Introduction to LaTeX Document Preparation System

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What is LaTeX and Why Bother?

- use for high-quality typesetting of documents
- will make bibliographies, glossaries, tables of content etc. . .
- used widely in scientific world
- excellent for typesetting equations
- required for many conference and journal submissions
- format is specified in commands
- run LaTeX on file to get document (e.g. pdf file)
- allows you to focus on content

Input and Output Files

```
\documentclass{article}
\title{I can use \LaTeX\ }
\author{Diana McCarthy}
\begin{document}
\maketitle
\section{Introduction}
\LaTeX\ formats documents
\section{Conclusion}
Try using \LaTeX
\end{document}
```

I can use LaTeX

Diana McCarthy

March 5, 2009

1 Introduction

LaTeX formats documents

2 Conclusion

Try using LaTeX

LaTeX commands

```
\acommand

\anothercommand{argument}

\yetanothercommand[options]{argument}

% a comment. I can say what I like here!
```

Overall structure of a LaTeX document:

```
\documentclass[...]{...}
% preamble
  ...
\begin{document}
% body of the document
  ...
\end{document}
```

The preamble:

```
\documentclass[a4paper,12pt]{article}

% the next line is only needed if you plan
% to embed a PostScript figure in the text
\usepackage{graphics}

\title{A \LaTeX\ File}
\author{Diana McCarthy}
% \date{if you are unhappy with the default}
```

Document classes: article, report, book, beamer, usthesis
and options: 10pt, 11pt, twocolumn, a4paper, a5paper ...

The body:

```
\begin{document}
\maketitle

\section{Introduction}
Some text...
\section{The Middle}
Some more ...
\section{Conclusion}
The final part
\end{document}
```

Numbered Lists

```
\begin{enumerate}
\item blah
\item di blah
\end{enumerate}
```

Looks like:-

1. blah
2. di blah

Bullet Point Lists

```
\begin{itemize}
\item blah
\item di blah
\end{itemize}
```

Looks like:-

- blah
- di blah

Changing Fonts

`{\bf bold text}`	**bold text**
`{\it italics}`	*italics*
`{\sf sans serif}`	sans serif
`{\tiny tiny text}`	tiny text
`{\large large text}`	large text

Symbols and Quotations

`$ \rightarrow $`	$\rightarrow$
`$\sum$`	$\sum$
`\'o`	ó
`\"o`	ö

```
\begin{quote}
\LaTeX\ The best thing since sliced bread [Diana McCarthy].
\end{quote}
```

So the quote in amongst text looks like:

> *LaTeX The best thing since sliced bread [Diana McCarthy].*

Reproducing text verbatim:

Either like this:

```
\begin{verbatim}

{\LARGE \bf Reproducing text verbatim:}

\end{verbatim}
```

Or like this:

```
\verb+{\LARGE Reproducing text verbatim:}+
```

Sections, sub-sections, subsubsections

```
\section{Experiments}
\label{Iwashere}
However this contains...
\subsection{Experiment A}
which contains...
\section{Discussion}
Look at section \ref{Iwashere} for more details.
\section{Conclusion}
```

Tables

```
\begin{table}[!h] %tbp
\begin{center}
\begin{tabular}{|l|r|} \hline
Number of students & 20 \\  \hline
Location \& time & JMS 1B01 \& 2pm\\ \hline
\end{tabular}
\caption{\LaTeX\ course}
\end{center}
\end{table}
```

Number of students	20
Location & time	JMS 1B01 & 2pm

Table: LaTeX course

Including Pictures

```
\begin{figure}[!h]
\begin{center}
\rotatebox{270}{\scalebox{0.1}{\includegraphics{stickman.pdf}}}
\caption{My Stickman}
\end{center}
\end{figure}
```

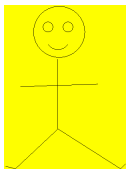

Figure: My Stickman

Equations

```
\begin{equation}
\sum_{n_{jw} \in N_{w}} \frac{n_{jw}}{\log(\pi^2)}
\label{foo}
\end{equation}
```

gets:

$$\sum_{n_{jw} \in N_w} \frac{n_{jw}}{\log(\pi^2)} \tag{1}$$

Equations: unnumbered and in text

or

```
\[\sum_{n_{jw} \in N_{w}} \frac{n_{jw}}{\log(\pi^2)}\]
```

gives

$$\sum_{n_{jw} \in N_w} \frac{n_{jw}}{\log(\pi^2)}$$

or

```
$\sum_{n_{jw} \in N_{w}} \frac{n_{jw}}{\log(\pi^2)}$
```

gives $\sum_{n_{jw} \in N_w} \frac{n_{jw}}{\log(\pi^2)}$

Editing and Running LaTeX: TeXnicCentre

- Start – All Programs – Applications – TeXnicCentre – TeXnicCentre
- open file.tex
- write your LaTeX
- choose "Project" and "create with active file as main file"
- press Ctrl+F5
- view the pdf
- edit file.tex as necessary
- Ctrl+F5 to produce a new version of the pdf

Citations and Bibliography

Using BIBTeX

- store your references in a .bib file in the specified format:

```
@BOOK{Lamport,
    Title    = {{\LaTeX\}: A Document Preparation System},
    AUTHOR    = {Lamport, Leslie},
    PUBLISHER      = {Addison-Wesley},
    ADDRESS        = {Reading, Massachusetts},
    YEAR           = {1994},
    Keywords       = {Latex documentation}
}
```

Using your bib file

1. include the package needed for the style e.g. plain, apa

```
\usepackage{plain}
      %  before \begin{document}
...
\begin{document}
```

2. cite references using `\cite{Lamport}`
3. specify the style

```
\bibliographystyle{plain}
       %  before \bibliography{} cmd
```

4. specify the bibliography file in your document where you want it to appear

```
\bibliography{my}
```

Running LaTeXwith BIBTeX

- choose “Project” and “create with active file as main file”
- select use BIBTeX
- press Ctrl+F5 (press again and it should work)
- view the pdf

You end up with an output file which including the bibliography:

Leslie Lamport.
LaTeX: A Document Preparation System.
Addison-Wesley, Reading Massachusetts, 1994.

The source

The source stored in the my.bbl file. You can insert this directly into your latex source:

```
\bibliographystyle{plain}
\begin{thebibliography}{1}

\bibitem{Lamport}
Leslie Lamport.
\newblock {\em {LaTeX}: A Document Preparation System}.
\newblock Addison-Wesley, Reading Massachusetts, 1994.

\end{thebibliography}
```

Unix: Running, Viewing and Printing LaTeX:

```
% latex myproposal.tex
% xdvi myproposal.dvi
% dvips myproposal.dvi
% dvips -P <printer> myproposal.dvi
% dvips -o myproposal.ps myproposal.dvi
% ps2pdf myproposal.ps myproposal.pdf
% pdflatex myproposal.tex
```

Unix: Running LaTeXwith BIBTeX

- run latex

```
% latex myproposal.tex
```

- run bibtex

```
% bibtex myproposal
```

- then run latex twice more to get all references in

```
% latex myproposal
% latex myproposal
```

Miscellaneous Tips

user commands `\newcommand{\myt}[1]{\textit{#1}}`

commenting chunks `\newcommand\ignore[1]{}`

footnotes `\footnote{Add something.}`

useful packages `\usepackage{times}` `\usepackage{epsfig}`

Getting Files for this Workshop

- login
- create a new folder for your LaTeX files
- Google **Diana McCarthy latex**
- select http://www.informatics.sussex.ac.uk/research/groups/nlp/mccarthy/teach/latex/
- Either:
  1. download beginlatex2009.zip and extract the contents
     e.g. use IZArc
     or
  2. download the individual files

Exercise: Running and Viewing LaTeX

- Start – All Programs – Applications – TeXnicCentre – TeXnicCentre
- open mydoc.tex and have a look

Exercise: Running and Viewing LaTeX

- Start – All Programs – Applications – TeXnicCentre – TeXnicCentre
- open mydoc.tex and have a look
- choose "Project" and "create with active file as main file"
- select use BibTex
- press Ctrl+F5
- view the pdf
- write your name as author and a sentence in the introduction
- press Ctrl+F5 to see the change

Exercises

1. adapt mydoc.tex to add some new sections and subsections
2. add a reference to a section from a different section
3. add a list
4. add a table with a caption, e.g. the first few rows of the 2 times table
5. add a reference to this table in the text
6. add a citation to one of the books in my.bib to your document
7. make an equation looking like $\sum_{x=0} \frac{x^2}{x}$
   (Hint: you can look at the source code in beginlatexslides.tex to see how to do it if you get stuck)
8. If you have time: close everything, put error.tex in a new folder and fix it