3 Structure of a LaTeX Document

A LaTeX source file has the format shown here:

```
\documentclass{class}
Preamble
\begin{document}
Body
\end{document}
```

We shall consider these components one at a time:

3.1 Document class

- `\documentclass{`*class*`}`
- `\documentclass[`*option,option,...*`]{`*class*`}`

The first active line is always a `\documentclass` declaration. This determines what LaTeX commands will be available, what the layout will be, etc. The classes available with basic LaTeX are:

- `book`
- `report`
- `article`
- `letter`
- `slides`

The three classes `book`, `report` and `article` are designed for the writing of entire books, reports (basically small books) and articles (entries for journals). This set of course notes is written in article style. The letter class is used for writing letters and the slides class for producing slides. This course only covers the first three and uses article as its example throughout.

The class used may take options. If so then these are specified in square brackets before the name of the class. Some of the more commonly used options are:

`10pt,11pt,12pt` Selects the default type size.

`a4paper,a5paper,b5paper` Selects the paper size. The default is the U.S.A. "letter".

`draft` Causes a thick black line to be drawn to the right of any overlong lines.

`twocolumn` Specifies two columns of text per page.

`titlepage,notitlepage` In article mode the title is placed at the top of the first page by default. If the `titlepage` option is specified, the title gets a page to itself. In article and book style, the title gets a titlepage unless the `notitlepage` option is specified.

A complete list is given in Lamport's LaTeX book in section C.5.1.

3.2 The preamble

The preamble is the section before the main body of the document. This section is the place to configure other options and to specify parameters that will alter the whole document.

N.B. Commands in the preamble must not produce any output.

3.2.1 Layout

The layout of the document should be left to the class to determine but facilities are available for changing certain parameters within the class. If any such changes are made they should be made in the preamble.

3.2.2 Packages

External sets of LaTeX commands called "packages" can be loaded in the preamble. These are loaded with the command

`\usepackage{`*package*`}`

Some of the more commonly used packages are described below:

`amstex`, `latexsym`: Add some commands and symbols for mathematical work.

Some of these packages take options which are passed with the syntax

`\usepackage[`*option,option*`]{`*package*`}`

A fuller list of packages is given in section C.5.2 of Lamport's LaTeX book.

3.3 The Document

The main body of the document is everything between the `\begin{document}` and `\end{document}` statements. This is the only part of the LaTeX input file that may produce any output.

The body of the document has various possible components:

Plain text: Plain text, with no special characters is treated very simply as we have seen in the introductory example.

Specially interpreted characters: We have already seen `~` used to produce a non-breaking, inter-word space and ``` `` ``` and `''` to generate the quotation marks.

LaTeX commands: We will see a number of LaTeX commands. An example is `\LaTeX` which generates the silly "LaTeX" logo.