The tabularht package

Heiko Oberdiek*

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Abstract
This package defines some environments that adds a height specification
to tabular and array.

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*Please report any issues at https://github.com/ho-tex/oberdiek/issues
1 Usage

\usepackage{tabularht}

The package provides the following environments that extend the tabular/array
environment by a height specification as first argument:

- \texttt{tabularht}, \texttt{tabularht*}
- \texttt{arrayht}
- \texttt{tabularhtx} (if package \texttt{tabularx} is loaded)

The height argument allows a length specification, package \texttt{calc} is supported if
used. This means, the tabular will have the specified height. You can also use the
prefixes \texttt{to=} and \texttt{spread=} \texttt{to=} is the default, \texttt{spread=} means, the natural height
of the tabular box is changed by the length after \texttt{spread=}.

Examples:

\begin{tabularht}{1in}
\end{tabularht}  \rightarrow \text{height is 1in}
\begin{tabularht}{to=1in}
\end{tabularht}  \rightarrow \text{height is 1in}
\begin{tabularht}{spread=0pt}
\end{tabularht}  \rightarrow \text{natural height, same as \begin{tabular}
\begin{tabularht}{spread=1in}
\end{tabularht}  \rightarrow \text{natural height increased by 1in}

Hint: See also package \texttt{tabularkv}, it provides an interface, where most param-
eters for the environments can be given by key-value pairs.

\interrowspace {...}

Adds space between table rows. It is essentially the same as \texttt{noalign\{vspace\{...\}}.

\interrowfill

Short for \texttt{interrowspace\{\texttt{\fill}}

\interrowstart...\interrowstop

Marker commands, useful for option \texttt{vlines}.

1.1 Option \texttt{vlines}

Warning: This stuff is experimental.

Vertical lines are interrupted, if space is inserted in \texttt{noalign, interrowspace,}
\texttt{addlinespace} (booktabs), between double \texttt{\hline}. This option tries to detect
and add the vertical lines. The lines in a tabular with \texttt{tabularht} support (environ-
mets of this package) are numbered from left to right. The gap that is controlled
by \texttt{interrowspace} or inbetween \texttt{interrowstart} and \texttt{interrowstop} is then
filled with the detected vertical lines.

If only a limited selection of the lines should be drawn, the commands know
an optional argument with a list of line numbers, e.g.

\begin{tabularht}{50mm}{|l|l|}
\hline
Hello & World\\
\interrowfill[1,3]
\hline
Foo & Bar
\end{tabularht}

There are three lines, but the middle line is not drawn in the gap between the first
and second row. Zero can be used to suppress all lines:
The syntax of the commands with the optional argument with the line number list \((\text{list})\). \((\text{list})\) is a comma separated list of numbers, \((\text{height})\) means the height specification described above with the optional prefixes \texttt{to=} or \texttt{spread=}.

\begin{verbatim}
\interrowspace\{[\text{list}]\}\{(\text{height})\}
\interrowfill\{[\text{list}]\}
\interrowstart\{[\text{list}]\}...
\interrowstop
\end{verbatim}

Option \texttt{vlines} is driver dependent and uses \texttt{\e-\TeX\ } features.

\textbf{pdf\TeX:} \texttt{pdf\TeX\ } in PDF mode. Here the positions of the lines are written with the help of the \texttt{\pdfsavepos} feature into the .\texttt{aux} file(s). Therefore you need two \LaTeX\ runs to get the lines.

\textbf{dvips:} Here, PostScript’s currentpoint it used to get the line positions. The lines are then drawn at the end of the page. Thus one \LaTeX/dvips run is sufficient for this option.

\textbf{Other drivers:}

\textbf{PostScript drivers:} probably possible, an end of page hook would be nice.

\textbf{V\TeX:} with GeX (PostScript interpreter) probably possible.

\textbf{dvipdfm:} no idea. The big problem is, how to get the current position?

\subsection*{1.2 Limitations}

- Vertical lines are interrupted by \texttt{\noalign{\vfill}}.

\subsection*{1.3 Compatibility}

- \texttt{array}, \texttt{delarray}, \texttt{tabularx} are supported.

- There can be problems with packages that redefine \texttt{\@array} (or \texttt{\@@array}, \texttt{\@tabarray}) and \texttt{\arrayrule} (for option \texttt{vlines}).

- \texttt{colortbl}: it should at least work, but there isn’t support for filling the gaps with color, neither the rules nor the backgrounds.

\subsection*{1.4 Examples}

\subsubsection*{1.4.1 Example 1}

\begin{verbatim}
1 ⟨example1⟩
2 \documentclass{article}
3 \usepackage{tabularht}
4 \begin{document}
5 \fbox{\
6 \begin{tabularht*}{1in}{4in}{@{}l@{\extracolsep{\fill}}r@{}}\
7 upper left corner & upper right corner\\
8 \noalign{\vfill} lower left corner & lower right corner\\
9 \end{tabularht*}\
10 }
11 \end{document}
12 ⟨/example1⟩
\end{verbatim}

\subsubsection*{1.4.2 Example 2}
2 Implementation

Package identification.
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{tabularht} \[2019/12/29 v2.7 Tabular with height specified (HO)]

2.1 Environments
\def\reserved@a{\let@array\array}\else
\let\reserved@a\relax
\fi
\tabH@patch@array
\reserved@a
}\tabH@patch@@array
\@ifpackageloaded{array}{}{%
\AtBeginDocument{%
\@ifpackageloaded{array}{%
\tabH@patch@@array
}{}
}
}\tabH@setheight#1{%
\tabH@setheight#1==\@nil
}\def\tabH@@setheight#1=#2=#3\@nil{%\ifx\#2#3\%
\setlength{\dimen@}{#1}\
\edef\@toarrayheight{to\the\dimen@}\
\else
\edef\tabH@temp{\zap@space#1 \@empty}\
\ifx\tabH@temp\tabH@to
\else
\ifx\tabH@temp\tabH@spread
\else
\PackageError{tabularht}{Unknown height specifier %
\接送after\strip@prefix\meaning\tabH@temp'}{%
The height dimension for tabular height can be prefixed with ‘to=’ or ‘spread=’, default is ‘to=. ‘% 
\let\tabH@temp\tabH@to
\fi
\fi
\setlength{\dimen@}{#2}\
\edef\@toarrayheight{\tabH@temp\the\dimen@}\
\fi
\fi
\let\tabH@temp\to
}\tabH@sethto{to}
\def\tabH@spread{spread}
First argument is the height of the table, then the original arguments for tabular follow.
\newenvironment{tabularht}[1]{%
\tabH@setheight(#1)%
\tabular%
}{%
\endtabular
}
\newenvironment{tabularht*}[1]{%
\def\tabH@to{to}
\def\tabH@spread{spread}
\tabH@sethto{to}
\def\tabH@spread{spread}
\newenvironment{tabularht*}[1]{%
\tabH@setheight(#1)%
\tabular%
}{%
\endtabular
}
\newenvironment{tabularhtx}[1]{% 
\tabH@setheight(#1)\% 
\tabularx 
\{}{}
\endtabularx 
}\}
\newenvironment{arrayht}[1]{% 
\tabH@setheight(#1)\% 
\array 
\}{}
\endarray 
}\}
\def\interrowspace{% 
\noalign\bgroup 
\tabH@interrowspace 
}\}
\newcommand*{\tabH@interrowspace}[2][]{% 
\tabH@vspace(#1){#2} 
\egroup 
}\}
\def\interrowfill{% 
\noalign\bgroup 
\tabH@interrowfill 
}\}
\newcommand*{\tabH@interrowfill}[1][]{% 
\tabH@vspace(#1){\fill} 
\egroup 
}\}
\def\tabH@vspace#1#2{% 
\tabH@vspace@start{#1} 
\vspace{#2} 
\tabH@vspace@stop 
}\}
\let\tabH@vspace@start\@gobble 
\let\tabH@vspace@stop\@empty 
\newcommand*{\interrowstart}{% 
\noalign\bgroup 
\tabH@interrowstart 
}\}
\newcommand*{\tabH@interrowstart}[1][]{% 
\tabH@vspace@start(#1) 
\egroup 
}\}
\newcommand*{\interrowstop}{% 
\vspace@empty 
}\}
\let\vspace@empty\@empty 
\newcommand*{\interrowstop}{% 
\noalign\vspace@empty 
}\}
\newcommand*{\interrowstop}{% 
\noalign\vspace@empty 
}\}

2.2 Options
\providecommand*{\tabH@driver}{}
\DeclareOption{vlines}{% 
\let\tabH@temp\relax 
}\}
\DeclareOption{pdftex}{% 
\def\tabH@driver{dvips} 
}\}
\ProcessOptions\relax

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2.3 Option vlines, driver independent stuff

\begingroup
\let\@addtoreset\@gobbletwo
\newcounter{tabH@unique}
\let\tabH@currenttab\@empty
\def\tabH@array@init{% 
  \ifx\@toarrayheight\@empty % ignore vertical lines of nested tabular environments
    \let\tabH@currenttab\@empty
  \else
    \stepcounter{tabH@unique}
    \edef\tabH@currenttab{\the\c@tabH@unique}
  \fi
}
\renewcommand*{\@arrayrule}{% 
  \@addtopreamble{%
    \hskip -.5\arrayrulewidth
    \ifx\tabH@currenttab\@empty
    \else
      \tabH@vrule{\tabH@currenttab}%
    \fi
  \hskip -.5\arrayrulewidth
}\
\let\tabH@vrule\@gobble
2.4 Driver pdftex
\RequirePackage{iftex}[2019/11/07]
\ifpdf
\begingroup
\@ifundefined{pdfsavepos}{% 
\PackageError{tabularht}{% Your pdfTeX is too old% }
\string\pdfsavepos\space is missing.% }% 
\endgroup 
\csname fi\endcsname 
\endinput
\let\on@line\@empty
\PackageInfo{tabularht}{% Using driver ‘pdftex’ because of pdfTeX in PDF mode% }
\endgroup
\protected\def\tabH@vrule#1{% 
\if@filesw 
\pdfsavepos 
\protected@write\@auxout{% 
\let\tabH@lastxpos\relax 
}{}
\fi
}
def\tabH@lastxpos{\the\pdflastxpos}% 
def\tabH@lastypos{\the\pdflastypos}%
% The .aux file contains three commands:
% \tabH@aux@vrule{tabular id}{x position}
% \tabH@aux@vstart{tabular id}{row id}{x position}{y position}
% \tabH@aux@vstop{y position}
% 
% The .aux files are read the first time before
% \AtBeginDocument{%.% The .aux files are read the first time before
% \AtBeginDocument and later at \end{document}.% \tabH@aux@done is a marker to distinguish
% between these two readings. Only in the first
% case we need the \tabH@aux@... commands.
% \let\tabH@aux@done\@empty
% \if@filesw
% \immediate\write\@mainaux{% 
\@percentchar\@percentchar BeginProlog: tabularht% }
% \immediate\write\@mainaux{% 
\detokenize{% 
% the \tabH@aux@... commands are needed only if 
% tabularht is loaded with driver pdftex.
\@ifundefined{\tabH@aux@vrule}\@secondoftwo\@firstofone
% % disable commands except for the first .aux files reading
\@ifundefined{\tabH@aux@done}\@gobble\@firstofone
% }%
\% the x positions of vrules are stored in
\% \tabH@<tabcount>list with distinct values
\protected\def\tabH@aux@vrule#1#2{%
  \@ifundefined{tabH@#1list}{%
    \expandafter\xdef\csname tabH@#1list\endcsname{%
      \do{#2}%
    }%
  }{%
    \begingroup
    \def\x{#2}%
    \let\y@undefined
    \let\do@tabH@do@add
    \expandafter\xdef\csname tabH@#1list\endcsname{%
      \csname tabH@#1list\endcsname\@empty
      \ifx\y@undefined
      \do{\x}%
    \fi
    \noexpand\do{#1}%
    \endgroup
  }%
}
\def\tabH@do@add#1{%
  \ifx\y@undefined
    \ifnum#1<\x\space
    \else
      \expandafter\ifx\csname y\endcsname\relax\fi
    \fi
  \else
    \expandafter\ifx\csname y\endcsname\relax\fi
  \fi
  \noexpand\do{#1}%
}
\def\tabH@vspace@start#1{%
  \if@filesw
    \stepcounter{tabH@unique}%
    \edef\tabH@currentrow{\the\c@tabH@unique}%
    \pdfsavepos
    \protected\write\@auxout{%
      \let\tabH@lastxpos\relax
      \let\tabH@lastypos\relax
    }{%
      \tabH@aux@vrule\tabH@currenttab\tabH@currentrow%
      \tabH@aux@vstart\tabH@currenttab\tabH@currentrow%
      \tabH@aux@vstop\tabH@currenttab\tabH@currentrow%
    }
  \fi
  \begingroup
  \edef\a{tabH@\tabH@currenttab row\tabH@currentrow}%
2.5 DVI drivers

\ifx\tabH@driver@dvips\@empty
\PackageError{tabularht}{Missing DVI driver, option `vlines' disabled}{Supported DVI drivers: dvips.}\fi
\expandafter\endinput
\fi
\begingroup
\let\on@line\@empty
\PackageInfo{tabularht}{Using driver `\tabH@driver'}\endgroup
\csname tabH@driver@\tabH@driver\endcsname
\protected\def\tabH@vrule#1#2\vrule#3\arrayrulewidth{#2% fi or empty
% hack to get rid of maxdrift rounding of dvips,
% thus simulate a large motion
\kern1in\relax
\tabH@literalps{#1 tabH.vrule % Resolution neg 0 translate%}
\vrule#3\arrayrulewidth
\tabH@literalps{Resolution 0 translate}\kern-1in\relax}
\def\tabH@vspace@start#1{\begingroup\let\y\@empty
\PackageInfo{tabularht}{Using driver `\tabH@driver'}\endgroup
\csname tabH@driver@\tabH@driver\endcsname
\protected\def\tabH@vrule#1#2\vrule#3\arrayrulewidth{#2% fi or empty
% hack to get rid of maxdrift rounding of dvips,
% thus simulate a large motion
\kern1in\relax
\tabH@literalps{#1 tabH.vrule % Resolution neg 0 translate%}
\vrule#3\arrayrulewidth
\tabH@literalps{Resolution 0 translate}\kern-1in\relax}
\def\tabH@vspace@start#1{\begingroup\let\y\@empty
\@for\x:=#1\do{% 
\ifx\y\@empty
\edef\y{\x}%
\else
\edef\y{\y\space\x}%
\fi
\}%
\tabH@literalps{\tabH@currenttab[\y]currentpoint exch pop}%
\endgroup
\}
\def\tabH@vspace@stop{%
\tabH@literalps{%
currentpoint exch pop %
\number{dimexpr\arrayrulewidth\relax\space}
\tabH.vspace%
}%
}
\def\tabH@headerps{%
userdict begin%
\tabH.list 10 dict def%
\tabH.job [[]] def %
end%
\tabH.vrule{%
10 string cvs cvn dup \tabH.list exch known{%
\tabH.list exch dup [ exch \tabH.list exch get %
currentpoint pop round exch true exch {%
\tabH.list key [ ... x true i
\tabH.list key [ ... false i
\exch%
% ... [ ... x i
2 copy lt{false}{%
2 copy eq{pop false}{exch true}ifelse%
\}ifelse%
\}\false\ifelse%
\for\al\%}
\put%
\}%
\tabH.list exch[currentpoint pop round]put%
\}%
\ifelse%
\}bind def%
\% <tab num> <cols array> <ytop> <ybottom> <rulewidth[sp]>
\tabH.vspace%
userdict begin %
10 dict dup begin %
exch 65536 div Resolution mul 72.27 div %
dvips uses a poor man's ceiling function
% see dopage.c before "drawrule": (int)(... + 0.9999999)
0.9999999 add truncate%
/rulewidth exch def %
exch/ybottom exch def %
exch/ytop exch def %
exch/cols exch def %
exch/tabkey exch 10 string cvs cvn def %
end%
\tabH.job exch[exch userdict/tabH.job get aload pop]def %
end%
}bind def %
\% Now we do the work at the end of the page.
\% Unhappily "eop-hook" cannot be used, because "eop"
\% executes "restore" before, so that all data are lost.
3 Installation

3.1 Download

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


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/macos/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):

```sh
unzip oberdiek.tds.zip -d ~/texmf
```

\(^1\)CTAN:pkg/tabularht
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 tabularht.dtx
```

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

- `tabularht.sty` → `tex/latex/oberdiek/tabularht.sty`
- `tabularht.pdf` → `doc/latex/oberdiek/tabularht.pdf`
- `tabularht-example1.tex` → `doc/latex/oberdiek/tabularht-example1.tex`
- `tabularht-example2.tex` → `doc/latex/oberdiek/tabularht-example2.tex`
- `tabularht.dtx` → `source/latex/oberdiek/tabularht.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, MiK\TeX{}, …) 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 \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:

```
l latex \let\install=y\input{tabularht.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 tabularht.dtx
makeindex -s gind.ist tabularht.idx
pdflatex tabularht.dtx
makeindex -s gind.ist tabularht.idx
pdflatex tabularht.dtx
```

4 History

[2005/09/22 v1.0]

- First public version.
[2005/10/16 v2.0]
• Height specification allows to=... or spread=..., default is to=.
• Option vlines added, drivers pdftex and dvips.
• \interrowspace, \interrowfil, and \interrowstart...\interrowstop added.

[2005/10/18 v2.1]
• Fix for package colortbl, but the colors of colortbl remain unsupported.

[2006/02/20 v2.2]
• Code is not changed.
• DTX framework.

[2006/12/22 v2.3]
• Documentation fix.
• Fix in code of option vlines.

[2007/03/21 v2.4]
• Fix: Counter tabh@unique must not be changed by \include.

[2007/04/11 v2.5]
• Line ends sanitized.

[2016/05/16 v2.6]
• Documentation updates.

[2019/12/29 v2.7]
• Use \iftex package.

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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.

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\iffalse...
\fi...
\if\fi...
\@ifnextchar...
\@ifnextchar...