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The memoir class

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Abstract The memoir class is essentially the book and report classes with lots of bells and whistles as it includes the functions of over 30 popularly used packages. It can also simulate the appearance of article class documents and provides a basis for producing the typewritten-like manuscripts which some publishers ask for.

1 Introduction

For nearly 20 years I was involved in using LaTeX to produce camera-ready copy of International Standards, in particular ISO 10303 (STEP). As the standard grew — it now consists of thousands of pages spread across many publications — and ISO and various committees kept changing their minds about what they wanted, I grew increasingly frustrated with having to keep modifying the internals of the class and packages that I had developed. Separately I became interested in book design and felt that there was a need for a class that would support layout experiments. I worked on this in a desultory fashion for several years and eventually produced something that I felt might be generally useful.

The memoir class was first released in 2001 and since then has proven to be reasonably popular. The class can be used as a replacement for the book and report classes, by default generating documents virtually indistinguisable from ones produced by those classes. The class includes some options to produce documents with other appearances; for example an article class look or one that looks as though the document was produced on a typewriter with a single font, double spacing, no hyphenation, and so on. In the following I use the term 'standard classes' to denote the book and report classes and, when appropriate, the article class as well.

The memoir class includes the functionality of many packages, for instance the tocloft package for controlling the table of contents or methods similar to the

fancyhdr package for designing your own headers. The built-in package functions are mainly related to document design and layout; memoir does not touch upon areas like those that are covered by the babel or hyperref packages or any related to typesetting mathematics. On the other hand it is easy to configure a work produced with memoir to meet a university's thesis layout requirements.

memoir has improved substantially since it was first released — over 50 LaTeXers have provided code or suggestions for improvements. The class is included in the TUG TeX distributions and the latest version of the class and its supporting documentation is always available from CTAN:macros/latex/contrib/memoir.

2 General considerations

The class is a large one consisting of about 10,000 lines of LaTeX code documented in a 400 page report; there is no need for most users to look at this. There is a separate comprehensive User Manual which runs to about 300 pages and from time to time an Addendum is released noting extensions to the class. The first part of the Manual discusses some aspects of book design and typography in general, something that I haven't come across in the usual LaTeX books and manuals. This is intended to provide a little background for when you design your own printed documents.

The standard classes provide point options of 10, 11, or 12 points for the main body font. memoir extends this by also providing 9, 14, and 17 point options. The width of the text block is automatically adjusted according to the selected point size to try and keep within generally accepted typographical limits for line lengths; you can override this if you wish. The class also provides easy methods for specifying the page layout parameters such as the margins, both side margins and those at the top and bottom of the page; the methods are similar to those of the geometry package.

The page layout facilities also include methods, like those provided by the fancyhdr package, for defining your own header and footer styles, and you can have as many different ones as you wish. In fact the class provides seven styles to choose from before having to create your own if none of the built-in styles suit you. The styles are all displayed in the Manual.

Sometimes it is useful, or even required, to place trimming marks on each page showing the desired size of the final page with respect to the sheet of paper

that is used in the printer. This is provided by the showtrims option. A variety of trim marks are provided and you can define your own if you need some other kind.

2.1 Sectioning styles

Handles are provided for designing and using your own styles for chapter titles and such. The class comes with six predefined chapter styles ranging from the default look to a style that mimics that used in the *Companion* series of LaTeX books. There is even one which uses words instead of numerals for chapter numbers. The Manual shows at least one example of each style and over 20 are shown in Lars Madsen's collection at http://www.imf.au.dk/system/latex/artikler/MemoirChapStyles.

For those who like putting quotations near chapter titles the `epigraph` environment can be used.

The options for changing `\section` and lower level titles are more constrained, but generally speaking document design, unless for advertisements, should be constrained.

Sometimes, but particularly in novels, a sectional division is indicated by just leaving a blank line or two between a pair of paragraphs, or there might be some decorative item like three or four asterisks. Commands are available for typesetting such anonymous divisions.

In the standard classes the sectioning commands have an optional argument which can be used to put a short version of the section title into the table of contents and the page header. memoir extends this with a second optional argument so you can specify one short version for the contents and an even shorter one for page headers where space is at a premium.

2.2 Captions

memoir incorporates the code from my ccaption package which lets you easily modify the appearance of figure and table captions; bilingual captions are available if required, as are captions placed at the side of a figure or table. This also supports subfigures and subtables along the lines of the subfig package, plus letting you define your own new kinds of floats together with the corresponding 'List of . . . '.

3 Tables

Code from the array, dcolumn, delarray and tabularx packages is integrated within the class. To improve the appearance of rules in tabular material the booktabs package is also included.

Multipage tabulations are often set with the longtable or xtab packages, which can of course be used with the class. For simple tabulations that may continue from one page to the next, memoir offers a 'continuous tabular' environment. This doesn't have all the flexibility provided by the packages but can often serve instead of using them.

More interestingly, but more limited, the class provides 'automatic tabulars'. For these you provide a list of simple entries, like a set of names, and a number of columns and the entries are automatically put into the appropriate column. You choose whether the entries should be added row-by-row or column-by-column.

4 Verse

The standard classes provide a very simple `verse` environment for typesetting poetry. This is greatly extended in memoir. For example in the standard classes the verse stanzas are at a fixed indentation from the left margin whereas memoir lets you control the amount of indentation so that you can make a poem appear optically centered within the textwidth.

Stanzas may be numbered, as can individual lines within a poem. There is a special environment for stanzas where lines are alternately indented. Also you can can define an indentation pattern for stanzas when this is not regular as, for example, in a limerick where the 3rd and 4th of the five lines are indented with respect to the other three. It is not always possible to fit a line into the available space and you can specify the particular indentation to be used when a 'logical' verse line spills over the available textwidth, thus forming two or more typeset 'physical' lines.

5 End matter

Normally appendices come after the main body of a book. The class provides some methods for introducing appendices at the end, or you can place one or more appendices at the end of selected chapters if that suits you better.

memoir also lets you have more than one index and an index can be set in either the normal double column style or as a single column which would be more appropriate, say, for an index of first lines in a book of poetry. The titles of any bibliography or indexes are added to the table of contents, but you can prevent this if you wish.

The class provides a set of tools for making glossaries or lists of symbols, the appearance of which can, of course, be easily altered. The `makeindex` program is used to sort the entries. An example is shown in the current version of the Addendum. The most recent addition to the class provides configurable end notes which can be used as well as, or instead of, footnotes.

6 Miscellaneous

As already noted, the Manual for memoir runs to some 300 pages and it is impossible to cover everything in a short article. Suffice it to say that hooks and macros are provided for most aspects of document layout; for instance, footnotes can be as normal, typeset in two or three columns, or all run into a single paragraph. You can create new verbatim-like environments, read and write information in external files, design your own style of `\maketitle`, convert numbers to words, reserve space at the bottom of a page, and so on and so forth.

A Packages

Most packages work with the memoir class. Apart from from those indicated below the main exception is the hyperref package. This package modifies many of the internals of the standard classes but does not cater for all of the differences between memoir and the standard ones. If you wish to use hyperref with memoir then you must use the memhfixc package[1] after using hyperref. For example like:

1. memhfixc is supplied as part of the memoir distribution.

```
\documentclass[...]{memoir}
...
\usepackage[...]{hyperref}
\usepackage{memhfixc}
...
\begin{document}
```

The memoir class includes code either equivalent to, or extensions of, the following packages; that is, the set of commands and environments is at least the same as those in the packages: abstract, appendix, array, booktabs, ccaption, chngcntr, chngpage, crop, dcolumn, delarray, enumerate, epigraph, framed, ifmtarg, ifpdf, index, makeidx, moreverb, needspace, newfile, nextpage, patchcmd, shortvrb, showidx, tabularx, titleref, titling, tocbibind, tocloft, verbatim, verse. The class automatically ignores any `\usepackage` or `\RequirePackage` related to these.

The class also provides functions similar to those provided by the following packages, although the commands are different: fancyhdr, geometry, sidecap, subfigure, titlesec. You can use these packages if you wish, or just use the capabilities of the memoir class.