

A brief introduction to $\text{\LaTeX}$

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L^AT_EX tips and tricks

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Footnotes

Here's a footnote `\footnote{An example footnote}`



Here's a footnote ¹

¹An example footnote

Headers and Footers

- ▶ Headers and footers in $\text{\LaTeX}$ are handled by page styles.
- ▶ Change the page style using `\pagestyle{style}`.
- ▶ The default is *plain* which adds page numbers centred in the footer.
- ▶ More page styles option are available, particularly through the *fancyheadings* package.

Changing font size

Use commands:

`\tiny` tiny

`\small` small

`\normalsize` normalsize

`\large` large

`\Large` Large

`\huge` huge

`\Huge` Huge

Changing text colour

Need `usepackage{color}` then use commands:

`\textcolor{red}{text in red}` text in red

`\textcolor{blue}{text in blue}` text in blue

`\textcolor{green}{text in green}` text in green

Numbering in L^AT_EX

L^AT_EX associates a counter to certain L^AT_EX environments and commands:

Examples include:

part

chapter

page

paragraph

table

subsection

figure

section

equation

Each of these has an associated counter whose current value can be referred to.

For example the current section counter is obtained by
`\thesection`

Numbering for Enumerators

Obviously the enumeration environment must also have a counter. These are stored independently for each level of enumeration hierarchy as follows:

- 1. enumi
 - 1.1 enumii
 - 1.1.1 enumiii

Changing the appearance of numbers

The appearance of numbers can be changed as follows:

```
\arabic{page}    9  
\roman{page}     ix  
\Roman{page}     IX  
\alph{page}      i  
\Alph{page}      I
```

Defining commands 1

You can define your own $\text{\LaTeX}$ commands as follows:

- ▶ `\newcommand{cmd}[args][opt]{def}`
defines a new command which must not already exist.
- ▶ `\renewcommand{cmd}[args][opt]{def}`
redefines an existing command.
- ▶ `\providecommand{cmd}[args][opt]{def}`
defines a command if one does not already exist.

`cmd` - the name of the command

`args` - an integer referring to the number of required arguments

`opt` - the number of above arguments which are optional

`def` - The actual function of the command

Defining commands 2

cmd

def

```
\renewcommand{\thesection}{\roman{\thesection}}
```

When defining an command you can refer to arguments passed using $\#n$

where n is the n^{th} argument

Resetting counters

L^AT_EX counters can be overridden using the `\setcounter{}{}` command.

For example:

You could create a new `\Chapter` command which marks the beginning of a new chapter but which also resets the figure counter so that the figures are counted separately in each chapter:

```
\newcommand{\Chapter}[1]{\chapter{#1}\setcoounter{figure}{1}}
```

Manipulating Space 1

Generally you should only want, or need, to manipulate space in $\text{\LaTeX}$ in rare circumstances.

Adding verticle space:

`\vspace{length}`

Where *length* can be positive or negative and measured in points, cm, mm, inches, etc.

You can also use predetermined verticle spacing with the commands:

`\smallskip`, `\medskip`, `\bigskip`

Manipulating Space 2

You can manipulate the horizontal spacing in a document with:

`\hspace{width}`

There are lots of other space manipulating commands which utilise the same approach.

Line Spacing

If anything other than single spacing is required you can use `package{setspace}`

Then use the following environments:

`doublespace` all line are double spaced.

`onehalfspace` set to one and a half spacing.

`singlespace` normal spacing.

Typically, technical documents, like a PhD thesis, are double spaced.

Boxes 1

Document content can be placed into a box :

Like this

using the command - `\makebox[width][position]{text}`

A box cannot be broken across lines or pages.

Boxes 2

Boxes can have a frame around them:

Like this

using the command - `\framebox[width][position]{text}`

You can do lots of useful things with boxes and there are lots of other box commands and arguments.

Spanning table cells 1

It is a common requirement to span over several rows or columns in a table.

L^AT_EX provides this capability through the following commands:

```
\multirow{rows}{width}{text}
```

where rows = number of rows to span.

```
\multicolumn{cols}{pos}{text}
```

where cols = number of columns to span.

`\multirow` requires `\usepackage{multirow}` in the preamble.

Spanning table cells 2

Example:

Chipsets	
Intel	Intel 945G NVIDIA nForce 570 VIA PT800
AMD	AMD 580X NVIDIA nForce 570 VIA K8T890

```
\begin{tabular}{|l|l|}  
\hline  
\multicolumn{2}{|c|}{Chipsets} \\  
\hline  
\multirow{3}{*}{Intel} & Intel 945G \\  
& NVIDIA nForce 570 \\  
& VIA PT800 \\  
\hline  
\multirow{3}{*}{AMD} & AMD 580X \\  
& NVIDIA nForce 570 \\  
& VIA K8T890 \\  
\hline  
\end{tabular}
```

V.large $\text{\LaTeX}$ documents

- ▶ Producing a very large $\text{\LaTeX}$ document requires some further consideration.
- ▶ So far all content has been included in one *.tex* file.
- ▶ A large document would need:
 - ▶ Contents pages.
 - ▶ Indexing

Using multiple L^AT_EX files

- ▶ The `\include{file}` command allows the inclusion of external `.tex` files.
- ▶ For example a book or thesis might have separate files for each chapter or section:
- ▶ `\include{introduction}` would include the content of the `introduction.tex` file at this point.
- ▶ Still only need one preamble in the main `.tex` file.

Indexes and Glossaries

- ▶ `usepackage{makeidx}` for indexing in $\text{\LaTeX}$.
- ▶ `\makeindex` must be called in the preamble.
- ▶ Add things to the index using `\index{key}` where *key* is the index entry.
- ▶ The resulting index will list all of the index entries along with respective page numbers.
- ▶ Cross-reference using `\index{key|see{other_key}}`.

Table of Contents

- ▶ Use `\tableofcontents`
- ▶ Entries generated from section heading, section enumeration and page numbers.
- ▶ You can do the same with `\listoffigures` for figures.
- ▶ and `\listoftables` for tables.
- ▶ Remember - $\text{\LaTeX}$ must be compiled several(3) times in order to ensure correct building of indexes.