The flags package

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Abstract

Package flags allows the setting and clearing of flags in bit fields and converts the bit field into a decimal number. Currently the bit field is limited to 31 bits.

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1 Documentation

A new powerful package bitset is written by me and supersedes this package:

- The bit range is not restricted to 31 bits, only index numbers are objected to \( \LaTeX \)'s number limit.
- Many more operations are available.
- No dependency of \( \epsilon \-\LaTeX \).

Therefore I consider this package as obsolete and have stopped the development of this package.

*Please report any issues at https://github.com/ho-tex/oberdiek/issues
1.1 User interface

Flag positions are one-based, thus the flag position must be a positive integer. Currently supported range: 1..31

\resetflags{(fname)}

The bit field \((fname)\) is cleared. Currently is is also used for initialization, because a \newflags macro is not implemented.

\setflag{(fname)}{(position)}

The flag at bit position \((position)\) is set in the bit field \((fname)\).

\clearflag{(fname)}{(position)}

The flag at bit position \((position)\) is cleared in the bit field \((fname)\).

\printflags{(fname)}

The bit field \((fname)\) is converted to a decimal number. The macro is expandible.

\extractflag{(fname)}{(position)}

Extracts the flag setting at bit position \((position)\). \extractflag expands to 1 if the flag is set and 0 otherwise.

\queryflag{(fname)}{(position)}{(set part)}{(clear part)}

It is a wrapper for \extractflag. \((set part)\) is called if \extractflag returns 1. Otherwise \((clear part)\) is executed.

Example. See package bookmark. It uses package flags for its font style options.

1.2 Requirements

• ε-TeX (\numexpr)

1.3 ToDo

• Named positions.
• Setting positions by a key-value interface.
• Support for more than 31 bits while maintaining expandibility of \printflags.
• Eventually \newflags, \newflagstype.
2 Implementation

\begin{verbatim}
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{flags} [2016/05/16 v0.5 Setting/clearing of flags in bit fields (HO)]
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname numexpr\endcsname\relax
\PackageError{flags}{Missing e-TeX, package loading aborted}
\}}
\expandafter\endinput
\fi
\resetflags
\newcommand*{\resetflags}[1]{\expandafter\let\csname flags@#1\endcsname\@empty}
\printflags
Macro \texttt{\printflags} converts the bit field into a decimal number.
\newcommand*{\printflags}[1]{\expandafter\@printflags\csname flags@#1\endcsname}
\def\@printflags#1{\expandafter\@firstofone\expandafter{\number\numexpr\ifx#1\@empty0\else\expandafter\@@printflags#1\fi}}
\def\@@printflags#1#2\fi{\fi#1\ifx\#2\%\else+2*\numexpr\expandafter\@@printflags#2\fi}
\setflag
\newcommand*{\setflag}[2]{\ifnum#2>\z@\expandafter\@setflag\csname flags@#1\expandafter\endcsname\expandafter{\romannumeral\number\numexpr#2-1\relax000}\else\PackageError{flags}{Position must be a positive number}\@ehc\fi}
\def\@setflag#1#2{\ifx#1\relax\let#1\@empty\fi\edef#1{}}
\end{verbatim}

\resetflags
\newcommand*{\resetflags}[1]{\expandafter\let\csname flags@#1\endcsname\@empty}
\endinput
\resetflags
\newcommand*{\resetflags}[1]{\expandafter\let\csname flags@#1\endcsname\@empty}
\printflags
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\def\@@printflags#1#2\fi{\fi#1\ifx\#2\%\else+2*\numexpr\expandafter\@@printflags#2\fi}
\setflag
\newcommand*{\setflag}[2]{\ifnum#2>\z@\expandafter\@setflag\csname flags@#1\expandafter\endcsname\expandafter{\romannumeral\number\numexpr#2-1\relax000}\else\PackageError{flags}{Position must be a positive number}\@ehc\fi}
\def\@setflag#1#2{\ifx#1\relax\let#1\@empty\fi\edef#1{}}
\endinput
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\newcommand*{\resetflags}[1]{\expandafter\let\csname flags@#1\endcsname\@empty}
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\setflag
\newcommand*{\setflag}[2]{\ifnum#2>\z@\expandafter\@setflag\csname flags@#1\expandafter\endcsname\expandafter{\romannumeral\number\numexpr#2-1\relax000}\else\PackageError{flags}{Position must be a positive number}\@ehc\fi}
\def\@setflag#1#2{\ifx#1\relax\let#1\@empty\fi\edef#1{}}
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\def\@@printflags#1#2\fi{\fi#1\ifx\#2\%\else+2*\numexpr\expandafter\@@printflags#2\fi}
\setflag
\newcommand*{\setflag}[2]{\ifnum#2>\z@\expandafter\@setflag\csname flags@#1\expandafter\endcsname\expandafter{\romannumeral\number\numexpr#2-1\relax000}\else\PackageError{flags}{Position must be a positive number}\@ehc\fi}
\def\@setflag#1#2{\ifx#1\relax\let#1\@empty\fi\edef#1{}}
\endinput
\queryflag \newcommand*{\queryflag}[2]{\ifnum\extractflag{#1}{#2}=\@ne \expandafter\@firstoftwo \else \expandafter\@secondoftwo \fi}

\extractflag \newcommand*{\extractflag}[1]{\expandafter\@extractflag\csname flags@#1\endcsname}
\def\@extractflag#1#2{\ifx#1\@undefined 0\else \ifx#1\relax 0\else \ifx#1\@empty 0\else \expandafter\expandafter\expandafter\@@extractflag \expandafter\expandafter\expandafter{\expandafter#1\expandafter} \expandafter{\romannumeral\number\numexpr#2-1\relax000}\fi \fi \fi}
\def\@@extractflag#1#2{\ifx\%#1\% 0\else \ifx\%#2\% \@car#1\@nil \else \@@@extractflag#1|#2\% \fi \fi \fi}
\def\@@@extractflag#1#2|#3#4\fi\fi{\fi\fi \@@extractflag{#2}{#4}}

\langle /package \rangle
3 Installation

3.1 Download

Package. This package is available on CTAN\footnote{CTAN:pkg/flags}:

CTAN:macros/latex/contrib/oberdiek/flags.dtx The source file.

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\TeX Files” (CTAN:pkg/tds). Directories with \texttt{texmf} in their name are usually organized this way.

3.2 Bundle installation

Unpacking. Unpack the \texttt{oberdiek.tds.zip} in the TDS tree (also known as \texttt{texmf} tree) of your choice. Example (linux):

\texttt{unzip oberdiek.tds.zip -d ~/texmf}

3.3 Package installation

Unpacking. The \texttt{.dtx} file is a self-extracting \texttt{docstrip} archive. The files are extracted by running the \texttt{.dtx} through \texttt{plain T\TeX}:

\texttt{tex flags.dtx}

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as \texttt{texmf} tree):

\begin{itemize}
  \item \texttt{flags.sty} → \texttt{tex/latex/oberdiek/flags.sty}
  \item \texttt{flags.pdf} → \texttt{doc/latex/oberdiek/flags.pdf}
  \item \texttt{flags.dtx} → \texttt{source/latex/oberdiek/flags.dtx}
\end{itemize}

If you have a \texttt{docstrip.cfg} that configures and enables \texttt{docstrip}’s TDS installing feature, then some files can already be in the right place, see the documentation of \texttt{docstrip}.

3.4 Refresh file name databases

If your \texttt{T\TeX} distribution (\texttt{T\TeX} Live, MiK\TeX, …) relies on file name databases, you must refresh these. For example, \texttt{T\TeX} Live users run \texttt{texhash} or \texttt{mktexlsr}.

3.5 Some details for the interested

Unpacking with \texttt{\LaTeX}. The \texttt{.dtx} chooses its action depending on the format:

plain \texttt{T\TeX}: Run \texttt{docstrip} and extract the files.
\LaTeX: Generate the documentation.
If you insist on using \TeX for docstrip (really, docstrip does not need \TeX), then inform the autodetect routine about your intention:

\latex \let\install=y\input{flags.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\TeX:

\pdf\latex flags.dtx
\makeindex -s gind.ist flags.idx
\pdf\latex flags.dtx
\makeindex -s gind.ist flags.idx
\pdf\latex flags.dtx

4 History

[2007/02/18 v0.1]
• First version.

[2007/03/07 v0.2]
• Raise an error if \v-\TeX is not detected.

[2007/03/31 v0.3]
• \queryflag and \extractflag added.
• Raise an error if position is not positive in case of \setflag and \clearflag.

[2007/09/30 v0.4]
• Package is deprecated because of new more powerful package \bitset.

[2016/05/16 v0.5]
• Documentation updates.

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