

# LaTeX tips and tricks

SpaSys lunch talk

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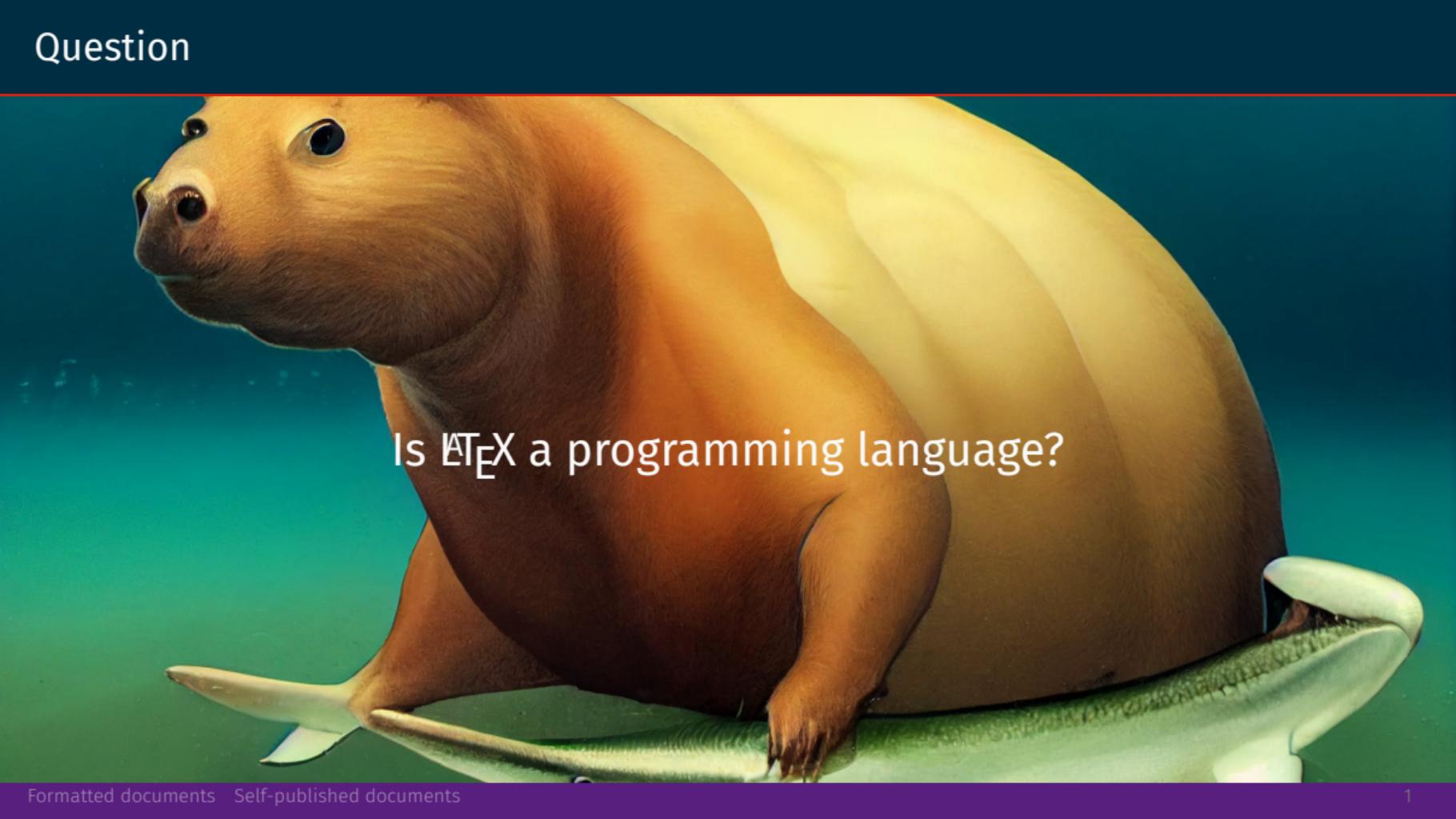
University of Luxembourg

What is this presentation?

$\text{\LaTeX}$  tips and tricks

## Question

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A close-up photograph of a large, orange-colored seal, possibly a walrus or sea lion, swimming in clear blue water. The seal is facing left, its head above the surface. Its body is a vibrant orange, with a lighter yellowish patch on its back and a white belly. The water is a deep teal color.

Is  $\text{\LaTeX}$  a programming language?

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# Image size

Use [width=] instead of [scale=] for images!

## Example

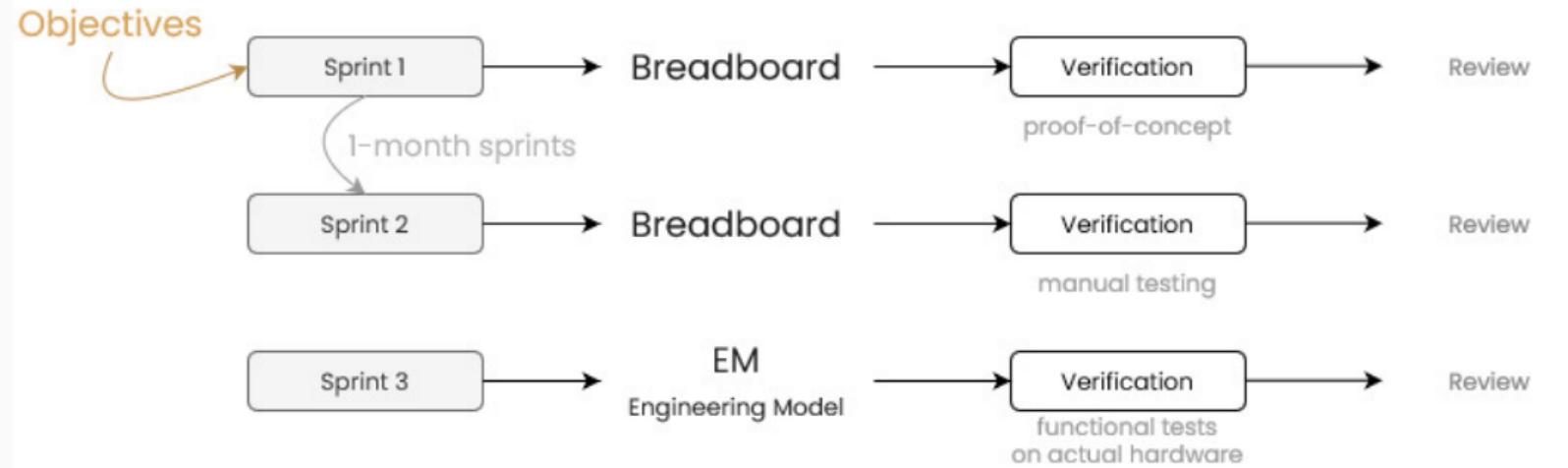
```
\begin{figure}[h]
  \centering
  \includegraphics[width=.1\textwidth]{capybara}
  \caption{A very reasonable capybara}
\end{figure}
```



**Figure 1:** A very reasonable capybara

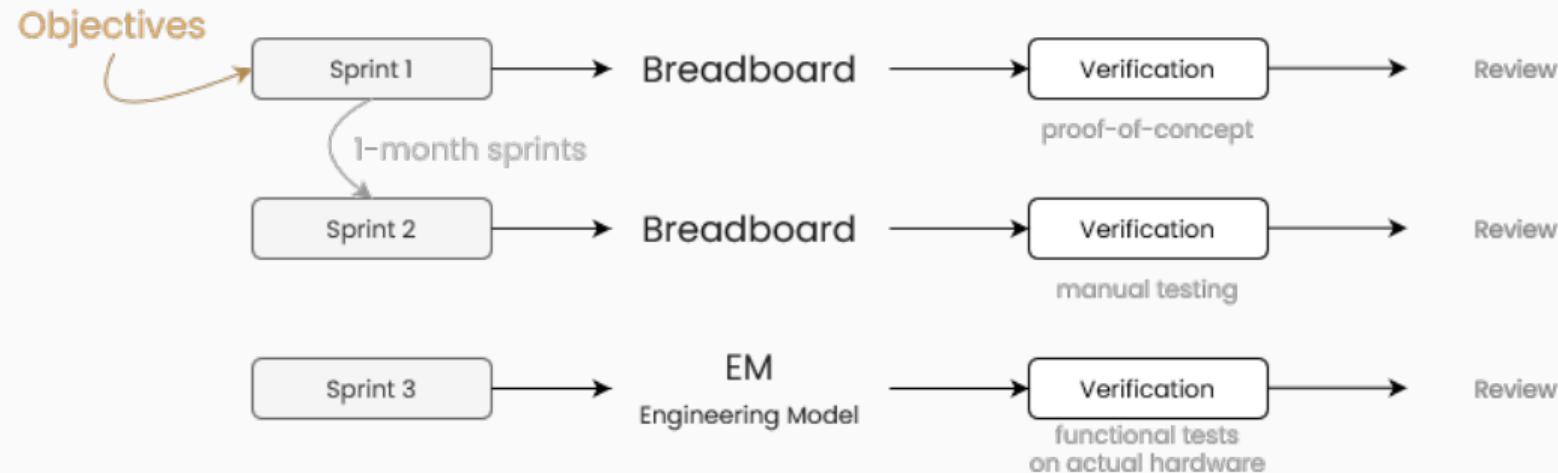
# Including images (example)

Image included as .jpg



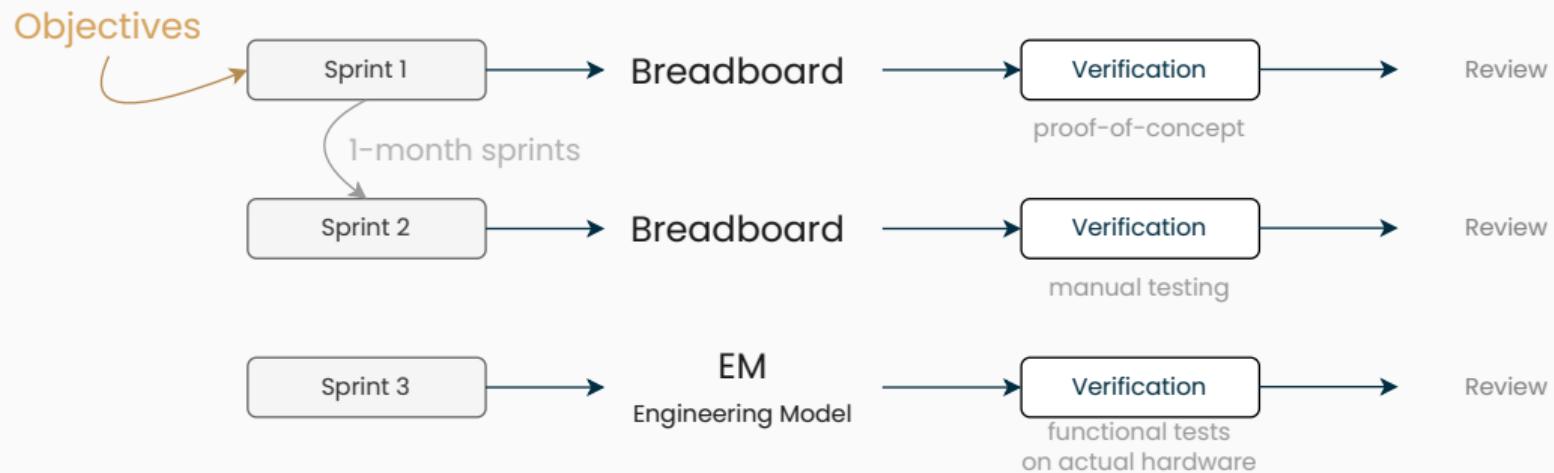
# Including images (example)

Image included as .png



# Including images (example)

Image included as .pdf



# Including images

## Export images as `.pdf` or `.eps`

- Try avoiding `.png`, `.jpg` and the like
- If you have to do that, get a high-resolution photo.
- Also, you can convert `.svg` to `.pdf` with Inkscape.

**Note:** Some 3D graphics may not be suitable for PDF export

# Including images

## Export images as `.pdf` or `.eps`

- Try avoiding `.png`, `.jpg` and the like
- If you have to do that, get a high-resolution photo.
- Also, you can convert `.svg` to `.pdf` with Inkscape.

## Why?

- |                         |                     |
|-------------------------|---------------------|
| • Accessibility         | • Ctrl+F works      |
| • Infinite zoom         | • Smaller file size |
| • Looks better on print | • Editable          |

**Note:** Some 3D graphics may not be suitable for PDF export

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## 1 what I can 't understand :

I don' t understand why are people boring with typography ,that' s pretty lame .Seriously guys .it 's clearly readable .

## 1 what I can 't understand :

I don' t understand why are people boring with typography ,that' s pretty lame .Seriously guys .it 's clearly readable .

I don't understand why are people boring with typography, that's pretty lame: Seriously guys — it's clearly readable (Hein et. al, 2021).

# Spacing and punctuation

## Naive punctuation

### Example

This is a sentence. This is another sentence.

This sentence is made by Dr. Alex Brown.

# Spacing and punctuation

## Full punctuation

### Example

This is a sentence. This is another sentence.

This sentence is made by Dr. Alex Brown.

# Spacing and punctuation

Correct punctuation

## Example

This is a sentence. This is another sentence.

This sentence is made by Dr. Alex Brown.

# Spacing and punctuation

Correct punctuation

## Example

This is a sentence. This is another sentence.

This sentence is made by Dr. Alex Brown.

Add a \ after every full stop you want to use as a dot.

This sentence is made by Dr.\ Alex Brown.

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# TODO Management

How to mention TODO items?

## Example

In this paper, we use reverse  
bio-engineering to calculate (TODO:  
Add some actual content here)...

## Example

The metastatic condition NOTE TO SELF:  
ADD MORE CITATIONS HERE implies  
the...

# TODO Management

How to mention TODO items?

## Example

In this paper, we use reverse bio-engineering to calculate (TODO: Add some actual content here)...

## Example

...shoaling preferences in the different female groups investigated (should we cite the crappy Gabor paper here?), shoaling preferences are unlikely...

Source: Nature

## Example

The metastatic condition NOTE TO SELF: ADD MORE CITATIONS HERE implies the...

## Example

In this study, we have used (insert statistical method here) to compile unique DNA methylation signatures

Source: Slate

# TODO Suggestions

Suggestion: Use this snippet:

```
\usepackage[many]{tcolorbox}
\newtcbox{\todo}[1][on line,colback=red!5!white,colframe=red!75!black,coltitle=red!75!black,
  fonttitle=\bfseries,fontupper=\footnotesize,title=TODO,detach title,
  before upper={\tcboxtitle\ },nobeforeafter,tcbaseline=raise base,
  top=0pt,bottom=0pt,left=0mm,right=0mm,toprule=0mm,bottomrule=0mm,boxsep=0.7mm,}
```

# TODO Suggestions

Suggestion: Use this snippet:

```
\usepackage[many]{tcolorbox}
\newtcbox{\todo}[1]{on line,colback=red!5!white,colframe=red!75!black,coltitle=red!75!black,
  fonttitle=\bfseries,fontupper=\footnotesize,title=TODO,detach title,
  before upper={\tcboxtitle\ },nobeforeafter,tcbx raise base,
  top=0pt,bottom=0pt,left=0mm,right=0mm,toprule=0mm,bottomrule=0mm,boxsep=0.7mm,}
```

## Example

Then you can write:

This research \todo {cite Gabor paper}

This research **(TODO** cite Gabor paper<>)

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Which is correct?

1. 20000.5kg
2. 20,000.5kg
3. 20.000,5kg
4. 20000,5kg
5. 20000.5 kg
6. 2,0000.5 kg
7. 2.0000,5 kg
8. 20000,5 kg

Which is correct?

- 1. 20000.5kg
- 2. 20,000.5kg
- 3. 20.000,5kg
- 4. 20000,5kg
- 5. 20000.5 kg
- 6. 2,0000.5 kg
- 7. 2.0000,5 kg
- 8. 20000,5 kg

None of the above: 20 000.5 kg

## SI Units suggestion

```
\usepackage {siunitx}
```

To use units:

```
\qty {20000.5}{\kilo\gram} 20 000.5 kg
```

# SI Units shenanigans

<code>\qty {5e6}{\second }</code>	$5 \times 10^6 \text{ s}$
<code>\num {-0.12345}</code>	-0.123 45
<code>\ang {30}</code>	$30^\circ$
<code>\unit {kg.m/s^2}</code>	$\text{kg m/s}^2$
<code>\qtyrange {5}{7}{\meter }</code>	5 m to 7 m

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**Figure 2:** Capybara in the sea



**Figure 2:** Capybara in the sea

As we can see in Fig.~\ref{fig:capybarasea}

As we can see in Fig. 2

\usepackage [nameinlink]{cleveref}



Figure 2: Capybara in the sea

As we can see in \Cref {fig:capybarasea}

As we can see in Figure 2

```
\usepackage [nameinlink]{cleveref}
```



Figure 2: Capybara in the sea

\Cref {sec:section}

Section 5

\Cref {fig:one,fig:two}

Figures 1 and 2

\Cpageref {sec:section}

Page 30

\nameCref {sec:section}

Capybara Food Habits

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# Side-by-side figures

## Using minipage

```
\begin{figure}
  \centering
  \begin{minipage}{.47\textwidth}
    \centering
    \includegraphics[width=\linewidth]{capybara1}
    \captionof{figure}{A figure}
    \label{fig:test1}
  \end{minipage}~%
  \begin{minipage}{.47\textwidth}
    \centering
    \includegraphics[width=\linewidth]{capybara2}
    \captionof{figure}{Another figure}
    \label{fig:test2}
  \end{minipage}
\end{figure}
```



Figure 3: Capybara



Figure 4: Sheep

# Side-by-side figures

## Using `subfigure`

```
\begin{figure}
  \centering
  \begin{subfigure}{.5\textwidth}
    \centering
    \includegraphics[width=.4\linewidth]{image1}
    \caption{A subfigure}
    \label{fig:sub1}
  \end{subfigure}%
  \begin{subfigure}{.5\textwidth}
    \centering
    \includegraphics[width=.4\linewidth]{image1}
    \caption{A subfigure}
    \label{fig:sub2}
  \end{subfigure}
  \caption{A figure with two subfigures}
  \label{fig:test}
\end{figure}
```



(a) Capybara



(b) Sheep

Figure 5: A figure with two subfigures

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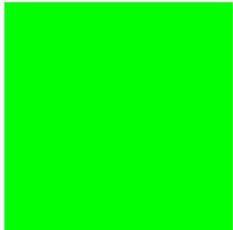
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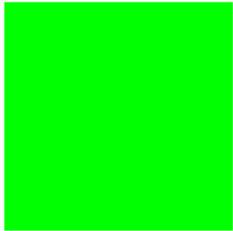
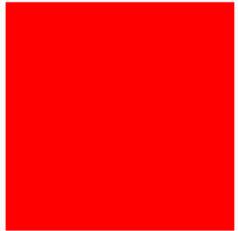
Fonts

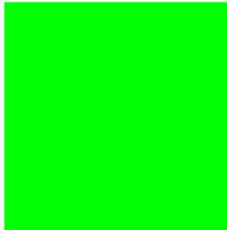
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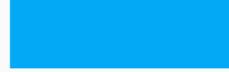


Enrich your palette with `\usepackage {xcolor-material}`

`MaterialLightBlue200`



`MaterialLightBlue500`



`MaterialLightBlue900`



`MaterialGreen600`



`MaterialYellow600`



`MaterialDeepOrange500`



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# Dashes

dash - -

en-dash -- -

em-dash --- —

## Dashes

dash - -

en-dash -- -

em-dash --- —

Use the en-dash for *dates, ranges* (although you should be using \qtyrange for the latter).

Use the em-dash for most of your dashing needs.

# Symbols

Use **\times** instead of x for multiplication:

$$5 \times 7 \times 5 = 2$$

$$5 \times 7 \times 5 = 2$$

# Symbols

Use `\times` instead of x for multiplication:

`5\times7\times5=2`

`5\times7\times5=2`

Use `` and '' for quoting:

`The "Daffodil" mission`

`The “Daffodil” mission`

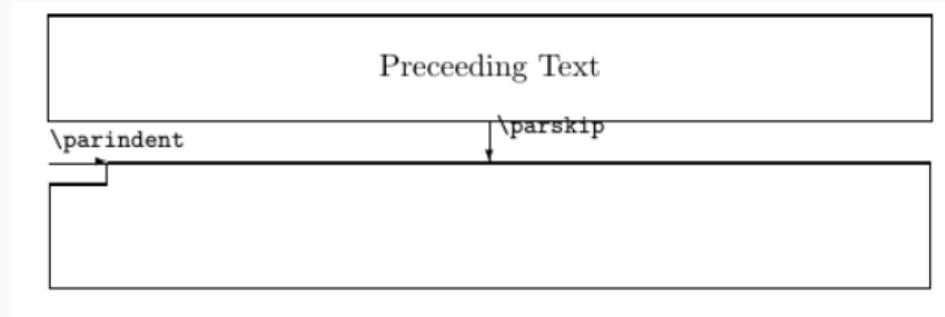
## Avoid using \\ unless required

Shifting a miniature spacecraft, either relying on the considerable confidence in 2023, are used and qualified  
→ from that the past decades, with sending cutting-edge hardware to space systems Engineering method  
→ originates for of agile practices, allows quick adaptation, and rapid prototyping a minimum viabiles than a  
→ year and can reach in favor of agile proposed for picosatellite (ChipSat) into a larger spacecraft.

Either is still a gap regarding discipline, focusing methodology that the overhead traditionally associated  
→ with orbital flight. However, while Systems miniatures and unprecedented with orbital flight. However,  
→ while Systems Engineering a minimum viabiles than 10g, taking away the classic waterfall-like approach,  
→ showing for.

# Newlines

If you're using \\ to fix indentation issues, you're doing it wrong!



Your toolkit to fix indentation issues:

```
\setlength{\parskip}{\baselineskip}  
\setlength{\parindent}{0pt}  
\usepackage{indentfirst}
```

# Bibliography

Just use `\usepackage[backend=biber]{biblatex}`

[https://www.overleaf.com/learn/latex/Articles/Getting\\_started\\_with\\_BibLaTeX](https://www.overleaf.com/learn/latex/Articles/Getting_started_with_BibLaTeX)

# Tables

You can use easy tools to edit tables:

- <https://www.tablesgenerator.com/>
- <https://www.latex-tables.com/>

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Use `minted` instead of `lstlisting` for code

With `lstlisting`

```
def function(x):
    if x > 5:
        return 17
    else:
        return 5
```

## Code

Use `minted` instead of `lstlisting` for code

With `minted`

```
def function(x):
    if x > 5:
        return 17
    else:
        return 5
```

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## Useful packages

`\usepackage {microtype}` for typographic corrections

`\usepackage {savetrees}` for extreme space savings

`\usepackage {acro}` for acronyms

`\usepackage {tcolorbox}` for all kinds of colourful boxes

`\usepackage {adjustbox}` to adjust things that get out of margin

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Make sure to use a nice font!

```
% Text  
\usepackage{libertine}  
\usepackage[osf]{bergamo}  
\usepackage{chantill}
```

```
% Maths  
\usepackage{newtxmath}  
\usepackage{mathpazo}
```

See <https://tex.stackexchange.com/questions/59702> for more inspiration

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# Table of contents

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The **hyperref** package takes care of the Table of Contents.

Make sure to check it!

## Sensible defaults

hyperref link colouring is AWFUL by default. Fix it using this:

```
\newcommand{\myshade}{85}
\colorlet{mylinkcolor}{violet}
\colorlet{mycitecolor}{Turquoise}
\colorlet{myurlcolor}{Blue}

\hypersetup{
    linkcolor = mylinkcolor!\myshade!black,
    citecolor = mycitecolor!\myshade!black,
    urlcolor = myurlcolor!\myshade!black,
    colorlinks = true,
}
```

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# pdflscape

By using `\usepackage {pdflscape}`, your PDF page will rotate automatically!



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## Interesting ideas

Consider using the Tufte class: <http://mirrors.ctan.org/macros/latex/contrib/tufte-latex/sample-book.pdf>

Get your content reviewed!

Use <https://www.overleaf.com/>! (university goodies)

Use <https://www.zotero.org/>! (university goodies)