  |  |
| <code>\EO@def</code> . . . . .                             | <u>113</u> , 140, 162, 172, 176     |  |  |
| <code>\EO@number</code> . . . . .                          | 177, <u>179</u>                     |  |  |
| <code>\EO@ord</code> . . . . .                             | 184, <u>197</u> , 208, 225, 227     |  |  |
| <code>\EO@reverse</code> . . . . .                         | 190, <u>210</u> , 223               |  |  |
| <code>\EO@reverseback</code> . . . . .                     | 220, <u>222</u>                     |  |  |
| <code>\EO@twodigits</code> . . . . .                       | 187, <u>207</u>                     |  |  |
| <b>I</b>                                                   |                                     |  |  |
| <code>\ifcase</code> . . . . .                             | 200                                 |  |  |
| <code>\ifengordraise</code> . . . . .                      | <u>130</u> , 141                    |  |  |
| <code>\ifmmode</code> . . . . .                            | 151                                 |  |  |
| <code>\ifnum</code> . . . . .                              | 180, 183, 186, 224                  |  |  |
| <code>\ifx</code> . . . . .                                | 15, 18, 21, 50, 58, 61, 114, 123,   |  |  |
| 133, 139, 146, 148, 161, 170, 211                          |                                     |  |  |
| <code>\immediate</code> . . . . .                          | 23, 52                              |  |  |
| <code>\input</code> . . . . .                              | 124, 125                            |  |  |
| <b>L</b>                                                   |                                     |  |  |
| <code>\ltx@newif</code> . . . . .                          | 130                                 |  |  |
| <b>N</b>                                                   |                                     |  |  |
| <code>\newcommand</code> . . . . .                         | 118                                 |  |  |
| <code>\number</code> . . . . .                             | 177                                 |  |  |
| <b>P</b>                                                   |                                     |  |  |
| <code>\PackageInfo</code> . . . . .                        | 26                                  |  |  |
| <code>\ProcessOptions</code> . . . . .                     | 137                                 |  |  |
| <code>\ProvidesPackage</code> . . . . .                    | 19, 67                              |  |  |
| <b>R</b>                                                   |                                     |  |  |
| <code>\RequirePackage</code> . . . . .                     | 127, 128                            |  |  |
| <code>\rm</code> . . . . .                                 | 152, 154                            |  |  |
| <b>T</b>                                                   |                                     |  |  |
| <code>\textsuperscript</code> . . . . .                    | 158                                 |  |  |
| <code>\the</code> . . . . .                                | 77, 78, 79, 80, 81, 82, 83, 84, 97  |  |  |
| <code>\TMP@EnsureCode</code> . . . . .                     |                                     |  |  |
| . . . . .                                                  | 94, 101, 102, 103, 104,             |  |  |
| 105, 106, 107, 108, 109, 110, 111                          |                                     |  |  |
| <b>V</b>                                                   |                                     |  |  |
| <code>\value</code> . . . . .                              | 173                                 |  |  |
| <b>W</b>                                                   |                                     |  |  |
| <code>\write</code> . . . . .                              | 23, 52                              |  |  |
| <b>X</b>                                                   |                                     |  |  |
| <code>\x</code> 14, 15, 18, 22, 26, 28, 51, 56, 66, 75, 87 |                                     |  |  |