The stackrel package

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Abstract

This package adds an optional argument to `\stackrel` for putting something below the relational symbol and defines `\stackbin` for binary symbols.

Contents

1 User interface

LaTeX's `\stackrel` allows a superscript above a relational symbol, but pure LaTeX does not provide a macro for putting a subscript below the symbol. This is supported by AMSLaTeX's `\underset` macro that works on both relational and binary symbols. A combination of `\underset` and `\overset` can be used to put sub- and superscripts to the same symbol.

This package stackrel extends the syntax of `\stackrel` by adding an optional argument for the subscript position. It follows the syntax of extensible arrows of packages amsmath and mathtools.

```
\stackrel [⟨subscript⟩] {⟨superscript⟩} {⟨rel⟩}
\stackbin [⟨subscript⟩] {⟨superscript⟩} {⟨bin⟩}
```

Example:

```
A \stackbin[\text{and}]{}{+} B \stackrel[x]{!}{=} C
```

$A \underset{\text{and}}{+} B \overset{!}{\underset{x}{=}} C$

2 Implementation

```
⟨*package⟩
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{stackrel}
  [2007/11/11 v1.2 Adding subscript option to stackrel (HO)]%
```

Given the original definition of `\stackrel` the addition of the optional argument is straightforward. If an argument is empty, then the corresponding sub- or superscript is suppressed.

Depending on the available resources (ε-TEX, pdfTEX) three methods are given for testing emptyness. All tests allow the hash to be used inside the arguments without doubling (for the unlikely case that someone wants to define macros with arguments).

\stack@relbin

```
\RequirePackage{etexcmds}[2007/09/09]
\ifetex@unexpanded
  \RequirePackage{pdftexcmds}[2007/11/11]%
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname pdf@strcmp\endcsname\relax
    \newcommand*{\stack@relbin}[3][]{%
      \mathop{#3}\limits
      \edef\reserved@a{\etex@unexpanded{#1}}%
      \ifx\reserved@a\@empty\else_{#1}\fi
      \edef\reserved@a{\etex@unexpanded{#2}}%
      \ifx\reserved@a\@empty\else^{#2}\fi
      \egroup
    }%
  \else
    \newcommand*{\stack@relbin}[3][]{%
      \mathop{#3}\limits
      \ifcase\pdf@strcmp{\detokenize{#1}}{}\else_{#1}\fi
      \ifcase\pdf@strcmp{\detokenize{#2}}{}\else^{#2}\fi
      \egroup
    }%
  \fi
\else
  \newcommand*{\stack@relbin}[3][]{%
    \mathop{#3}\limits
    \toks@{#1}%
    \edef\reserved@a{\the\toks@}%
    \ifx\reserved@a\@empty\else_{#1}\fi
    \toks@{#2}%
    \edef\reserved@a{\the\toks@}%
    \ifx\reserved@a\@empty\else^{#2}\fi
    \egroup
  }%
\fi
```

\stackrel

```
\renewcommand*{\stackrel}{%
  \mathrel\bgroup\stack@relbin
}
```

\stackbin

```
\newcommand*{\stackbin}{%
  \mathbin\bgroup\stack@relbin
}
```

```
⟨/package⟩
```

3 Installation

3.1 Download

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

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

CTAN:macros/latex/contrib/oberdiek/stackrel.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.

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 stackrel.dtx
```

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

```
stackrel.sty → tex/latex/oberdiek/stackrel.sty
stackrel.pdf → doc/latex/oberdiek/stackrel.pdf
stackrel.dtx → source/latex/oberdiek/stackrel.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`.

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

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 stackrel.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{stackrel.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 stackrel.dtx
makeindex -s gind.ist stackrel.idx
pdflatex stackrel.dtx
makeindex -s gind.ist stackrel.idx
pdflatex stackrel.dtx
```

4 History

[2006/12/02 v1.0]

- First version.

[2007/05/06 v1.1]

- Uses package etexcmds.

[2007/11/11 v1.2]

- Use of package pdftexcmds for LuaTeX support.

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; numbers in roman refer to the code lines where the entry is used.