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.

Contents

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 TeX's number limit.

- Many more operations are available.

- No dependency of ε-TeX.

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

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

```
1 ⟨*package⟩
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{flags}%
4   [2007/09/30 v0.4 Flag setting in bit fields (HO)]%

5 \begingroup\expandafter\expandafter\expandafter\endgroup
```

```
6 \expandafter\ifx\csname numexpr\endcsname\relax
7   \PackageError{flags}{%
8     Missing e-TeX, package loading aborted%
9   }{%
10     This packages makes heavy use of \string\numexpr.%
11   }%
12   \expandafter\endinput
13 \fi
```

\resetflags

```
14 \newcommand*{\resetflags}[1]{%
15   \expandafter\let\csname flags@#1\endcsname\@empty
16 }
```

\printflags Macro \printflags converts the bit field into a decimal number.

```
17 \newcommand*{\printflags}[1]{%
18   \expandafter\@printflags\csname flags@#1\endcsname
19 }
20 \def\@printflags#1{%
21   \expandafter\@firstofone\expandafter{%
22     \number\numexpr
23     \ifx#1\@empty
24       0%
25     \else
26       \expandafter\@@printflags#1%
27     \fi
28   }%
29 }
30 \def\@@printflags#1#2\fi{%
31   \fi
32   #1%
33   \ifx\\#2\\%
34   \else
35     +2*\numexpr\expandafter\@@printflags#2%
36   \fi
37 }
```

\setflag

```
38 \newcommand*{\setflag}[2]{%
39   \ifnum#2>\z@
40     \expandafter\@setflag\csname flags@#1\expandafter\endcsname
41       \expandafter{\romannumeral\number\numexpr#2-1\relax000}%
42   \else
43     \PackageError{flags}{Position must be a positive number}\@ehc
44   \fi
45 }
46 \def\@setflag#1#2{%
47   \ifx#1\relax
48     \let#1\@empty
49   \fi
50   \edef#1{%
51     \expandafter\@@setflag\expandafter{#1}{#2}%
52   }%
53 }
54 \def\@@setflag#1#2{%
55   \ifx\\#1\\%
56     \FLAGS@zero#2\relax
57     1%
58   \else
59     \ifx\\#2\\%
60       1\@gobble#1%
61     \else
```

3

```
62      \@@@setflag#1|#2%
63    \fi
64  \fi
65 }
66 \def\@@@setflag#1#2|#3#4\fi\fi{%
67  \fi\fi
68  #1%
69  \@@setflag{#2}{#4}%
70 }
```

\clearflag

```
 71 \newcommand*{\clearflag}[2]{%
 72  \ifnum#2>\z@
 73    \expandafter\@clearflag\csname flags@#1\expandafter\endcsname
 74      \expandafter{\romannumeral\number\numexpr#2-1\relax000}%
 75  \else
 76    \PackageError{flags}{Position must be a positive number}\@ehc
 77  \fi
 78 }
 79 \def\@clearflag#1#2{%
 80  \ifx#1\relax
 81    \let#1\@empty
 82  \fi
 83  \edef#1{%
 84    \expandafter\@@clearflag\expandafter{#1}{#2}%
 85  }%
 86 }
 87 \def\@@clearflag#1#2{%
 88  \ifx\\#1\\%
 89  \else
 90    \ifx\\#2\\%
 91      0\@gobble#1%
 92    \else
 93      \@@@clearflag#1|#2%
 94    \fi
 95  \fi
 96 }
 97 \def\@@@clearflag#1#2|#3#4\fi\fi{%
 98  \fi\fi
 99  #1%
100  \@@clearflag{#2}{#4}%
101 }
```

```
102 \def\FLAGS@zero#1{%
103  \ifx#1\relax
104  \else
105    0%
106    \expandafter\FLAGS@zero
107  \fi
108 }
```

\queryflag

```
109 \newcommand*{\queryflag}[2]{%
110  \ifnum\extractflag{#1}{#2}=\@ne
111    \expandafter\@firstoftwo
112  \else
113    \expandafter\@secondoftwo
114  \fi
115 }
```

\extractflag

```
116 \newcommand*{\extractflag}[1]{%
```

```
117    \expandafter\@extractflag\csname flags@#1\endcsname
118 }
119 \def\@extractflag#1#2{%
120    \ifx#1\@undefined
121       0%
122    \else
123       \ifx#1\relax
124          0%
125       \else
126          \ifx#1\@empty
127             0%
128          \else
129             \expandafter\expandafter\expandafter\@@extractflag
130             \expandafter\expandafter\expandafter{%
131             \expandafter#1\expandafter
132             }\expandafter{%
133                \romannumeral\number\numexpr#2-1\relax000%
134             }%
135          \fi
136       \fi
137    \fi
138 }
139 \def\@@extractflag#1#2{%
140    \ifx\\#1\\%
141       0%
142    \else
143       \ifx\\#2\\%
144          \@car#1\@nil
145       \else
146          \@@@extractflag#1|#2%
147       \fi
148    \fi
149 }
150 \def\@@@extractflag#1#2|#3#4\fi\fi{%
151    \fi\fi
152    \@@extractflag{#2}{#4}%
153 }

154 ⟨/package⟩
```

3 Installation

3.1 Download

Package.   This package is available on CTAN[1]:

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

CTAN:macros/latex/contrib/oberdiek/flags.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:tds/tds.pdf). Directories with texmf in their name are usually organized this way.

---

[1] ftp://ftp.ctan.org/tex-archive/

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
```

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/
```

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 flags.dtx
```

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

```
flags.sty → tex/latex/oberdiek/flags.sty
flags.pdf → doc/latex/oberdiek/flags.pdf
flags.dtx → source/latex/oberdiek/flags.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 (teTeX, mikTeX, ...) relies on file name databases, you must refresh these. For example, teTeX users run `texhash` or `mktexlsr`.

3.5 Some details for the interested

Attached source. The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk flags.pdf unpack_files output .
```

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{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 pdfLATEX:

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

4 History

[2007/02/18 v0.1]

- First version.

[2007/03/07 v0.2]

- Raise an error if ε-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.

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.