

# 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

### 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 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  $\langle position \rangle$  is cleared in the bit field  $\langle fname \rangle$ .

`\printflags {⟨fname⟩}`

The bit field  $\langle fname \rangle$  is converted to a decimal number. The macro is expandible.

`\extractflag {⟨fname⟩} {⟨position⟩}`

Extracts the flag setting at bit position  $\langle position \rangle$ . `\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`.  $\langle set part \rangle$  is called if `\extractflag` returns 1. Otherwise  $\langle clear part \rangle$  is executed.

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

## 1.2 Requirements

- $\varepsilon$ -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   [2007/03/07 v0.3 Flag setting in bit fields (H0)]%
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\relax00}%
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
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{#1}

```

```

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  \end{package}

```

## 3 Installation

### 3.1 Download

**Package.** This package is available on CTAN<sup>1</sup>:

[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:macros/latex/contrib/oberdiek/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.

### 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/

```

---

<sup>1</sup>[ftp://ftp.ctan.org/tex-archive/](http://ftp.ctan.org/tex-archive/)

### 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 (te $\TeX$ , mi $\TeX$ , ...) relies on file name databases, you must refresh these. For example, te $\TeX$  users run `texhash` or `mktextlsr`.

### 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 pdf $\LaTeX$ :

```
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  $\varepsilon$ -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`.

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