The package vcell: Vertical alignment for cells

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1 Introduction

This package offers a serie of low-level macros to align vertically the content of a cell, whether it has a fixed height or a variable height.

2 Using vcell

The idea behind vcell is to measure the height of cells to calculate the height of the row and then to print the cells in another row. This second row will be printed over the first one¹. This process is not automated.

In a row where cells are vertically-aligned, all cells must be vertically-aligned. Each cells can have a different alignment however.

The commands available are those:

\savecellbox { <content>}</content>	Measure and save a cell that is vertically aligned. It will have to be printed in a second row.
<pre>\vcell {<content>}</content></pre>	Shortcut for \savecellbox
\printcelltop	Print a top-aligned cell
\printcellmiddle	Print a middle-aligned cell
$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	Print a bottom-aligned cell
\resetcellcount	Reset the measurement of cells. This will be
	done automatically once you print all saved
	cells

Once your cells are measured, the following lengths will be available:

\rowht The height of the row
\rowheight The total height of the row

^{*}The author wrote this package for its online table generator (https://latex-tables.com). You can contact him at info [at] latex-tables [dot] com.

¹Which can be understand as "cheating" for some.

3 Basic example

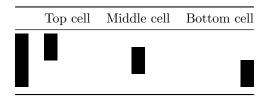
The following table:

Top cell	Middle cell	Bottom cell
Top		
	Middle	
		Bottom

can be created with the following code:

```
\begin{tabular}{@{}c@{}lcr@{}}
 \toprule
   & Top cell
   & Middle cell
   & Bottom cell
 \\ \midrule
     \savecellbox{\rule{0pt}{40pt}}
   & \savecellbox{Top}
   & \savecellbox{Middle}
   & \savecellbox{Bottom}
 \\[-\rowheight]
     \printcellmiddle
   & \printcelltop
   & \printcellmiddle
   & \printcellbottom
 \\ \bottomrule
\end{tabular}
```

To ensure the height of the table, an invisible strut is used. However, any content could be used instead, even content with variable height. You can see the alignment of the table with this figure :



The commands works even if all the cells have the same height, as shown in the following table :

Top cell	Middle cell	Bottom cell
Top	Middle	Bottom

4 Special cases

4.1 Usage of multicolumn

Whenever you want to use the command \multicolumn because you want to change the alignment of your cell or because you want your cell to span several column, you have to repeat the command in the second row.

$$\frac{\text{Top cell} \quad \text{Top cell} \quad \text{Bottom cell}}{\text{Top (2 cols)}}$$

Bottom

The previous table can be created with the following code:

```
\begin{tabular}{@{}c@{}lcr@{}}
\toprule
    & Top cell
    & Bottom cell
    \\ \midrule
        \savecellbox{\rule{0pt}{40pt}}
    & \multicolumn{2}{c}{\savecellbox{Top (2 cols)}}
    & \savecellbox{Bottom}
    \\ [-\rowheight]
        \printcellmiddle
    & \multicolumn{2}{c}{\printcelltop}
    & \printcellbottom
    \\ bottomrule
\end{tabular}
```

4.2 Paragraph columns

A frequent case is the use of paragraph columns (i.e. p, m or b columns). The only rule is to use p columns (or X columns from the tabularx package) and avoid m columns, otherwise it will mess with the alignment.

Middle-p cell	Top-p cell	Bottom-p cell	Bottom-p cell	Middle cell
This is a paragraph that starts at the center and keeps continuing	Paragraph from top	This is the biggest paragraph. It is aligned from the bottom but you can't notice that.	Paragraph from bot- tom	Middle

It can be produced by this code:

```
\begin{tabular}{@{}p{80pt}p{45pt}p{90pt}p{45pt}c@{}}
 \toprule
      Middle-p cell
    & Top-p cell
    & Bottom-p cell
    & Bottom-p cell
    & Middle cell
 \\ \midrule
      \savecellbox{This is a paragraph that starts at the center
          and keeps continuing}
    & \savecellbox{Paragraph from top}
    & \savecellbox{This is the biggest paragraph. It is aligned
        from the bottom but you can't notice that.}
    & \savecellbox{Paragraph from bottom}
    & \savecellbox{Middle}
  \\ [-\rowheight]
      \printcellmiddle
    & \printcelltop
    & \printcellbottom
    & \printcellbottom
    & \printcellmiddle
  \\ \bottomrule
\end{tabular}
```

4.3 Usage with colortbl

You can use coloured cells with colortbl. However, the color declaration must be repeated before \printcellmiddle, \printcelltop or \printcellbottom commands.



```
\begin{tabular}{|>{\columncolor{red}}p{60pt}|c|}
  \hline
    Middle-p cell
    & \cellcolor{yellow} Bottom cell
    \\ hline
```

4.4 Usage with multirow

vcell does not support cells that spans several rows. If you want to use \multirow in the same row as vertically-aligned cells, just use multirow as you would normally do and skip it in the second row. You don't have to adjust the first argument of multirow. You might want to use the optional argument of multirow to get the vertical alignment that you want.

Multirow cell	Middle-p cell	Bottom cell
	This is a	
	paragraph	
	that starts at	
	the center	
	and keeps	
	continuing	Paragraph from bottom
Two rows	This is	
	another	
	paragraph	
	that starts at	
	the center	
	and keeps	
	continuing	Second paragraph from bottom

```
\begin{tabular}{|c|>{\centering}p{60pt}|c|}
\hline
    Multirow cell
& Middle-p cell
& Bottom cell
\\ hline
    \multirow{2}{*}[-3.5em]{Two rows}
& \savecellbox{This is a paragraph that starts at the center and keeps continuing}
& \savecellbox{Paragraph from bottom}
\\ [-\rowheight]
% We skip for the multirow
& \printcellmiddle
```

5 Issues and limitations

This is a list of known issues and limitations from this package:

- Content generated by >{...} or <{...} in the preamble are not measured and may produce errors in some cases.
- m columns will mess with vertical alignment.
- Glues such as \dotfill or \hrulefill are not supported in cells
- \verb command is not supported in cells

However, we took great care to ensure that the content of the cell is only evaluated once, that no driver-specific commands were used and that selection in PDFs was not broken.

6 Licence

The contents of this package are distributed under the LaTeX Project Public License, version 1.3c or later.