The engord package
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2016/05/16 v1.9

Abstract
The package generates the suffix of English ordinal numbers. It can be used with plain and \LaTeX formats.

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1 Usage

\texttt{\textbackslash 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 \texttt{\arabic}, \texttt{\roman}, or \texttt{\alph}. The command is not available in plain \TeX.\par

\textsuperscript{*}Please report any issues at https://github.com/ho-tex/oberdiek/issues
\texttt{\engordnumber\{\langle\textit{any \LaTeX\ number}\rangle\}}

It prints the number as English ordinal number.

\texttt{\engordletters\{#1\}}

This command formats the English ordinal letters after the number. It defaults to \texttt{textsuperscript}.

\texttt{\engordererror\{#1\}}

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

\texttt{\engordraisetrue} \hspace{1cm} \texttt{\engordraisefalse}

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

1.1 Package options

\texttt{normal}: \texttt{\engordraisefalse}

\texttt{raise}: \texttt{\engordraisetrue}

Default is \texttt{raise}.

1.2 Examples

- \texttt{\usepackage[\texttt{normal}]{engord}}
  \texttt{\engordnumber\{1\} \rightarrow 1st}
  \texttt{\engordnumber\{12\} \rightarrow 12th}
  \texttt{\engordnumber\{123\} \rightarrow 123rd}
  \texttt{\engord\{page\} \rightarrow 1st (if page has the value of one)}
  \texttt{\engordraisetrue}
  \texttt{\engordnumber\{12\} \rightarrow 12th}

- The default output of a counter can be redefined:

  \texttt{\newcounter\{mycounter\}}
  \texttt{\renewcommand\{\theengcounter\}\{\engord\{mycounter\}\}}

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

  \texttt{\renewcommand\{\{1\}\}\{1\}}
  \texttt{\@namedef\{My\\engordnumber\{3\}\Command\}\{\ldots\}}

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

- If the letters should not be raised, use \texttt{\LaTeX\} package option \texttt{normal} or use \texttt{\engordraisefalse}.

Also \texttt{\engordletters} could be redefined for this purpose:

\texttt{\renewcommand\{\{1\}\}\{1\}}
2 Implementation

2.1 Reload check and identification

1 (*package*)

Reload check, especially if the package is not used with \LaTeX.

\begin{verbatim}
\begin{group}
\catcode13=5 \relax
\endlinechar=13 %
\catcode35=6 % #
\catcode39=12 % ,
\catcode44=12 % ,
\catcode45=12 % -
\catcode46=12 % .
\catcode58=12 % :
\catcode68=11 % @
\catcode123=1 % {
\catcode125=2 % }
\expandafter\ifx\csname ver@engord.sty\endcsname
\else
\else
\expandafter\ifx\csname PackageInfo\endcsname\relax
\def\x#1#2#3[#4]{
\immediate\write-1{Package #1 Info: #2.}%
\endgroup
\else
\definition
\list\PackageInfo{#1}{#2, stopped}%
\x{engord}{The package is already loaded}%
\aftergroup\endinput
\fi
\fi
\endgroup%
\end{verbatim}

Package identification:

\begin{verbatim}
\begin{group}
\catcode13=5 \relax
\endlinechar=13 %
\catcode35=6 % #
\catcode39=12 % ,
\catcode44=12 % ,
\catcode45=12 % -
\catcode46=12 % .
\catcode58=12 % :
\catcode68=11 % @
\catcode91=12 % [
\catcode93=12 % ]
\expandafter\ifx\csname ProvidesPackage\endcsname
\else
\definition
\list\ProvidesPackage{#1}{#2, stopped}%
\fi
\endgroup%
\end{verbatim}
2.2 Help commands for plain compatibility

\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^\n\catcode123=1 % {
\catcode125=2 % }
\catcode64=11 % @
\def\x{
\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}
}\x\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^\n\catcode35=6 % #
\edef\EO@AtEnd{\EO@AtEnd\noexpand\endinput}
\EO@def
Definitions, \newcommand does not exist in plain \TeX.
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname newcommand\endcsname\relax
\def\EO@def{\def}
\endinput
\def\EO@def#1{% 
\newcommand*{#1}{% 
\def#1% 
}% 
}\fi
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname RequirePackage\endcsname\relax
\input infwarerr.sty\relax
\input ltxcmds.sty\relax
\else
\RequirePackage{infwarerr}\[2007/09/09]\%
\RequirePackage{ltxcmds}\[2016/05/16]\%
\fi

2.3 User macros

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

In \LaTeX{} 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 \ifengordraise.
\begingroup\expandafter\expandafter\expandafter\endgroup
\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.
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname engordtextsuperscript\endcsname\relax
\EO@def\engordtextsuperscript{\textsuperscript}{% 
\relax
\ifmmode
^\text{#1}%
\else
$^\text{#1}$%
\fi
}%
\else
\def\engordtextsuperscript{\textsuperscript}{% 
\fi
\fi
\fi
\engorderror \engorderror is called, if the number is zero or negative.
\expandafter\ifx\csname engorderror\endcsname\relax
\EO@def\engorderror#1{% #1\engordletters{!ERROR!}%
\@PackageWarning{engord}{% '1' is not an ordinal number%
}%}
\fi

\engord \engord expects a \LaTeX{} counter name as argument and calls \engordnumber. It is defined only, if \LaTeX{} is used.
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname newcounter\endcsname\relax
\else
\EO@def\engord#1{% \engordnumber{\value{#1}}%
}%
\fi

\engordnumber \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.
\EO@def\engordnumber#1{% \expandafter\EO@number\expandafter{\number#1}%
}

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:
\def\EO@number#1{% \ifnum#1<1 % handle the error case
\engorderror(#1)%
\else
\ifnum#1<21 % \EO@ord(#1)%
\else
\ifnum#1<100 % \EO@twodigits#1%
\else
\@ReturnAfterFi{% \EO@reverse#1\&nil{}\EO@afterreverse
}%
\fi
\fi
\fi
\EO@ord \EO@ord prints the number with ord letters. 
#1: decimal digits, #1 < 21
\def\EO@ord#1{% #1%
\expandafter\engordletters
\ifcase#1{th}\or
\{st}\or
\{nd}\or
\}
```latex
\EO@twodigits \EO@twodigits expects a number with two digits, 20 < number < 100
\def\EO@twodigits{\#1\EO@ord{\#2}}%
\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
\def\EO@reverse{\ifx\#2\%
    \else
        \EO@reverseback{\#1\#3}{\#4}
    \fi}
\EO@afterreverse \EO@afterreverse calls \EO@reverseback so that \EO@reverseback can inspect the digits of the number.
\def\EO@afterreverse{\EO@reverseback{\#1}{\#2}{\#3}}%
\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.
\def\EO@reverseback{\ifnum\#2\#1<21
    \EO@ord{\#2\#1}
    \else
        \EO@ord{\#1}\EO@ord{\#2\#1}
    \fi}
\EO@AtEnd\langle/\EO@package\rangle

3 Installation

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


\(^1\)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

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
```

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 `mktexlsr`.

3.5 Some details for the interested

Unpacking with \TeX. 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?”

[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 infwareerr.

[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.

Symbols
\@PackageWarning ........................ 164

\Url: https://groups.google.com/group/de.comp.text.tex/msg/738e2cb4c51759d6