

# COMPSCI 111 / 111G

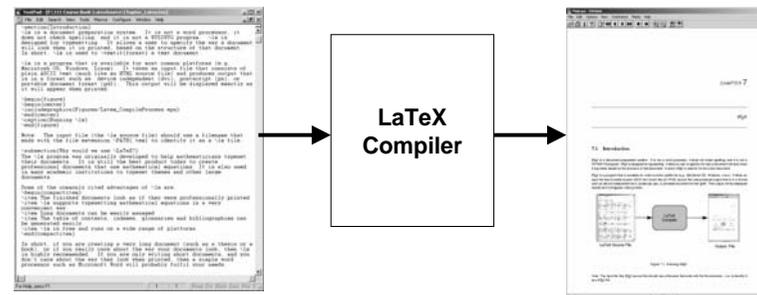
*Mastering Cyberspace:  
An introduction to practical computing*

# L<sup>A</sup>T<sub>E</sub>X

# 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

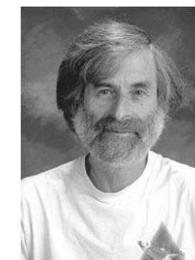
### Donald Knuth

- 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



# 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.
```

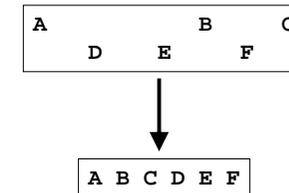
# Whitespace

## Whitespace characters

- Space bar
- Tab
- Line break

## Two or more consecutive whitespace characters

- Reduced to a single space



# 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 text within the environment

- New environments start new paragraphs

```
\begin{environmentname}
```

```
...
```

```
\end{environmentname}
```

# 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

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

# A simple LaTeX document

## `\documentclass`

- Defines the type of document
- Book
- Report
- Article
- Letter

```
\documentclass[a4paper]{article}

\begin{document}

...

\end{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

- 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 other—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

`\dots` 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

## More spaces

### LaTeX will eat any spaces that occur after a command

- Only if the command has no curly braces
- Sometimes this is bad
- Have to add a special space back into the text

### LaTeX will add additional space after a full stop

Normally this is good

Sometimes this is bad

E.g. after a title (Mr. Smith), i.e. or e.g.

### Use backslash followed by a space \

- Forces a normal size space (which can be broken) at that point

Mr.~Smith  
Mr.\ Smith

# 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

## Help within the TeXnicCenter application

- LaTeX manual