A brief introduction to \LaTeX

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\textsc{\LaTeX} tips and tricks

- Footnotes
- Headers and Footers
- Changing fonts
- Numbering and Enumeration
- Defining commands
- Manipulating space
- Table spanning
- Large \LaTeX\ documents
Footnotes

Here’s a footnote \footnote{An example footnote}

\[\]
Here’s a footnote \footnote{An example footnote}

\footnote{An example footnote}
Headers and Footers

- Headers and footers in \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 \LaTeX

\LaTeX\ associates a counter to certain \LaTeX\ environments and commands:

Examples include:

- part
- chapter
- page
- paragraph
- table
- subsection
- figure
- section
- equation

Each of these has an associated counter who’s current value can be referred to.

For example the current section counter is obtained by \texttt{\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} \quad 9
\roman{page} \quad ix
\Roman{page} \quad IX
\alph{page} \quad i
\Alph{page} \quad I
Defining commands 1

You can define your own \LaTeX commands as follows:

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

- cmd - the name of the command
- args - an integer refering to the number of required arguments
- opt - the numer 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\textsuperscript{th} argument
Resetting counters

\LaTeX\ counters can be overridden using the \texttt{\setcounter{}{}} command.

For example:

You could create a new \texttt{\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:

\texttt{\newcommand{\Chapter}[1]{\chapter{#1}\setcounter{figure}{1}}}

Manipulating Space 1

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

Adding verticle space:

\vspace{\textit{length}}

Where \textit{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
You can manipulate the horizontal spacing in a document with:

\hspace{\textit{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 usepackage{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.
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.

\LaTeX{} 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:

\begin{tabular}{|l|l|}
\hline
\multicolumn{2}{|c|}{Chipsets} \\
\hline
Intel & Intel 945G \\
& NVIDIA nForce 570 \\
& VIA PT800 \\
\hline
AMD & AMD 580X \\
& NVIDIA nForce 570 \\
& VIA K8T890 \\
\hline
\end{tabular}
V. Large \LaTeX\ documents

- Producing a very large \LaTeX\ document requires some further consideration.
- So far all content has been included in one \texttt{.tex} file.
- A large document would need:
  - Contents pages.
  - Indexing
Using multiple \LaTeX\ 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 \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}}`. 
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 - \LaTeX must be compiled several(3) times in order to ensure correct building of indexes.