Introduction to Scientific Typesetting
Lesson 5: The Structure of a Document

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Document Layout

More Header customization

Document Layout

Page Styles

LaTeX provides several standard page styles. In the preamble, use `\pagestyle{`*style*`}`, where *style* is one of the following:

`plain` blank header, footer contains only the page number
`empty` empty header and footer
`headings` header provided by document class, empty footer
`myheadings` header determined by `\markright` and `\markboth`, footer is empty

`\markright` takes one argument, `\markboth` takes two arguments—the left-hand page header and the right-hand page header. We'll only need `\markright` usually.

`\thispagestyle{`*style*`}` changes only the headers/footer on that page.

An Example of Page Styles

Let's play around with this:

```
\documentclass{article}
\usepackage[margin=1in]{geometry}
\usepackage{amsmath}
\pagestyle{myheadings}
\begin{document}
Hello.
\markright{Math 233}
\newpage
Goodbye.
\markright{Introduction to Scientific Typesetting}
\end{document}
```

Try to substitute `plain` and `empty` for `myheadings`. Also try to use `\thispagestyle` on the second page.

Sections of an Article

Each document class has its own division names. For the `article` class, the divisions are:

`\section`, `\subsection`, `\subsubsection`.

The general form of the command is: `\section{`*title*`}`.

A variant is `\section[`*short-title*`]{`*title*`}`. In this case, *short-title* is used in the running header.

A second variant is `\section*{`*title*`}`, where no section number is printed and nothing is carried in the running header.

An Example


```
\documentclass{article}
\usepackage[margin=1in]{geometry}
\usepackage{amsmath}
\pagestyle{headings}
\begin{document}
\section[Intro]{Introduction}
Information here.
\subsection{Getting Started}
Right here
\end{document}
```

Title

For scholarly articles, the title has a special appearance. This should be the first item after `\begin{document}` when writing such an article.

In the `article` class, there are several fields possible, then the `\maketitle` command formats the title. (The title page generally has the `plain` page style.)

```
...
\begin{document}
\title{A Really Nice Paper}
\author{Ryan Higginbottom}
\date{\today}
\maketitle
...
```

Abstracts

The `abstract` environment typesets the abstract of the paper. This goes within the `document` environment.

Make sure to put the `abstract` environment after the `\maketitle` command.

```
\begin{document}
\title{...}
\author{...}
\date{...}

\maketitle
\begin{abstract}
...
\end{abstract}
```

Let’s practice!

Open up the first example PDF file from Sakai, and reproduce it.

Bibliography

Most papers will require a bibliography or “References” section of some sort. This will be the last thing in the body of your paper, and it falls in a `thebibliography` environment.

```
\begin{thebibliography}{#}
  \bibitem{key}
  ...
\end{thebibliography}
```

should be 9 or 99, depending on the number of entries you have.

You will have to run LaTeX twice to get the citations correct.

More on Bibliographies

Reference to the bibliography is done with `\cite{key}`. You'll notice in the sample file that I've also put an optional page reference in.

Two downsides to processing bibliographies this way: you are responsible for the formatting of the entry, and you are responsible for the order in which entries appear.

In TeXnicCenter, open the second example file (`.tex`) I posted on Sakai, build it twice to PDF and view it.

Table of Contents

Longer articles usually have tables of contents. This is generated with the `\tableofcontents` command. Because of the way LaTeX processes things, it will take at least 2 (and sometimes 3) runs of LaTeX to get all of the entries and page numbers correct.

Take the previous example `.tex` file and add three lines directly after `\begin{document}`:

```
\tableofcontents
\section{Introduction}
\subsection{Getting Started}
```

Now build three times and look at the `.pdf` file.

The TOC Example

Notice that the “References” wasn’t in the table of contents. We can add it (or anything else) manually.

`\addcontentsline{toc}{section}{`*text to be added*`}`

From the previous example, put `\newpage` before the `thebibliography` environment and type `\addcontentsline{toc}{section}{References}` after `\newpage`.

Build three times and view.

More Header customization

The `fancyhdr` package

We saw earlier that there were a few ways to adjust the page style of your document. The `fancyhdr` package gives you *a ton* more control.

The commands for this go in the preamble of your document.

```
\fancypagestyle{name}
  {
  \lhead{} \chead{} \rhead{}
  \lfoot{} \cfoot{} \rfoot{}
  \renewcommand{\headrulewidth}{0pt}
  \renewcommand{\footrulewidth}{0pt}
  }
\pagestyle{name}
```

Within the `\fancypagestyle` command, typing `\thepage` will give the page number.

Two Examples

In TeXnicCenter, open the third example file (`.tex`) posted on Sakai.

Build it to PDF and view it.

You can also define multiple page styles with `fancyhdr`. You'll need to use the command `\thispagestyle`.

In TeXnicCenter, open the fourth example file (`.tex`) posted on Sakai. Build it to PDF and view.

Let's practice!

Open up the fifth example file (`.pdf`) from Sakai, and reproduce it.