



COMPSCI 111 / 111G

Mastering Cyberspace:

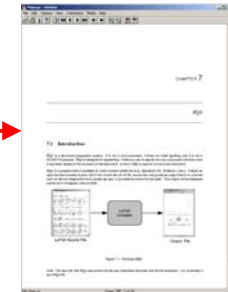
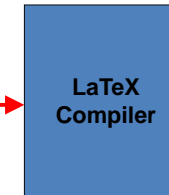
An introduction to practical computing

L^AT_EX

LaTeX

- **A document preparation system**

- Used to typeset a document



<http://en.wikipedia.org/wiki/LaTeX>

Why?

- **Why use LaTeX when we have word processors?**

- Results look better
- Focus on structure helps document development
- Best tool available for mathematical layout
- Works well for large documents
- Automatically generates:
 - Table of contents
 - Lists of figures
 - Lists of tables
 - Index
 - Glossaries
 - Bibliography
- Free and runs on many platforms

Development

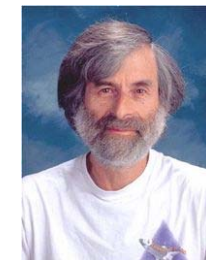
- **Donald Knuth**

- Stanford University
- The Art of Computer Programming
- Created TeX and METAFONT
- 1978 - 1989 Development of TeX



- **Leslie Lamport**

- LaTeX 1984
- Extensions to TeX
- Easier than TeX
- Focus on the structure of the document
- Standard way to use TeX



Commands

- **Used to tell LaTeX how to typeset something**

- Commands are case sensitive
- Optional parts are in square brackets
- Compulsory parts are in curly braces

```
\commandname[options]{argument}
```

Environments

- **Apply a change to the content within the environment**

- New environments start new paragraphs

```
\begin{environmentname}
```

```
...
```

```
\end{environmentname}
```

Comments

- **Used to annotate the document**

- Ignored by the compiler
- Aimed at other humans

```
% Comments starts with a percentage sign  
% All text is ignored until the end of the  
% line is reached.
```

Whitespace

- **Whitespace characters**

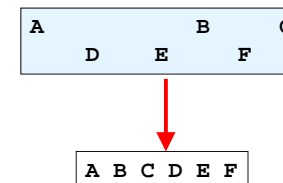
- Space
- Tab
- Line break

- **White space is largely ignored apart from:**

- Space between words.
- Blank lines between blocks of text that are used to make paragraphs.

- **Two or more consecutive whitespace characters**

- Reduced to a single space



Special characters

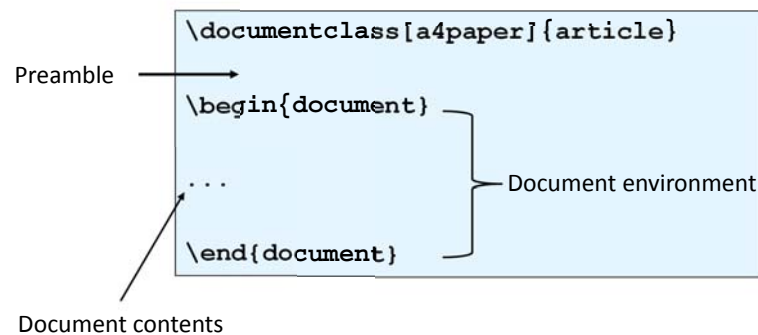
- **Characters that are used in the syntax of the language**
 - Can't type these characters directly
 - Need a special way to print them
 - 10 characters

`\ $ % ^ & _ ~ # { }`

Creating a LaTeX document

- **`\documentclass`**
 - Defines the type of document
 - Book
 - Report
 - Article
 - Letter
- **The document environment encloses the contents of the document**
- **The space between the document class command and the start of the document environment is called the preamble.**
 - Contains commands that affect the entire document.

Creating a LaTeX document



Adding a title

- **Require four commands to create a title**
 - `\title{ put the title here }`
 - `\author{ author goes here }`
 - `\date{ date goes here }`
- **Once the information has been defined, insert the title**
 - `\maketitle`

```
...
\begin{document}
\title{A very short document}
\author{Andrew Luxton-Reilly}
\date{2006}
\maketitle
This is the document.
\end{document}
```

Structuring a document

- `\part{ part name goes here }`
- `\chapter{ chapter name goes here }`
- `\section{ section name goes here }`
- `\subsection{ subsection name goes here }`
- `\subsubsection{ subsubsection name goes here }`
- `\paragraph{ paragraph name goes here }`

Table of contents

- **Table of contents is automatically generated using the `\tableofcontents` command.**
 - Parts
 - Chapters
 - Sections
 - Subsections
- **Each command has an table of contents option**
 - Displays a different name in the table of contents
 - `\section[Introduction]{An introduction to typesetting using the LaTeX language}`

Footnotes

- **Footnotes are created in the text as you type them**
 - `\footnote{ footnote text goes here }`

```
\documentclass[a4paper]{report}

\begin{document}
\title{A very short report}
\author{Andrew Luxton-Reilly}
\date{2006}
\maketitle

This is the document\footnote{Note that the
document is a report} that I am using as an
example.

\end{document}
```

Paragraphs and line breaks

- **LaTeX will remove excess whitespace**
 - Need to explicitly include paragraphs and line breaks
- **Paragraph**
 - Leave a blank line in the input
- **Line break**
 - Use the command `\\`

```
A short paragraph.

Another short paragraph.

And\\
some lines\\
that appear sequentially.
```

Quote marks

- **Unidirectional quotes (") are inadequate**

- Use the symbols ` and ' for single quotes
- Use the symbols `` and '' for double quotes

```
He said, ``As they say, `you win some, you  
lose some' ''.
```



He said, “As they say, ‘you win some, you lose some’”.

Dashes

- **Hyphen (-)**

- Short dash to join different words together
- merry-go-round

- **En dash (--)**

- Longer dash used to indicate a range of values
- pages 45–50

- **Em dash (---)**

- Very long dash between words or phrases
- There are many commands—some more complex than others—that are used in LaTeX.

Ellipsis

- **Three dots in a sequence**

- Used to indicate text that ... has been removed
- Or an unfinished ...

- **Can't just use three full stops in a row**

- LaTeX will use incorrect spacing
- Use the `\ldots` command

```
\ldots or so he said.
```



... or so he said

Spaces

- **Lines have to be broken to wrap text**

- Try to break at a space
- Try to break at a syllable

- **Some spaces we don't want to be broken**

- E.g. between initials and surnames

Bad layout →

```
The lecturer for this course is A.  
J. Luxton-Reilly
```

- **Use a tilde ~ to signify a space that we can't break**

```
The lecturer for this course is  
A.~J.~Luxton-Reilly
```

Emphasis

- **Emphasis**

- `\emph{ text to be emphasized here }`

It is `\emph{very}` important to practice the typesetting commands so that you don't `\emph{forget}` them.

References

- **There are many LaTeX tutorials on the Internet**

- <http://www.tug.org/interest.html>
- <http://www.latex-project.org/>
- <http://www.ctan.org>

- **Web site that allows you to try it out**

- <http://sciencesoft.at/index.jsp?link=latex&size=1280&js=1&lang=en>

- **Tutorial documents**

- The (not so) short guide to LaTeX

- **Online course reference manual**