Writing papers and thesis using LaTeX2e

Part II: Writing papers and thesis using LaTeX

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Figures

- LaTeXcan be easily extended using a *package* to typeset images.
- To use graphics in your LaTeXdocument use `\usepackage{graphicx}`
- Always use relative scaling to specify the width of the figure, i.e., `[width = 0.75\textwidth]`
- Never ever use absolute values to scale your images!
- Set either the width or the height of the image. Or use `scale`

```
\begin{figure}
\includegraphics[width=0.75\textwidth]
                                {figs/minion}
\end{figure}
```

Figures

- For captioning a figure, you can use `\usepackage{caption}`
- tweak the location, label, separator: `[labelsep=space, tableposition=top]{caption}`
- I prefer to centre the figure. To do that use `\centering`
- You can use `~\cref{fig:minion}` to cross reference the figure.

```
\begin{figure}
\centering
\includegraphics[width=0.75\textwidth]
                                {figs/minion}
\caption[Minion]{
Dave the Minion from Despicable Me!}
\label{fig:minion}
\end{figure}
```

Figure: Dave the Minion from Despicable Me!

\begin[option]{figure}

Parameter	Position
h	Place the float here, i.e., approximately at the same point it occurs in the source text (however, not exactly at the spot)
t	Position at the top of the page.
b	Position at the bottom of the page.
p	Put on a special page for floats only.
!	Override internal parameters LaTeX uses for determining "good" float positions.
H	Places the float at precisely the location in the LaTeX code. Requires the float package. This is somewhat equivalent to h!

Subcaption

I can cite Wall-E (see fig. 2b) and Minions in despicable me (fig. 2c). Figure 2 lets me cite the whole figure.

```
\begin{figure}
  \centering
  \begin{subfigure}[b]{0.3\textwidth}
    \includegraphics[width=\textwidth]
    {figs/TomandJerry}
    \caption{Tom and Jerry}
    \label{fig:TomJerry}
  \end{subfigure}
  \begin{subfigure}[b]{0.3\textwidth}
    \includegraphics[width=\textwidth]{figs/WallE}
    \caption{Wall-E}
    \label{fig:WallE}
  \end{subfigure}
  \begin{subfigure}[b]{0.3\textwidth}
    \includegraphics[width=\textwidth]{figs/minion}
    \caption{Minions}
    \label{fig:Minnion}
  \end{subfigure}
  \caption{Best Animations}
  \label{fig:animations}
\end{figure}
```

(a) Tom and Jerry (b) Wall-E (c) Minions

Figure: Best Animations

Exercise 6: Pictures

Click to open this exercise in **writeLaTeX**

- Please upload the figures in `figs/` to the writeLaTeXproject. or point to raw URLs on github.
- Format these the King's college picture. Change it's location: (top, bottom, here, new page)
- Arrange Tom, WallE and Dave inside a single figure environment vertically.
- Use Fig. to refer to figures
- Create a list of figures.

Click to open my solution.

Tables

- Tables in LaTeX take some getting used to.
- The argument specifies column alignment — **l**eft, **r**ight, **r**ight.

```
\begin{tabular}{lcr}
Item    & Qty & Unit \$ \\
Widget & 1    & 199.99  \\
Gadget & 2    & 399.99  \\
Cable  & 3    & 19.99   \\
\end{tabular}
```

Item	Qty	Unit $
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

- Don't use vertical lines, it's ugly. Use `\begin{booktabs}` to create horizontal lines. Never use `\hline`

```
\begin{table}[h]
\caption{Cost}
\begin{tabular}{lrr} \toprule
Item    & Qty & Unit \$ \\ \midrule
Widget & 1    & 199.99  \\
Gadget & 2    & 399.99  \\
Cable  & 3    & 19.99   \\ \bottomrule
\end{tabular}
\label{t:cost}
\end{table}
```

Table: Cost

Item	Qty	Unit $
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

- Use an ampersand [&] to separate columns and a double backslash [\][\] to start a new row (like in the `align*` environment that we saw in part 1).

Table Environment

Option	Description
l	left-justified column
c	centered column
r	right-justified column
p{'width'}	paragraph column with text vertically aligned at the top
m{'width'}	paragraph column with text vertically aligned in the middle
b{'width'}	paragraph column with text vertically aligned at the bottom
\&	column separator
\\	start new row (additional space may be specified
\cmidrule{i-j}	partial horizontal line beginning in column i and ending in column j

Exercise 7: Tables

Click to open this exercise in **writeLaTeX**

- Use `tabularx` package for tables with paragraph text.
- Never use `\hline` or `\cline`, use `\toprule`, `\midrule`, `\bottomrule` and `\cmidrule{i-j}`
- Visual table editor: http://truben.no/table/

Click to open my solution.

bibTeX 1

- Put your references in a `.bib` file in 'bibtex' database format:

```
@Article{Jacobson1999Towards,
  author = {Van Jacobson},
  title = {Towards the Analysis of Massive Multiplayer Online
           Role-Playing Games},
  journal = {Journal of Ubiquitous Information},
  Month = jun,
  Year = 1999,
  Volume = 6,
  Pages = {75--83}}

@InProceedings{Brooks1997Methodology,
  author = {Fredrick P. Brooks and John Kubiatowicz and
            Christos Papadimitriou},
  title = {A Methodology for the Study of the
           Location-Identity Split},
  booktitle = {Proceedings of OOPSLA},
  Month = jun,
  Year = 1997}
```

- Most reference managers can export to bibtex format.

bibTeX 2

- Each entry in the `.bib` file has a *key* that you can use to reference it in the document. For example, `Jacobson1999Towards` is the key for this article:

```
@Article{Jacobson1999Towards,
  author = {Van Jacobson},
  ...
}
```

- It's a good idea to use a key based on the name, year and title.
- LaTeX can automatically format your in-text citations and generate a list of references; it knows most standard styles, and you can design your own.

bibTeX 3

- Use the `natbib` package[2] with `\citet` and `\citep`.
- Reference `\bibliography` at the end, and specify a `\bibliographystyle`.

```
\documentclass{article}
\usepackage[authoryear]{natbib}
\begin{document}

\citet{Brooks1997Methodology}
show that \ldots. Clearly,
all odd numbers are prime
\citep{Jacobson1999Towards}.

\bibliography{bib-example}
% if 'bib-example' is the name of
% your bib file

\bibliographystyle{plainnat}
% try changing to abbrvnat

\end{document}
```

Brooks et al. [1997] show that .... Clearly, all odd numbers are pri
[Jacobson, 1999].

References

Fredrick P. Brooks, John Kubiatowicz, and Christos Papadimitriou. A metho
ology for the study of the location-identity split. In *Proceedings of OOPSL*
June 1997.

Van Jacobson. Towards the analysis of massive multiplayer online role-playi
games. *Journal of Ubiquitous Information*, 6:75–83, June 1999.

[2] There is a new package with more features named `biblatex` but most of the articles templates still use `natbib`.

Exercise 8: Formatting a Paper

Click to open this exercise in **writeLaTeX**

Upload this file to **writeLaTeX**

Upload this file to **writeLaTeX**

- Reference styles: http://sites.stat.psu.edu/ surajit/present/bib.htm
- Bibliography style previews: http://nodonn.tipido.net/bibstyle.php

Click to open my solution.

PhD Thesis Template

Click to open the template in **writeLaTeX**

Click to open the template in shareLaTeX

View the template in github