Simple Guide to Basic LaTeX

Created by Mairi MacLeod

Headers

1 Section

```
\section{Section}
```

1.1 Subsection

```
\subsection{Subsection}
```

1.1.1 Subsubsection

```
\subsection{Subsubsection}
```

Paragraph

```
\paragraph{Paragraph}
```

To remove the numbers from a header use an asterisk (`\section*{}`) this will also remove it from the contents page.

Text Sizes

Smallest

```
\tiny{}
```

Very very small

```
\scriptsize{}
```

Very small

```
\footnotesize{}
```

Small

```
\small{}
```

Normal

```
\normalsize{}
```

Big

```
\large{}
```

Very big

```
\Large{}
```

Very very big

```
\LARGE{}
```

Even bigger

```
\huge{}
```

Biggest

```
\Huge{}
```

Text Styles

Bold

```
\textbf{}
```

Italic

```
\textit{}
```

Underline

```
\underline{}
```

Slanted

```
\textsl{}
```

Small Caps

```
\textsc{}
```

Medium

`\mdseries{}` (Useful for headers)

Colours

Remember to use the American spelling!

```
\usepackage[dvipsnames]{xcolor}
\definecolor{MyFavouriteColour}{RGB}{252,252,37}
```

When you want to use this colour just call it using `\color{}`, for whole sections you can call this before the `\include` statement e.g.

```
\color{MyFavouriteColour}
\include{Page.tex}
```

This package also has a number of predefined colours like black, pink and green which don't need defined just called.

Headers and Footers

To change the header or footer of your document you first need `\usepackage{fancyhdr}`
Then you make the page style 'fancy' and remove the default header and footers:

```
\pagestyle{fancy}
\fancypagestyle{plain}{}
\fancyhf{}
```

From here you can make the header and footer whatever you want (l= left, c= centre, r= right)

```
\fancyfoot[l]{blah}
\fancyfoot[c]{Page \thepage}
\fancyfoot[r]{\today}
```

```
\lhead{blah}
\chead{Page \thepage}
\rhead{\today}
```

`\thepage` gets the current page number and `\today` gets the current date.

Acronyms

Defining

```
\usepackage{acronym}
\acrodef{OS}{Operating System}
```

Using in text

`\ac{OS}`
First use: Operating System (OS)
Other uses: OS

`\acf{OS}`
Every use: Operating System (OS)

`\acl{OS}`
Every use: Operating System

Including Files

Use separate .tex files for every section!!

It makes it easier for you to find things rather than having to go through one massive file and just looks so much neater if you're using overleaf. It is also very easy to do just create your file in the same folder as your main and use this command:
`\include{name.tex}`

Columns

```
\usepackage{multicols}
\begin{multicols}{number}
blah blah blah text
\end{multicols}
```

Line Spacing

New line

`\\` or `\smallskip` or `\newline`

New paragraph

`\medbreak`

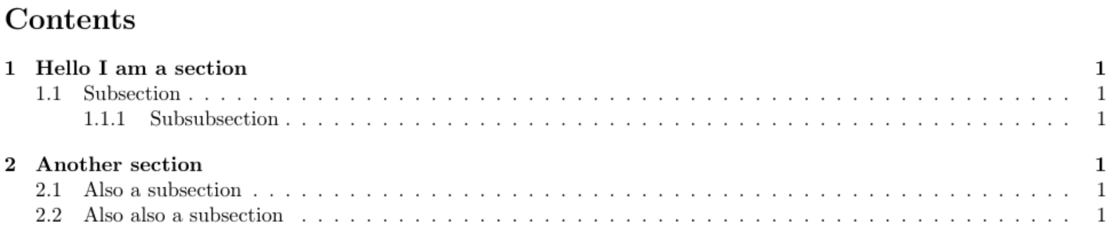
New page

`\newpage`

Table of Contents

Basic table of contents: `\tableofcontents`
Setting the depth of headers: `\setcounter{tocdepth}{2}` (1= Shows sections only, 2= Sections and Subsections etc)

Standard table of contents

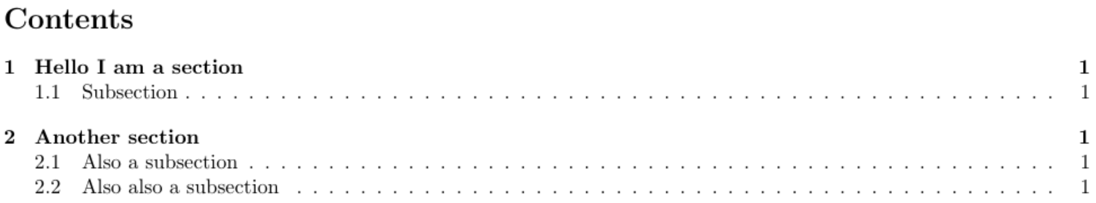


Contents

1 Hello I am a section **1**
1.1 Subsection 1
1.1.1 Subsubsection 1

2 Another section **1**
2.1 Also a subsection 1
2.2 Also also a subsection 1

Table of contents depth one



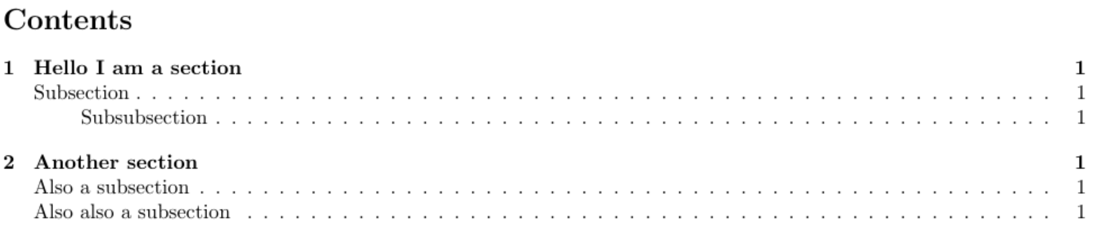
Contents

1 Hello I am a section **1**
1.1 Subsection 1

2 Another section **1**
2.1 Also a subsection 1
2.2 Also also a subsection 1

If you have chosen to remove the section numbers from your headers you can still include them in the table of contents by writing the following line under the corresponding header: `\addcontentsline{toc}{subsubsection}{Header name}`

Un-numbered sections



Contents

1 Hello I am a section **1**
Subsection 1
Subsubsection 1

2 Another section **1**
Also a subsection 1
Also also a subsection 1

Images

This uses the *graphicx or graphics* packages.

Changing image size

This can be done using scale or giving exact width and height measurements.

```
\includegraphics[scale=1.5]{image.png}
\includegraphics[scale=1.5, angle=45]{image.png}
\includegraphics[width=10cm]{image.png}
\includegraphics[width=10cm, height=5cm]{image.png}
```

Fixing image location

```
\begin{figure}[x]
```

h: Place image roughly in same order as it appears in source (sometimes LaTeX decides no and puts it somewhere else)
t: Place at top of page
b: Place at bottom of page
p: Puts on separate page for images only
!: Overrides what LaTeX thinks is right e.g. [h!] places it where you specify exactly
H: Same as [h!] but requires the float package and I find is more precise.

Captions and labels

```
\caption{caption text}
```

Captions label images and automatically increment figure number so you don't have to. To make sure you always reference the correct figure use labels, in the figure tags include the line `\label{fig:short snappy name}`. Then you can call in inline using `\pageref{fig:short snappy name}` and if you add/delete images it will update the figure number accordingly.

Example

```
\usepackage{graphicx}
\usepackage{float}

\begin{figure}[H]
    \centering
    \includegraphics[size parameters]{path\imageName.png}
    \caption{Hello I am a caption}
\end{figure}
```

Tables

For tables you have three options:

1. Use the Google Sheets LaTeX plugin or other converter
2. Use an image of your table instead
3. Do it by hand and want to die

The first method is *highly* recommended and some aesthetic adjustments can easily be made to add borders and text styles.

Adding borders

Vertical borders: `|` before and after each column where a border is required
Horizontal borders: `\hline`. Must have a `\\` directly before it. (If you want to make a horizontal line in your document outside of tables you can use `\noindent\hrulefill`)

Text alignment

c = centre
r = right
l = left

p{xcm} = top
b{xcm} = bottom
m{xcm} = middle

For p, b and m a value in centimetres must also be provided.

Merging cells

Columns
`\multicolumn{number of columns}{alignment type}{column text}`

Rows
`\multirow{number of rows}{width of row}{row text}` For the row width * can be used to just merge the rows to the size of the others.
`\usepackage{multirow}` must be included first before this can be used.

Example

Multi column		**Single column**
123	This is a row	Oh wow merged rows!
234	This is another row	
345	And another one	

```
\begin{tabular}{|c|c|c|}
\hline
\multicolumn{2}{|c|}{\textbf{Multi column}} & \textbf{Single column}\\
\hline
123 & This is a row & \multirow{3}{*}{Multi row}\\
234 & This is another row &\\
345 & And another one &\\
\hline
\end{tabular}
```

Including Code

Code Blocks

```
\usepackage{minted}

\begin{minted}
[options]{language}

#code

\end{minted}
```

Inline Code

```
\mint{language}| code |


pros = "Lots of pretty colours"
cons = "Creates blank space on top and bottom of it"

\verb+ code +
pros = "Can be put in the middle of a sentence"
cons = "No pretty colours :("
```

Some Options

`linenos`: Numbers the lines.
`breaklines`: Cuts up long lines so that they don't go over the page width.
`frame= x`: Adds a border around the code snippet, x can be lines, leftline, topline, bottomline and single.

`framesep= xmm`: Padding around border.
`bgcolor= colourName`: Changes background colour
`showspaces`: Makes spaces visible
`rulecolor= colorName`: Changes the border colour.

Changing colour scheme

`\usemintedstyle{styleName}`
There are a number of different options but here are three of my favourite ones:

rrt

```
num1, num2 = 123, 0
str1 = "abc"

def function1():
    while(num2 != num1):
        print(str1)
        num2++

# hello i am a comment
```

perldoc

```
num1, num2 = 123, 0
str1 = "abc"

def function1():
    while(num2 != num1):
        print(str1)
        num2++

# hello i am a comment
```

friendly

```
num1, num2 = 123, 0
str1 = "abc"

def function1():
    while(num2 != num1):
        print(str1)
        num2++

# hello i am a comment
```

Listings

Similar to captions on images but can also create a table of listings which gives the location of all of the code snippets in the document. Underneath your code snippet place the following:

```
\begin{listing}[H]
\caption{Hello}
\label{listing:number}
\end{listing}
```

To create a table of listings use this command:

```
\renewcommand\listoflistingscaption{Title here}
\listoflistings
```