

Word Processing Using L^AT_EX

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1 Using L^AT_EX on the CUED Teaching System

L^AT_EX is a friendly way of using the T_EX text formatting system. It can be used with a front-end that makes it look much like Word, but here we'll show how to use it in a minimal environment with just a text editor, L^AT_EX and a command line.

With the text editor you can create a file containing your text in it, along with a few special formatting commands. It's a good idea to give the filename a `.tex` suffix. As an example, put this

```
\documentclass[12pt]{article}  
\usepackage{a4}  
\begin{document}
```

at the top of the file called `one.tex`, and

```
\end{document}
```

at the end. In the middle add some text. The text of the document is just typed in as normal except that each time you want to start a new paragraph you should leave a blank line. If you want to have numbered section headings in the text use the command

```
\section{This is the Text of the Heading}
```

If you don't want the numbering, use `\section*` instead of `\section`. The text of the document is just typed in as normal except that each time you want to start a new paragraph you should leave a blank line.

There are a small number of characters which have special meanings in L^AT_EX so if you need to use them they will need to be entered specially into your file. The characters are:

& \$ # % _ { } ^ ~ \

If you really need any of the first seven of these they can be inserted by typing the two-character combinations shown below.

\& \\$ \# \% _ \{ \}

The ‘\’ character is used in each case to tell \LaTeX that the character that comes next should not have its special meaning in this case. When you are happy with the document, save it.

Next, your document needs to be processed. Nowadays it’s common to produce PDF files directly with latex. Type

```
pdflatex one.tex
```

If an error occurs, details will be given of the line in which the error was detected so you can correct your latex code. Even if there aren’t any errors there’ll be quite a lot of messages. if it says

```
Output written on one.pdf
```

then you know you’ve produced a file you can view using `acroread`.

2 An Example Document

Sooner or later you may want to produce more complicated documents using \LaTeX . There are many other documents available - see the LaTeX page¹ in the help system. To introduce a few more of the more commonly used techniques we now present an example of the source file of a \LaTeX document followed by what it really looks like when it has been processed by the `latex` program.

¹http://www-h.eng.cam.ac.uk/help/tpl/textprocessing/LaTeX_intro.html

```

\documentclass[12pt]{article}
\begin{document}
\section*{Excitement and Hard Maths}
Quotation marks are inserted into text using ` for open quotes, and '
for close quotes. If double quotes are needed you just type two
single quotes --- ``This is a quotation,`` he said. Notice that you
can produce different length dashes by typing one, two and three
hyphens. Between hyphenated words use just one inter-word hyphen.
Two hyphens are often used for number ranges (23--45). Three hyphens
are used a bit like semicolons --- you know the sort of thing.

```

\LaTeX\ always puts extra space after a full stop like this.
To prevent the extra gap occurring in the middle of a name you insert
a tie like this (Mr.~Jones).

This is a bit of prose which is gently building up to the excitement
of an equation.

```

\begin{eqnarray}
y&=&ax^2+bx+c \nonumber\\
E&=&mc^2 \nonumber\\
{\delta y \over \delta x} &=& {{a \over b} \over c}
\end{eqnarray}

```

```

\noindent
Don't worry too much if it looks
complicated, the main purpose was to give an \emph{idea\} of the
quality of maths which \LaTeX\ can produce. Let's look at a rather
simpler formula. Subscripts are written \(\ x_{2y} \) and superscripts
are written \(\ x^{2y} \). These are both in-line formulae.

```

```

\section*{Conclusions}
This example illustrates a number of \LaTeX\ features. By comparing
the original and the processed text you should be able to see
\begin{enumerate}
\item How to open and close both single and double quotes.
\item How to produce dashes and what they look like.
\item How to typeset Ms.~Smith.
\item How to produce subscripts and superscripts.
\item How to emphasize a section of text \emph{like this}.
\item How to produce a numbered list of things.
\end{enumerate}
\end{document}

```

comes out like this:

Excitement and Hard Maths

Quotation marks are inserted into text using ‘ for open quotes, and ’ for close quotes. If double quotes are needed you just type two single quotes — “This is a quotation,” he said. Notice that you can produce different length dashes by typing one, two and three hyphens. Between hyphenated words use just one inter-word hyphen. Two hyphens are often used for number ranges (23–45). Three hyphens are used a bit like semicolons — you know the sort of thing.

L^AT_EX always puts extra space after a full stop like this. To prevent the extra gap occurring in the middle of a name you insert a tie like this (Mr. Jones).

This is a bit of prose which is gently building up to the excitement of an equation.

$$\begin{aligned}y &= ax^2 + bx + c \\E &= mc^2 \\ \frac{\delta y}{\delta x} &= \frac{a}{c}\end{aligned}\tag{1}$$

Don’t worry too much if it looks complicated, the main purpose was to give an *idea* of the quality of maths which L^AT_EX can produce. Let’s look at a rather simpler formula. Subscripts are written x_{2y} and superscripts are written x^{2y} . These are both in-line formulae.

Conclusions

This example illustrates a number of L^AT_EX features. By comparing the original and the processed text you should be able to see

1. How to open and close both single and double quotes.
2. How to produce dashes and what they look like.
3. How to typeset Ms. Smith.
4. How to produce subscripts and superscripts.
5. How to emphasize a section of text *like this*.
6. How to produce a numbered list of things.