The **engord** package

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**Abstract**

The package generates the suffix of English ordinal numbers. It can be used with plain and \LaTeX \ 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 \LaTeX{} 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 \TeX{}.

\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

Reload check, especially if the package is not used with \LATEX.
\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode39=12 % '
\catcode44=12 % ,
\catcode45=12 % -
\catcode46=12 % .
\catcode58=12 % :
\catcode64=11 % @
\catcode123=1 % {
\catcode125=2 % }
\expandafter\let\expandafter\x\csname ver@engord.sty\endcsname
\ifx\x\relax % plain-TeX, first loading
\else
\def\empty{}
\ifx\empty % LaTeX, first loading,\ PROVIDESpackage not yet seen
\else
\expandafter\ifx\csname PackageInfo\endcsname\relax
\immediate\write-1{Package #1 Info: #2.}
\else
\PackageInfo{#1}{#2, stopped}
\fi
\x{engord}{The package is already loaded}
\aftergroup\endinput
\fi
\fi
\endgroup%
\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode39=12 % '
\catcode44=12 % ,
\catcode45=12 % -
\catcode46=12 % .
\catcode58=12 % :
\catcode64=11 % @
\expandafter\ifx\csname ProvidesPackage\endcsname\relax
\def\x#1#2#3[#4]{\endgroup
\immediate\write-1{Package: #3 #4}%
\xdef#1{#4}%
}%
\else
\def\x#1#2[#3]{\endgroup
#2[#{#3}]%
\ifx#1\@undefined
\xdef#1{#3}%
\fi
\ifx#1\relax
\xdef#1{#3}%
\fi
}%
\fi
\expandafter\x\csname ver@engord.sty\endcsname
\ProvidesPackage{engord}%
[2016/05/16 v1.9 Provides English ordinal numbers (HO)]%

2.2 Help commands for plain compatibility

\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode64=11 % @
\catcode123=1 % {
\catcode125=2 % }
\expandafter\edef\csname EO@AtEnd\endcsname{%
\endlinechar=\the\endlinechar\relax
\catcode13=\the\catcode13\relax
\catcode32=\the\catcode32\relax
\catcode35=\the\catcode35\relax
\catcode61=\the\catcode61\relax
\catcode64=\the\catcode64\relax
\catcode123=\the\catcode123\relax
\catcode125=\the\catcode125\relax
}%
\endgroup
\expandafter\edef\csname EO@AtEnd\endcsname{%
\endlinechar=\the\endlinechar\relax
\catcode13=\the\catcode13\relax
\catcode32=\the\catcode32\relax
\catcode35=\the\catcode35\relax
\catcode61=\the\catcode61\relax
\catcode64=\the\catcode64\relax
\catcode123=\the\catcode123\relax
\catcode125=\the\catcode125\relax
}%
\expandafter\edef\csname EO@AtEnd\endcsname{%
\endlinechar=\the\endlinechar\relax
\catcode13=\the\catcode13\relax
\catcode32=\the\catcode32\relax
\catcode35=\the\catcode35\relax
\catcode61=\the\catcode61\relax
\catcode64=\the\catcode64\relax
\catcode123=\the\catcode123\relax
\catcode125=\the\catcode125\relax
}%
\def\EO@def{\edef\EO@AtEnd{\EO@AtEnd\noexpand\endinput}}

2.3 User macros

The switch \fengordraise, whether the ordinal letters are raised or not. Default is raised because of compatibility.
\ltx@newif\fengordraise
\engordraisetrue

In L\TeX{} this also can be controlled by option normal or raise.
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname DeclareOption\endcsname\relax
\else
\DeclareOption{normal}{\engordraisefalse}\
\DeclareOption{raise}{\engordraisetrue}\
\ProcessOptions*\relax
\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 \fengordraise.
\expandafter\ifx\csname engordletters\endcsname\relax
\EO@def\engordletters{\ifengordraise\expandafter\engordtextsuperscript\fi}\
\fi

\engordtextsuperscript
For plain \TeX{} the definition is quite ugly, redefine \engordtextsuperscript if you have a better one.
\expandafter\ifx\csname engordtextsuperscript\endcsname\relax
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname textsuperscript\endcsname\relax
\def\engordtextsuperscript#1{\relax}
\fi
\fi

\EO@def{Definitions, \newcommand does not exist in plain \TeX.}
\texttt{\textbackslash engorderror} \texttt{\textbackslash engorderror} is called, if the number is zero or negative.

\texttt{\textbackslash engord} \texttt{\textbackslash engord} expects a \LaTeX{} counter name as argument and calls \texttt{\textbackslash engordnumber}. It is defined only, if \LaTeX{} is used.

\texttt{\textbackslash engordnumber} \texttt{\textbackslash engordnumber} is the user command to print a number as English ordinal number. The argument can be any \TeX{} 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.

\subsection{Suffix generation}

\texttt{\textbackslash EO@number} \texttt{\textbackslash EO@number} expects a number with decimal digits as argument and looks at the size of the number and the count of the digits:
An internal help macro to prevent a too deep `if` nesting.

```latex
\def\@ReturnAfterFi#1\fi{\fi#1}
```

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

```latex
\def\EO@ord#1{\expandafter\engordletters\ifcase#1{th}\or{st}\or{nd}\or{rd}\else{th}\fi}
```

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

```latex
\def\EO@twodigits#1#2{\EO@ord{#2}}
```

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

```latex
\def\EO@reverse#1#2\@nil#3#4{\ifx\EO@afterreverse\EO@reverse{\EO@reverse#2\@nil{#1#3}{#4}}\fi}
```

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

```latex
\def\EO@afterreverse#1{\EO@reverseback#1\@nil}
```

`EO@reverseback` reverses the reversion.

```latex
\def\EO@reverseback#1#2#3\@nil{\ifnum#2#1<21 \EO@ord{#2#1}\else#2\EO@ord{#1}\fi}
```

`EO@AtEnd`
3 Test

3.1 Catcode checks for loading

\catcode`\{=1 \%
\catcode`\}=2 \%
\catcode`#=6 \%
\catcode`@=11 \%
\expandafter\ifx\csname count@\endcsname\relax
\countdef\count@=255 \%
\fi
\expandafter\ifx\csname @gobble\endcsname\relax
\long\def\@gobble#1{}\%
\fi
\expandafter\ifx\csname @firstofone\endcsname\relax
\long\def\@firstofone#1{#1}\%
\fi
\expandafter\ifx\csname loop\endcsname\relax
\expandafter\@firstofone
\else
\expandafter\@gobble
\fi
{\
\def\loop#1\repeat{\
\def\body{#1}\
\iterate
}
\def\iterate{\
\body
\let\next\iterate
\else
\let\next\relax
\fi
\next
}
\let\repeat=\fi
\let\RestoreCatcodes=\}
\count@=0 \%
\loop
\edef\RestoreCatcodes{\}
\count@=0 \%
\loop
\edef\RestoreCatcodes{\}
\RestoreCatcodes
\catcode\the\count@=\the\catcode\count@\relax
\ifnum\count@<255 \%
\advance\count@ 1 \%
\repeat
\def\RangeCatcodeInvalid#1#2{\
\count@=#1\relax
\loop
\catcode\count@=15 \%
\ifnum\count@<#2\relax
\advance\count@ 1 \%
\repeat
\def\RangeCatcodeCheck#1#2#3{\
\count@=#1\relax
\loop
\catcode\count@=\#3\relax
\ifnum\count@<#2\relax
\advance\count@ 1 \%
\repeat
}
4 Installation

4.1 Download

Package. This package is available on CTAN\(^1\):


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

\textit{TDS} refers to the standard “A Directory Structure for \LaTeX\ Files” (CTAN:tds/tds.pdf). Directories with \texttt{texmf} in their name are usually organized this way.

\(^1\)http://ctan.org/pkg/engord
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 TeX:

```
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
test/engord-test1.tex → doc/latex/oberdiek/test/engord-test1.tex
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.

4.4 Refresh file name databases

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

4.5 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 pdfLaTeX:
5 Catalogue

The following XML file can be used as source for the \TeX\ Catalogue. The elements \texttt{caption} and \texttt{description} are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is \texttt{engord.xml}.

\begin{verbatim}
<entry datestamp='$Date$' modifier='$Author$' id='engord'>
  <name>engord</name>
  <caption>Converts numbers to English ordinal numbers.</caption>
  <authorref id='auth:oberdiek'/>
  <license type='lppl1.3'/>
  <version number='1.9'/>
  <description>
    Defines \texttt{\engord} (used like \texttt{\arabic}, \texttt{\roman}, etc.), and \texttt{\engordnumber} (which formats a "\TeX\ number").
    
    So \texttt{\pagenumbering{engord}} gives page numbers \texttt{1st, 2nd, 3rd, ...}, ...
  </description>
  <documentation details='Package documentation' href='ctan:/macros/latex/contrib/oberdiek/engord.pdf'/>
  <ctan file='true' path='/macros/latex/contrib/oberdiek'/>
  <miktex location='oberdiek'/>
  <texlive location='oberdiek'/>
  <install path='/macros/latex/contrib/oberdiek.tds.zip'/>
</entry>
\end{verbatim}

6 History

[2000/05/23 v1.0]
- First public release, published in newsgroup \texttt{de.comp.text.tex}:
  "Re: Ordinalzahlen in \LaTeX?"\textsuperscript{2}

[2003/04/28 v1.1]
- Bug fix for 30, 40, 50, ..., 100, 130, ...
- \texttt{\ordletters} renamed to documented \texttt{\engordletters}.

[2006/02/20 v1.2]
- Support for plain \TeX.
- Switch \texttt{\ifengordraise} added.

\textsuperscript{2}Url: \url{http://groups.google.com/group/de.comp.text.tex/msg/738e2cb4c51759d6}
• 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-TeX.

[2016/05/16 v1.9]
• Documentation updates.

7 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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