The \texttt{spacingtricks} package\footnote{This document corresponds to \texttt{spacingtricks} v1.2, dated 2019/09/09.}

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September 09, 2019

1 Introduction

This package proposes some macros to deal with spacing issues. Thus:

- \texttt{\centered} yields good horizontal centering without vertical spacing;
- \texttt{\footnote} has been redefined to avoid unsuitable spacings;
- \texttt{\vstrut} produces a strut with variable height or depth;
- \texttt{\indent} has been redefined to indent a line at the beginning of a particular paragraph even if \texttt{\parindent} has been set to 0;
- the \texttt{indentblock} environment produces indentation of all its content;
- the \texttt{compactlist} environment yields a compact list, without vertical spacing between the items, like here; several aliases are provided to type some list symbols shorter: \texttt{\bul}, \texttt{\dash}, \texttt{\ddash}, \texttt{\aster}, \texttt{\hand}, \texttt{\checksym}, \texttt{\arrowsymb};
- the macros \texttt{\ie} and \texttt{\eg} attends to typeset common abbreviations i.e. and e.g. with correct spacings;
- the \texttt{\dualboxes} command attends to place two boxes (figures, tables, text) side by side by adjusting the vertical positioning.

Otherwise, we provide the package \texttt{arraycols} \cite{arraycols}, wich allows a good management of spacings in \texttt{tabular} and \texttt{array} environments, and \texttt{mismath} \cite{mismath} of which several macros tends to improve spacings in mathematical formulas. Let us mention also the \texttt{setspace} package (natively in \LaTeX{} 2\epsilon), which allows to set the space between the lines of text, and at last \texttt{xspace} \cite{xspace}, which is loaded by \texttt{spacingtricks}: it adds a space unless the macro is followed by certain punctuation characters.

2 Usage

The \texttt{\centered\{(text)\}} command yields a centered line without vertical spacing. It acts like \texttt{\centerline} except in lists or tables where its behavior is much better (see the following examples). Moreover, the line break before (but not after) the macro is automatic.
Here is a comparative example of the centering commands inside a list:

1. Here a centered line with `\centered`:
   
   Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

2. Here another centered line with `\ \ \textbackslash \centerline`:
   
   Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

3. Here another centered line with `\par\centerline`:
   
   Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

4. Here a centered line with the `center` environment:
   
   Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

In tables, `\centered` allows to center a particular cell independently of the (general) column alignment\(^1\).

<table>
<thead>
<tr>
<th>left aligned column</th>
<th>right aligned column</th>
</tr>
</thead>
<tbody>
<tr>
<td>another cell</td>
<td>centered cell</td>
</tr>
<tr>
<td>centered line</td>
<td>the last cell right aligned</td>
</tr>
</tbody>
</table>

The `\footnote` command doesn’t have a good management of spacing issues, in particular when the `hyperref` package has been loaded. In English tradition, there is no space before numbers (or symbols) of note calls, and likewise at the beginning of footnotes, text begins immediately after the note number\(^2\). To avoid undesirable spaces, we don’t have to put some space before or after writing `\footnote{}`, for instance:

this is a note\footnote{good spacing} which works fine,

but sometimes, it is convenient to place the `\footnote` command on a new line. To achieve this, `\footnote` has been redefined to completely eliminate unwanted spaces\(^3\).

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\(^1\)In tables, we can also use the powerful `\makecell` command of the `makecell` package [2], on the other hand the `\centerline` command doesn’t work for a single line in a cell. Let us also mention the `\centeredline` command, from the package `centeredline` [3], which allows to use `\verb` commands inside the text to center; but it doesn’t work in tables either.

\(^2\)The typesetting of footnotes and note calls depends on national typographic rules which are, in principle, managed by `babel`. For instance, by activating the `french` option of `babel`, a thin space is added before the note calls, and the new `\footnote` macro does not alter this behavior.

\(^3\)Probably it would have been enough to recommend the use of the `%` symbol at the end of line; its effect is to cancel the space produced by a line break, but we do not always think of using it.
This is a note
\footnote{Bad spacing example.}
with the old command.

This is a note\footnote{Good spacing example.} with the new command.

Like the old one, the new \footnote command can take an optional argument to force the number of the note. Likewise, we have always the customization macros \footnotesize, \footnotepage, \footnoterule, but two new macros have been added to manage spacings: \footnotespace produces the space before the note call symbol and \footnoteindent produces the space at the beginning of the footnote text. For instance, with \renewcommand{\footnotespace}{\,} and \renewcommand{\footnoteindent}{\enskip} we get:

This is a note\footnote{\enskip} with particular space settings.

\footnotespace

\vstrut \{\langle \text{height} \rangle \} \{\langle \text{depth} \rangle \}
produces a strut with variable height or depth, in order to increase the line’s height (above the base line) or depth (below the base line, optional); this command can be used in a text line, a table, a list, a formula, etc. If the values of \langle \text{height} \rangle and \langle \text{depth} \rangle are inferior to the height and depth of the current line, the command has no effect. Here are some examples.

\[ \frac{\sqrt{0.5p}}{10} = \frac{\sqrt{\vstrut{1.7ex} 0.5p}}{10} \]
\fbox{\vstrut{2ex}$\sigma(X)=1$} gives $\sigma(X) = 1$ better than $\sigma(X) = 1$

The height adjustment is done by trial and error. We could also have used a vertical phantom box; for example in the previous square root, we get a good result with \vphantom{\bar{t}}, but it’s not obvious to know what to put in the phantom box, moreover, \vstrut allows a finer tuning.

In a table, \renewcommand{\arraystretch}{\langle \text{stretch} \rangle} allows to increase the height of the rows but this command has a global effect, whereas \vstrut allows to adjust properly the height of each row, as in the following table:

<table>
<thead>
<tr>
<th>bad</th>
<th>good</th>
</tr>
</thead>
</table>
| \begin{array}{|c|}
| \hline
| \frac{\ln X}{x^2} | \boxed{\vstrut{3.8ex}} |
| \hline
| \int_{\frac{a}{b}}^{\frac{c}{d}} \frac{1}{t} dt | \boxed{\vstrut{3ex}} |
| \hline
\end{array} | \begin{array}{|c|}
| \hline
| \frac{\ln X}{x^2} | \text{obtained with} \vstrut{3.8ex} |
| \hline
| \int_{\frac{a}{b}}^{\frac{c}{d}} \frac{1}{t} dt | \boxed{\vstrut{3ex} \{3ex\}} |
| \hline
\end{array}|

\text{enskip is equivalent to} \hspace{0.5em}.  

4
However, for tables, we have the `arraycols` package \cite{arraycols}, based on `cellspace` \cite{cellspace}, which allows to adjust row heights automatically. Nevertheless, \texttt{\vstrut} can be useful for fine adjustments.

In a text line, \texttt{\vstrut} can be used in place of \texttt{\vspace}.

\begin{quote}
\texttt{\indent} \texttt{\parindentlength} allows to eliminate any indentation of lines at the beginning of every paragraph. But in this case, the \texttt{\indent} command does not work anymore if we want exceptional indentation of a particular paragraph. So, the initial length of \texttt{\parindent} has been saved in \texttt{\parindentlength} and the command \texttt{\indent} has been redefined to still allow indentation of length \texttt{\parindentlength}.
\end{quote}

\begin{quote}
\texttt{\indentblock} The \texttt{\indentblock} environment allows indentation of a whole block of lines. It has an optional argument which is the length of indentation (set by default to \texttt{\parindentlength}). The following lyrics have been indented (and typeset in italic shape) with \texttt{\begin{indentblock}\itshape} and stanzas 2 and 4 have been affected by an additional indentation with \texttt{\begin{indentblock}[3em]}.
\end{quote}

\begin{quote}
\begin{verbatim}
Overhead the albatross hangs motionless upon the air
And deep beneath the rolling waves in labyrinths of coral caves
The echo of a distant time comes willowing across the sand
And everything is green and submarine

And no one showed us to the land
And no one knows the where’s or why’s
But something stirs and something tries
Starts to climb towards the light

Strangers passing in the street
By chance two separate glances meet
And I am you and what I see is me
And do I take you by the hand
And lead you through the land
And help me understand the best I can?

And no one calls us to move on
And no one forces down our eyes
No one speaks and no one tries
No one flies around the sun
\end{verbatim}
\end{quote}

\begin{quote}
\texttt{\compactlist} As its name tells it, the \texttt{\compactlist} environment allows to create a “compact” list, i.e. without vertical space neither above nor between items. As for lists in \LaTeX, items are generated by the \texttt{\item} command. The environment has an optional argument: \texttt{\begin{compactlist}[(symbol)]}.
\end{quote}

\begin{quote}
\begin{verbatim}
\texttt{\bul} \texttt{\dash} \texttt{\ddash} \texttt{\aster} \texttt{\hand} \texttt{\textbullet} \texttt{\textendash} \texttt{\textemdash} \texttt{\textasteriskcentered} \texttt{\ding{43}} \texttt{\ding{51}} \texttt{\checkssymb} \texttt{\arrowsymb} \texttt{\begin{compactlist}[(\textbullet)]}
\end{verbatim}
\end{quote}

\begin{quote}
\texttt{\bul} \texttt{\dash} \texttt{\ddash} \texttt{\aster} \texttt{\hand} default item symbol is \texttt{\textbullet} but it can be changed. We provide aliases for several symbols commonly used in lists: \texttt{\bul} \texttt{\dash} \texttt{\ddash} \texttt{\aster} \texttt{\hand} \texttt{\checkssymb} \texttt{\arrowsymb} \texttt{\begin{compactlist}[(\textbullet)]} which need to load the
\checkssymb \textfont \pifont \textfont \textit \textsf \texttt \textfrak \textit \textsf \texttt \textfrak \textbf \textup \textsc \texttt \textfrak \textbf \textup \textsc \texttt \textfrak \textbf \textup \textsc \texttt \textfrak

\begin{compactlist}[\checkssymb]:
✓ First item.
✓ Second item.
✓ Third item.

\textbullet These aliases can be used directly in text mode, of course. For \hand, \checkssymb and \arrowsymb, the symbol is followed by a space if there is no punctuation character just after it (thanks to the macro \texttt{\xspace} from the \texttt{xspace} package [1]).

\checkssymbindent This length (fixed at 1 em by default) can be modified with \texttt{\setlength} to increase or decrease the indentation of the \texttt{compactlist} environment. Notice that there are several other ways to construct a compact list in particular with the \texttt{noitemsep} key of the \texttt{enumitem} package [5].

\checkssymb\texttt{\ie} \texttt{\eg} In English, at the end of a sentence, the point is followed by an em space which is larger than an interword space. We provide the \texttt{\ie} (\textit{id est}) and \texttt{\eg} (\textit{exempli gratia}) macros, suggested in The \texttt{\LaTeX} Companion [9], to get correct spacing after these abbreviations e.g. here. In American typography, a comma is often placed after these abbreviations, what we can get with \texttt{\ie}, on the other hand, some authors prefer to typeset \textit{i.e.} in italic shape, which is always possible with \texttt{\textit{\ie}}.

\checkssymb\texttt{\dualboxes} Several packages intend to set the text around a figure or a table, but in general we have to give the width of the box containing the figure or the table. Let us mention however the \texttt{picins} package [8], cited in The \texttt{\LaTeX} Companion [9], which do not ask for the box width and it can also be used with lists. Nevertheless vertical positioning can be tricky. For this purpose, we have written the \texttt{\dualboxes[⟨pos⟩]⟨left⟩⟨right⟩} macro, which places two boxes, ⟨left⟩ and ⟨right⟩, side by side. These boxes can contain figures, tables, text, \texttt{minipage} environments (for several paragraphs and lists), etc. The optional ⟨pos⟩ parameter sets the vertical level on which the boxes are aligned: a number between 0 (bottom) and 1 (top, default value). Here is a first example with \texttt{\dualboxes[0.7]}.

\begin{tabular}{c|c|c|c|c|c}
\hline
\texttt{x} & –2 & –1 & 0 & 1 & 2 & 3 \\
\hline
\texttt{f(x)} & –0.96 & –0.71 & 0.59 & 0.38 & 0.18 & \\
\hline
\end{tabular}

\begin{center}
\begin{tikzpicture}
\begin{axis}[
axis lines=middle,
axis line style={-stealth},
xtick={-4,-3,-2,-1,1,2,3,4},
ytick={-1,0,1},
]
\addplot [domain=-1:4, samples=100, red, thick] {x^2-2*x+1};
\end{axis}
\end{tikzpicture}
\end{center}

The horizontal space is equally shared between left margin, interbox space and right margin.

In the following example the right box has been shifted back to make an over-laping with the left one, what \texttt{picins} cannot do.
This command has a starred version which eliminates spaces at the beginning and at the end of the line, the only remaining space is between the boxes:
\dualboxes*[⟨pos⟩]{{⟨left⟩}}{⟨right⟩}.

Here the left part consist of a paragraph box obtained with \parbox{7cm}{...}. If we want several paragraphs, a list or a mathematical displayed formula, in one of the boxes, then we have to put them in a minipage environment.

Let us indicate that it’s unfortunately not possible to use\verbatim{} environments (nor the in-line \verb command) within \dualboxes arguments, just as it’s not possible for footnotes or margin notes.

\section{Implementation}

1 \RequirePackage{ifthen}
2 \RequirePackage{xspace}
3
4 \newcommand*{\centered}[1][{{\setlength{\parskip}{0pt}\par\noindent}f\hspace{\footnotespace}\parbox{\textwidth}{#1}}}]
5

The double braces are necessary here to ensure that the \parskip modification applies locally within the command and not globally to the rest of the document.
\newcommand{\footnoteindent}{}
\let\footnt\footnote
\renewcommand{\footnote}[2][\unskip\footnotespace]{%\unskip\footnt{\footnoteindent\ignorespaces #2}\unskip\footnt[#1]{\footnoteindent\ignorespaces #2}}\unskip elimi-\nates undesirable spaces before and \ignorespaces after.
\newlength{\strutheight}
\newcommand*{\vstrut}[2][0pt]{%\setlength{\strutheight}{#2}\addtolength{\strutheight}{#1}\unskip\ensuremath{\text{\rule[-#1]{0pt}{\strutheight}}}\ignorespaces}
\newlength{\parindentlength}
\setlength{\parindentlength}{\parindent}\renewcommand{\indent}{\hspace{\parindentlength}}
\newenvironment*{indentblock}[1]{%\parindentlength}{%\begin{list}{}{%\setlength{\leftmargin}{#1}\setlength{\itemsep}{0pt}\setlength{\parsep}{0pt}\setlength{\topsep}{0ex}\setlength{\partopsep}{0pt}\setlength{\labelwidth}{1em}\setlength{\leftmargin}{\labelwidth}\addtolength{\leftmargin}{\labelsep}\addtolength{\leftmargin}{\compactlistindent}}\item\}{%\end{list}}
\newlength{\compactlistindent}
\setlength{\compactlistindent}{1em}\newenvironment*{compactlist}[1]{%\parindentlength}{%\begin{list}{#1\unskip}{%\unskip suppresses the space created by \xspace}\setlength{\itemsep}{0pt}\setlength{\parsep}{0pt}\setlength{\topsep}{0ex}\setlength{\labelwidth}{1em}\setlength{\leftmargin}{\labelwidth}\addtolength{\leftmargin}{\labelsep}\addtolength{\leftmargin}{\compactlistindent}}\item\}{%\end{list}}
\providecommand{\bul}{\textbullet}
The command \asterisk already exists in the mathabx package.
The following macros need the pifont package.

\providecommand{\hand}{\ding{43}\xspace}
\providecommand{\checksymb}{\ding{51}\xspace}
\providecommand{\arrowsymb}{\ding{226}\xspace}
\providecommand{\ie}{i.e.\xspace}
\providecommand{\eg}{e.g.\xspace}
\newcommand{\@@dualboxes}[3][3][1]{
\par
\noindent
\raisebox{-#1\height}{#2} \hfill
\raisebox{-#1\height}{#3} \smallskip
}
\newcommand{\@dualboxes}[3][3][1]{
\par
\noindent
\hfill
\raisebox{-#1\height}{#2} \hfill
\raisebox{-#1\height}{#3} \hfill\mbox{}\smallskip
}
\newcommand{\dualboxes}{\@ifstar{\@@dualboxes}{\@dualboxes}}

References

[2] The makecell package, Olga Lapko, CTAN, v0.1e 2009/08/03.
[3] centeredline – A macro for centering lines, Jean-François Burnol, CTAN, v1.1 2019/05/03.