The **pagelayout** class

Manual for Version 1.1.0

[https://github.com/friedemannbartels/latex-pagelayout](https://github.com/friedemannbartels/latex-pagelayout)

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1 Introduction

When Apple discontinued its photo book feature in Apple Photos, I was missing an easy-to-use photo book application. In 2020, I started to develop my own solution. What started with some SVG templates and shell scripts ended up in the pagelayout class, a declarative desktop publishing approach.

With the pagelayout class you can create single- and double-sided documents, create pages with margins, safety margins, and bleed, use templates, align text and graphics in a grid, wrap text across multiple pages and use before pages. Automatic grid layout and a simple and consistent user interface make it easier than ever to create graphics-rich documents with \LaTeX. Under the hood the TikZ and tcolorbox packages, ImageMagick and Inkscape are used.

2 Document

The document arguments described in the following can be either set as a document argument (\documentclass[⟨arguments⟩]{pagelayout}) or with a command (\twoside) in the preamble.

\documentclass Use the class with the \documentclass[⟨arguments⟩]{pagelayout} command. A single sided document is the default.

\twoside Using the document argument \twoside results in a document with left and right pages. When you create a two-sided document, your document always has an even number of pages. If you create a document with an odd number of pages, an additional page is automatically inserted. Two-sided documents start with a right page by default.

\beginleft Use the argument \beginleft to begin with a left page.

\fanfold By default, each page is placed on one paper. With the \fanfold argument you can change this behavior so that a left and a right page are placed on one paper. In this case, the first page is a left one by default.

\cover The \cover argument is similar to the \fanfold argument, but only applied to cover pages. Read more about cover pages in section 3.

\beginright If you want your fanfold document to start with a right hand page, you can use the argument \beginright.
2.1 Lengths

The document lengths described below can be set either as a document argument (\documentclass[page width=21cm]{pagelayout}) or by assigning the dimension directly (\pagewidth=21cm) in the preamble or in the document.

\pagewidth \hfill You can set the lengths page width and page height. The default page size is 210mm by 297mm.
\pageheight \hfill
\bleed \hfill You can set the bleed length. It applies to all paper edges. The default bleed is 0mm. You can override the bleed for each edge separately by defining the lengths top bleed, inner bleed, bottom bleed, outer bleed. The paper size results from the page size and the bleed.
\safetymargin \hfill The safety margin is the only length that has no influence on the final result. Its only purpose is to control the safe zone when editing. It is 0mm by default and can be configured for each edge by defining top safety margin, inner safety margin, bottom safety margin and outer safety margin.
\margin \hfill You can set the lengths margin and gutter for the document, for a page (see section 3) or for a grid (see section 4). The default margin is 20mm, the default gutter is 0mm. Similar to bleed and safety margin, the margin can be defined for each edge individually by setting top margin, outer margin, bottom margin and inner margin.
\coverwidth \hfill You can create documents with cover pages. Read more about creating cover pages in section 3. You can set the lengths coverwidth and coverheight. By default, the cover pages are the same size as the inside pages. If you want to create a cover with a spine, use the fanfold or cover argument described in section 2. In this case the length spine width takes effect. The default spine width is 3mm.
You can overwrite the bleed and the safety margin for cover pages. To do this, prefix the respective lengths described above. For example, define cover inner bleed or cover safety margin.

2.2 Page Graphics and Colors

You can define a page graphic and a page color with the arguments page graphic and page color. Set the argument color to define the text color. These arguments can be defined for the document or for each page (see section 3).

Read how to set the scale and crop of a page graphic with the newgraphic command in section 5.

2.3 Layout Guides

The layout guides described in the following can be either set as a document argument (\documentclass[grid]{pagelayout}) or using a command (\grid) in the preamble or the document. Layout guides can be switched on (\safezone) or off (\nosafezone).
The \texttt{grid} argument visualizes the margin and the grid gutters with green lines. Read more about the grid in section 4. The \texttt{safezone} layout guide shows a red border for the bleed and a thin pink line to indicate the safety margin. As an alternative to \texttt{safezone}, you can also use \texttt{cutting marks} to display cutting marks. Show a graph paper with the \texttt{graph paper} argument.

The \texttt{placeholders} argument shows template placeholders. Read more about templates in section 6. If you create a document with a cover and a first right hand page, use the \texttt{fill pages} argument during editing to add blank pages to get a better impression of the final result.

### 2.4 Draft Mode

The \texttt{draft} argument is a shortcut to enable the arguments \texttt{placeholders}, \texttt{cutting marks} and \texttt{fill pages}. It also speeds up rebuilding the PDF when changing the document.

### 3 Pages

\texttt{page} Create a page with the command \texttt{\page\{(arguments\}\{(content\}\}}. You can overwrite the document arguments \texttt{margin}, \texttt{top margin}, \texttt{bottom margin}, \texttt{inner margin}, \texttt{outer margin}, \texttt{gutter}, \texttt{page color}, \texttt{page graphic} and \texttt{color} for each page.

Use the argument \texttt{double} to create a double page. When creating a double page after a left page, a right page is automatically inserted before the double page. The argument \texttt{double} is only recognized for double sided documents.

Use the arguments \texttt{front cover} or \texttt{back cover} to create a front or back cover. If you have a back cover and a front cover, the back cover page must be defined first. If no argument is active, the front cover is placed as the first page and the back cover as the last page of the document. In this case, the only difference from normal pages is that the cover pages are not counted in the page numbering.

If the argument \texttt{fanfold} or \texttt{cover} is selected, the back and front covers are laid out on one paper so that the cover is suitable for a book with a hard or soft cover (see section 2). Space is reserved between the back and front covers for the spine. Set the \texttt{spine width} document argument as described in section 2.1.

With the arguments \texttt{hpos} and \texttt{vpos} you can set the default grid alignment for a page. Read more about the grid in the next section.

\texttt{setpagecolor} Alternativly to the argument you can use the command \texttt{\setpagecolor\{(color\}\}} to set the page color for all following pages.

\texttt{setpagegraphic} With the command \texttt{\setpagegraphic\{(arguments\}\{(name\}\}} you can define
a page graphic for all following pages. The name references a graphic version created with the \newgraphic command (see section 5). If no graphic version with the given name exists, the command uses the name as the file name. You can change the clipping by defining relative decimal values for the arguments scale (>1), hpos and vpos (0-1).

With the command \newbeforepage\{⟨name⟩\}\{⟨content⟩\} you can create a reusable page layer, that can be set before pages. Use the command \setbeforepage\{⟨name⟩\} to define a before page for all following pages or use the page argument before page to specify a before page for an individual page.

Use the condition \ifleftpage\{⟨content⟩\} and \ifrightpage\{⟨content⟩\} to check for the current page alignment.

Within a page scope you can use the \leftpage\{⟨content⟩\} command to place content only on a left page. In comparison to the \ifleftpage\{⟨content⟩\} condition, the command sets a grid for a single page. That way you can combine single with double page layouts. Accordingly you can use the \rightpage\{⟨content⟩\} command.

## 4 Grid

The grid allows you to create rows with cells. You can define width and height relations between rows and cells. All definitions are relative. The size and position results from these relations and the configured dimensions page width, page height, margin and gutter.

Create a grid with the command \setgrid\{⟨arguments⟩\}\{⟨config⟩\}. The grid configuration is a nested list of rows and cells. A cell is defined by a number that describes the width ratio to the other cells in the row. The default grid describes a row with one cell:

\setgrid{
  {{}}
}

You can define a width relation between cells by adding a integer value for each cell:

\setgrid{
  {{1}{2}}
}

With an optional integer value for each row you can set a height relation between rows:

\setgrid{
  {{2}{1}{2}}
  {{1}{1}{2}}
}

You can set an aspect ratio for a cell by adding a ! to the width. This way the aspect ratio is defined by the width of the cell and the height of the row. If all cells in a row have a fixed aspect ratio, the aspect ratio of the row is fixed too. In the following, a row with only fixed cells is named a fixed row. Because the height of a fixed row is determined by the aspect ratios of the cells, the height relation to the flexible rows is broken. In this case, you can force a height relation
between flexible and fixed rows by adding a ! to the height of the flexible row. In
the following, a row with a forced height is named a forced row.

The example defines a first fixed row with one cell and an aspect ratio of 3:2.
The height of the second row is forced half of the height of the first row. The cells
in the second row share the available width in the ratio one to two:

```
\setgrid{
  {[2]{3!}}
  {[1!]{1}{2}}
}
```

If the height of fixed and forced rows exceeds the available height, the grid
shrinks to fit the available space. The defined aspect ratios of the cells are pre-
served and the grid is centered horizontally. In this case you can define the hpos
argument to align the grid horizontally. A value of 0 aligns the grid to the left, a
value of 1 aligns the grid to the right. The default is a value of 0.5.

If the height of fixed and forced rows is less than the available height, all
flexible rows share the excess height. If there are no flexible rows, the grid is
centered vertically. In this case you can define the vpos argument to align the
grid vertically. A value of 0 aligns the grid to the top, a value of 1 aligns the grid
to the bottom. The default is a value of 0.5.

As for a document or a page you can set margin and gutter arguments for a
specific grid. With the arguments width, height, x and y you can override the
intrinsic grid size and position. When overriding the grid size and position, you
calculate with the intrinsic values, for example x=x-1cm.

4.1 Placing Content

The grid aligns content (see section 5) automatically in the given grid cells. To
set the position of a content box manually use the command \place{⟨fromrow
\place fromcell torow tocell⟩}. To place content in the first row and first cell use the
command \place{0 0 1 1} before the content. The defined place applies only
for the following content box. The next boxes are then again placed with auto
layout.

The command accepts decimals. That allows you to place content everywhere
within the grid. The gutter is taken into account when calculating the positions.

5 Content

5.1 Text

\text With the command \text[⟨arguments⟩]{⟨text⟩} you can place text. Align the
text vertically with the center and bottom arguments.

The \text command uses the package tcolorbox and accepts tcolorbox arguments,
for example to set text, frame or background color and transparency. The
tcolorbox behaves slightly different then the standalone version: spacings, rules
and background are removed by default. You can change the behaviour with
the tcolorbox command \tcbset{⟨arguments⟩}. Also the arc arguments behaves
different: if you set the arc to Opt the outer arc is also set to Opt.

\usetext Add the argument breakable to break text over multiple boxes and pages. Use
the command \usetext[⟨name⟩] to place the following text boxes in the grid. If
you want to use multiple breakable text boxes you can initialize the text with the name argument and define a name that you then can pass to the \usetext argument. Breakable text boxes may have different heights and positions. To align the baselines use the baselineskip argument and set the baseline dimension, for example baselineskip=\baselineskip.

The text command accepts the arguments shadow, shadow size, shadow color, shadow opacity, shadow xshift, shadow yshift, border, border width, border color and border radius. Read more about shadows and borders in section 5.4.

5.2 Graphics
\newgraphic
Create a reusable graphic version with the \newgraphic{⟨name⟩}{⟨arguments⟩} command. Define the arguments scale (>1), hpos and vpos (0-1) to set the clipping of the graphic. With the argument file you can link a file. If no file is defined, the name is used as the file name.

\graphic
The command \graphic{⟨arguments⟩}{⟨name⟩} places a graphic. The name references a graphic version created with the command \newgraphic. If no graphic version with the given name exists, the command uses the name as the file name.

The graphic is scaled to fit in the content box. If the aspect ratio of the graphic differs from that of the defined content box, the graphic is cropped. You can change the cropping by defining relative decimal values for the arguments scale (>1), hpos and vpos (0-1). With the orientation argument you can set the Exif orientation flag (1-8). To flip a graphic horizontally or vertically use the arguments hflip or vflip. Same as the \text command, the \graphic command accepts the border and shadow arguments described in section 5.4.

\graphicspath
You can use the command \graphicspath{⟨dir-list⟩} of the graphics package to specify a list of directories in which to search for graphic files.

5.3 Other
\xput
The command \xput{⟨code⟩} is an easy way to place arbitrary content in the grid. Within the code block the dimensions \width and \height represent the size of the content area and can be used to create graphics, that fit and adapt to the available size.

\tikzgraphic
The command \tikzgraphic{⟨tikz code⟩} works like the \xput command, but wraps your input in a tikzpicture.

5.4 Shadows and Borders

Text and graphic content can be placed with a border or a shadow. You can define a border or shadow for a specific content box by using the arguments border width, border color, border radius to add a border or shadow size, shadow color, shadow opacity, shadow xshift, shadow yshift to add a shadow.

\newborder
Define a reusable border or shadow with the \newborder{⟨name⟩}{⟨arguments⟩} \newshadow or \newshadow{⟨name⟩}{⟨arguments⟩} commands. Apply the border or shadow to ttext or \graphic with the argument border or shadow.

\setborder
To set a border or shadow within a page or document scope, use the commands \setshadow \setborder{⟨arguments⟩}{⟨name⟩} or \setshadow{⟨arguments⟩}{⟨name⟩}.
6 Templates

\newtemplate With the command \newtemplate\{\langle name\rangle\}{\langle layout\rangle} you can create a reusable layout. Creating a template works the same way as creating a page. In addition to graphics and text you can define placeholders. Use the command \placeholder\{\langle fromrow fromcell torow tocell\rangle\} to define a content area that can later be filled with a text or a graphic.

\template Use a template with the command \template\{\langle arguments\rangle\}{\langle name\rangle}{\langle content\rangle}. The available arguments are the same as for pages.

The command \template comes with an easy way to generate templates by using a name pattern. For example the template name \textit{sp} creates a template with a square and a portrait format placeholder. In this case the letter \textit{s} specifies a square (1:1) and the letter \textit{p} a portrait (2:3) format placeholder. Use the letter \textit{l} to define a landscape ratio (3:2), \textit{g} for golden ratio (5:3), \textit{o} for golden upright ratio (3:5), \textit{w} for wide ratio (2:1) or \textit{f} for a flexible ratio. With the character - you can start a new row. Within a row you can mix the fixed placeholders (\textit{s, p, l, g, o, w}) or use only flexible placeholders (\textit{f}).

7 Image Optimization

\optimize With the command \optimize\{\langle arguments\rangle\} you can enable image optimization. When enabled, JPG and PNG images are cropped, resized and cached. This results in fast rebuilds when changing the document. You can set the arguments \textit{density}, \textit{quality}, \textit{unsharp} and \textit{downsample threshold}. The \textit{density} argument takes a number of the pixels per inch (default 300), the \textit{quality} argument takes numbers between 1 and 100, the \textit{unsharp} argument an ImageMagick unsharp configuration (default 2x1) and the \textit{downsample threshold} a decimal value greater or equal 1 (default 1.2). The \textit{unsharp} argument can also be applied for individual graphics.

If you use image optimization and change the original graphics files, you must delete the cached versions so that the cache will update. The \import command helps you to streamline this process. When enabled, you need an import directory in which to place the modified files. When the document is created, the files are moved to your image directory and the corresponding cached versions are automatically regenerated. The import directory is either the directory \textit{import} in your working directory. Or you can set a system wide import directory by defining the shell variable PAGELAYOUT_IMPORT_DIRECTORY.

\preflight Use the \preflight command to proof the image resolution. If images have a final resolution less then 300 ppi you get a warning, if less then 200 ppi you get an error. With preflight enabled the maximum possible resolution is shown next to each graphic.