Abstract

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

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1 Usage

\usepackage{tabularht}

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

- \begin{tabularht}\end{tabularht}
- \begin{tabularht*}\end{tabularht*}
- arrayht
- \begin{tabularhtx}\end{tabularhtx} (if package tabularx is loaded)

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

Examples:
\begin{verbatim}
\begin{tabularht}{1in}
→ height is 1in
\begin{tabularht}{to=1in}
→ height is 1in
\begin{tabularht}{spread=0pt}
→ natural height, same as \begin{tabular
\begin{tabularht}{spread=1in}
→ natural height increased by 1in
\end{verbatim}

Hint: See also package tabularkv, it provides an interface, where most parameters for the environments can be given by key-value pairs.

\interrowspace {...}

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

\interrowfill

Short for \interrowspace{\fill}

\interrowstart \interrowstop

Marker commands, useful for option vlines.

1.1 Option vlines

Warning: This stuff is experimental.

Vertical lines are interrupted, if space is inserted in \noalign, \interrowspace, \addlinespace (booktabs), between double hlines. This option tries to detect and add the vertical lines. The lines in a tabular with tabularht support (environments of this package) are numbered from left to right. The gap that is controlled by \interrowspace or inbetween \interrowstart and \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{verbatim}
\begin{tabularht}{50mm}{|l|l|}
Hello & World\\ Foo & Bar
\end{tabularht}
\end{verbatim}

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 \textit{list}. \textit{list} is a comma separated list of numbers, \textit{height} means the height specification described above with the optional prefixes \textit{to=} or \textit{spread=}.

\begin{verbatim}
\interrowspace[\textit{list}]{\textit{height}}
\interrowfill[\textit{list}]
\interrowstart[\textit{list}]
\interrowstop
\end{verbatim}

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

\textbf{pdftex:} 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 \TeX/dvips run is sufficient for this option.

\textbf{Other drivers:}

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

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

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

\subsection{Limitations}

\begin{itemize}
\item Vertical lines are interrupted by \texttt{\noalign{\vfill}}.
\end{itemize}

\subsection{Compatibility}

\begin{itemize}
\item \texttt{array}, \texttt{delarray}, \texttt{tabularx} are supported.
\item There can be problems with packages that redefine \texttt{\@array} (or \texttt{\@@array}, \texttt{\@tabarray}) and \texttt{\arrayrule} (for option \texttt{vlines}).
\item \texttt{colortbl}: it should at least work, but there isn’t support for filling the gaps with color, neither the rules nor the backgrounds.
\end{itemize}

\subsection{Examples}

\subsubsection{Example 1}

\begin{verbatim}
\begin{document}
\fbox{\begin{tabularht*}{1in}{4in}{@{}l@{}}
\text{upper left corner} & \text{upper right corner}\n\noalign{\vfill}
\multicolumn{2}{@{}c@{}}{\text{bounding box}}\n\noalign{\vfill}
\text{lower left corner} & \text{lower right corner}\n\end{tabularht*}}
\end{document}
\end{verbatim}

\subsubsection{Example 2}
\documentclass{article}
\usepackage{booktabs}
\usepackage[dvips,vlines]{tabularht}
\begin{document}
\begin{tabularht}{spread=0pt}{|l|l|}
\hline
First&Line
\hline
interrowstart
\addlinespace[10mm]
interrowstop
\hline
Second&Line
\hline
interrowstart
\hline
\hline
interrowstop
Third&Line
\hline
\hline
Fourth&Line
\hline
\end{tabularht}
\end{document}

\section{Implementation}

\texttt{\example2}

Package identification.
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{tabularht}[]\[2007/04/11 v2.5 Tabular with height specified (HO)]

\subsection{Environments}

\begin{verbatim}
\def\toarrayheight{\empty}
\def\tabHarray@init{\empty}
\toks0={
  \begingroup
  \long\def\vcenter{\fi\bg{}\sharp\nil}{\endgroup}
  \def\array[#1]{\the\toks0}
  \let\toarrayheight=\empty
  \def\vcenter{\fi
  \@toarrayheight
  \let\toarrayheight=\empty
  \def\array#1\@nil {\the\toks0
    \expandafter\x\array#1\@nil % hash-ok
  }%\end{verbatim}

\def\reserved@a{\let\@array\array}
\else
\fi
\tabH@patch@array
\reserved@a
}
\tabH@patch@@array
\@ifpackageloaded{array}{}{%
\AtBeginDocument{%
\@ifpackageloaded{array}{{
\tabH@patch@@array
}}{%
}
}
\def\tabH@setheight#1{%
\tabH@@setheight#1==\@nil
}
\def\tabH@@setheight#1=#2=#3\@nil{%
\ifx\@nil#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\%
\PackageError{tabularht}{Unknown height specifier \expandafter\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
\def\tabH@to{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}%
\begin{tabular}{
\let\tabH@setheight{#1}%
\tabular
%
\end{tabular}
%
\def\tabH@to{to}
\def\tabH@spread{spread}
\newenvironment{tabularhtx}[1]{{\tabH@setheight(#1)\% \tabularx}}{{\endtabularx}}
\newenvironment{arrayht}[1]{{\tabH@setheight(#1)\% \array}}{{\endarray}}
\def\interrowspace{{\noalign{\tabH@interrowspace}}} \newcommand*{\tabH@interrowspace}[2]{{\tabH@vspace{#1}{#2}}} \def\interrowfill{{\noalign{\tabH@interrowfill}}} \newcommand*{\tabH@interrowfill}[1]{{\tabH@vspace{#1}{\fill}}} \let\tabH@vspace@start\@gobble \let\tabH@vspace@stop\@empty \newcommand*{\interrowstart}{{\noalign{\tabH@interrowstart}}} \newcommand*{\tabH@interrowstart}[1]{{\tabH@vspace@start{#1}}} \newcommand*{\interrowstop}{{\noalign{\tabH@vspace@stop}}} \providecommand*{\tabH@driver}{}
\DeclareOption{vlines}{{\let\tabH@temp\relax}} \DeclareOption{pdftex}{}
\DeclareOption{dvips}{{\def\tabH@driver{dvips}}}
\ProcessOptions*\relax

2.2 Options
\providecommand*{\tabH@driver}{}
\DeclareOption{vlines}{{\let\tabH@temp\relax}} \DeclareOption{pdftex}{}
\DeclareOption{dvips}{{\def\tabH@driver{dvips}}}
\ProcessOptions*\relax
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%
    \begingroup
    \expandafter\ifx\csname CT@arc@\endcsname\relax%
      \else%
      \expandafter\CT@arc@
    \fi
    \vline
    \endgroup
    \hskip -.5\arrayrulewidth
  }%}
\let\tabH@vrule\@gobble

2.4 Driver pdftex
\RequirePackage{ifpdf}
\ifpdf
\begingroup
\@ifundefined{pdfsavepos}{{% 
\PackageError{tabularht}{Your pdfTeX is too old% }
}% }%\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
}{% 
\tabH@aux@vrule(#1){\tabH@lastxpos}% 
}% \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}
%
\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{% 
@percentchar@percentchar\@percentchar@percentchar\@percentchar BeginProlog: tabularht%
}%
% items in the aux file are executed,
% if tabularht is loaded
% and during the aux file read at \begin{document} only
\immediate\write\@mainaux{% 
@percentchar@percentchar@percentchar@percentchar\@percentchar@percentchar@percentchar\@percentchar@percentchar Done: tabularht%
}%
% the \tabH@aux@... commands are needed only if
% tabularht is loaded with driver pdftex.
\@ifundefined{\tabH@aux@vrule}{\@secondoftwo\@firstofone
%}{% 
\@ifundefined{\tabH@aux@done}{\@gobble\@firstofone
%}{% 
\@ifundefined{\tabH@aux@done}{\@gobble\@firstofone
%}{% 
\@ifundefined{\tabH@aux@done}{\@gobble\@firstofone
%}{%
\expandafter\let\expandafter\x\csname\a\endcsname
\relax
\else
\expandafter\let\expandafter\y\csname\a\endcsname
\expandafter\let\expandafter\l\csname tabH@currenttab list\endcsname
\relax
\else
\def\f{#1}\
\ifx\f\@empty
\let\do\tabH@do@set
\else
\count@=\z@
\let\do\tabH@do@filter
\fi
\setbox\z@=\hbox{\l}\
\wd\z@=\z@
\dp\z@=\z@
\copy\z@
\fi
\fi
\endgroup
\def\tabH@vspace@stop{%
\if@filesw
\pdfsavepos
\protected@write\@auxout{%\tabH@lastypos}{\tabH@aux@vstop{\tabH@lastypos}}%
\fi
\def\tabH@do@set#1{%
\hbox to \z@{\hskip \dimexpr #1sp - \x sp\relax
\vrule \@width\arrayrulewidth
\@depth\dimexpr \y sp\relax
\hss}
\def\tabH@do@filter{%
\@tempswafalse
\advance\count@=\z@
\@for\e:=\f\do{%
\ifnum\e=\count@
\@tempswatrue
\fi
\fi
\def\tabH@aux@vstart#1#2#3#4{%\tabH@current@vstart{{#1}{#2}{#3}{#4}}%
\}%
\def\tabH@aux@vstop{\tabH@aux@v{	abH@current@vstart}%
\}
\protected\def\tabH@do@set{%
\expandafter\tabH@do@set
\}
\else
\expandafter\@gobble
\fi
\protect\def\tabH@aux@vstart#1#2#3#4{%\tabH@current@vstart{{#1}{#2}{#3}{#4}}%
\}%
\protected\def\tabH@aux@vstop{%
\expandafter\tabH@aux@v{\tabH@current@vstart}%
}%
2.5 DVI drivers

\ifx\tabH@driver\@empty
\PackageError{tabularht}{Missing DVI driver, option `vlines' disabled}{Supported DVI drivers: dvips.}\fi
\expandafter\endinput

\def\tabH@driver@dvips{
\def\tabH@literalps##1{\special{ps:SDict begin ##1 end}}
\def\tabH@headerps##1{\special{! ##1}}
}
\@onelevel@sanitize\tabH@driver
\@ifundefined{tabH@driver@\tabH@driver}{\PackageError{tabularht}{Unsupported driver `\tabH@driver'}{Supported DVI drivers: dvips.}}{}
\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%\}}
\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{false}{%\exch true}{false}%
}ifelse%
}forall %
}ifelse%
)post %
\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 ceil 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:\footnote{ftp://ftp.ctan.org/tex-archive/}


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

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):

```bash
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 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 (`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 tabularht.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{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 `pdftex`:
The following XML file can be used as source for the \TeX Catalogue. The elements caption and description are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is tabularht.xml.

The tabularht package defines some environments that add a height specification to tabular and array environments. The default set of new environments take a value for their height in the first argument: defined environments are: \tt{tabularht}, \tt{tabularht*} and \tt{arrayht}. If package \xref{tabularx} is also loaded, the package also defines environments \tt{tabularxht} and \tt{tabularxht*}.

The places where stretching is to happen are signalled by \tt{\noalign{\vfill}} immediately after the \tt{\\} that ends a row of the table or array.

The package is part of the \xref{oberdiek} bundle.

\section{History}

\subsection*{[2005/09/22 v1.0]}
- First public version.

\subsection*{[2005/10/16 v2.0]}
- Height specification allows \tt{to=}... or \tt{spread=}..., default is \tt{to=}.
- Option \tt{vlines} added, drivers \tt{pdftex} and \tt{dvips}.
- \tt{\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 \c@tab\@unique must not be changed by \include.

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

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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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<table>
<thead>
<tr>
<th>Command</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>\tabH@vspace@start</td>
<td>165, 169, 177, 360, 494</td>
</tr>
<tr>
<td>\tab@vspace@stop</td>
<td>167, 170, 181, 398, 507</td>
</tr>
<tr>
<td>\tabular</td>
<td>122</td>
</tr>
<tr>
<td>\tabularx</td>
<td>136</td>
</tr>
<tr>
<td>\the</td>
<td>70, 96, 115, 222, 282, 283, 363, 440</td>
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<tr>
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<td>\vline</td>
<td>238</td>
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<td>\write</td>
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<td>\y</td>
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</tr>
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<td>\z@</td>
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<tr>
<td>\zap@space</td>
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