
Latex

What is Latex and why do we need it?

- Latex
  - high-quality typesetting system
- Reasons
  - production of technical documentation
  - production of scientific documentation

What are we going to learn today?

- Basic Document Structure
- Text Formating
- Lists
- Tables
- Inserting Images
- Equations / Plots
- Bibliography
- Presentation

We hope you are having fun! ;)

Let's open the Overleaf!

https://www.overleaf.com/

Environment for formatting Latex code.

*Note: use your university email to sign in to get professional overleaf for free

Basic Document Structure

Types of documents possible in Latex

- **Academic Journal**
- **Book**
- **Formal Letter ..**

Today's Focus
In Overleaf:

1. **Press 'New Project'**
2. **Press 'Blank Project'**

Basic Document Structure

- \documentclass{article}
  \usepackage[utf8]{inputenc}
  - set layout of your document
- \title{your_title}
  \author{your_name}
  \date{today}
- \begin{document} \end{document}
  - marking of the main body of your doc
- \maketitle
  - prints title/auther/date
- \section{Introduction} (*subsubsection)
  - marks the new section

Basic Document Structure

Your turn!
Create Blank Project.
Give it a title of your choice.
Fill in your name.
Create 5 sections for:
Text
Lists
Tables
Pictures
Equations / Plots

Text Formating

- \textit{Italic}
- \textbf{Bold}
- \underline{Underlined}
- \uppercase{Uppercase}

- \tiny{tiny},
- \small{small}
- \large{large}
- \Large{Large}
- \LARGE{LARGE}
- \HUGE{Huge}

Text Formating

Your turn! (In new section)
Write this sentence in Latax:
This is my weird sentence.
A very (large) very (larger) tiny (largest) **Chicken (bold and uppercase)** ***ate*** **(italic)** very (small) big (smallest)
Worm(underline and uppercase)

Lists

Bullet Points

```
\begin{itemize}
    \item One entry
    \item Another entry
\end{itemize}
```

Ordered List

```
\begin{enumerate}
    \item First entry
    \item Second entry
\end{enumerate}
```

Lists

Your turn! (In new section)

- Create a subsection for your self.
- Create and unordered list of things you like.
- Create ordered list for Starter pack of Computer Scientist.

Tables

- \begin{center}
  - centres the table
- \begin{tabular}{||c c||}
  - indicates beginning of table
  - creates double vertical year
- \hline
  - new horizontal line
- Title1 & Title 2 \\
  - Titles for each column
- Row1Col1 & Row1Col2 \\
  - Values for row1 and indication of new line
- \end{tabular} \end{center}

Tables

Your turn! (In new section)

- Create a Table with 3 Columns
  - Course
  - Rating
  - Year
- And list all Informatics Courses you have taken so far

Inserting Images

When adding Pictures to your Latex doc you need to upload them to the files section

- \usepackage{graphicx}
  - package for adding pictures
- \begin{figure}[H]
  - indicating picture
- \centering
- \includegraphics[height=5cm]{picture.png}
  - height is size of the picture
- \caption{This is caption for your picture}
- \end{figure}

Inserting Images

2 figures next to each other

```
\begin{figure}[H]
    \centering
        \begin{subfigure}{0.4\textwidth}
            \centering
            \includegraphics[width =
<width>]{<filepath>}
            \caption{<caption>}
        \end{subfigure}
        \begin{subfigure}{0.4\textwidth}
            \centering
            \hfill
            \includegraphics[width =
<width>]{<filepath>}
            \caption{<caption>}
        \end{subfigure}
\end{figure}
```

Inserting Images

Your turn! (In new section)
Try to replicate

(a) Me

(b) The guy she tells me not to worry about

Equations / Plots

Equations

For any variable or equation use

- **\ (\)**
- **$ $**
- **\begin{math} \end{math}**

Superscript

- **^**

Subscript

- **_**

All other parts of equations can be found here https://en.wikipedia.org/wiki/List_of_mathematical_symbols_by_subject

Equations / Plots

Plots

```
\begin{figure}[h]
\begin{tikzpicture}
        \begin{axis}[
                xlabel=x
                ylabel=y]

 \addplot[color=red,mark=x]
 coordinates {
                (x,y)
                (a,z)};
        \end{axis}
\end{tikzpicture}
\end{figure}
```

x,y,z,a are real coordinates

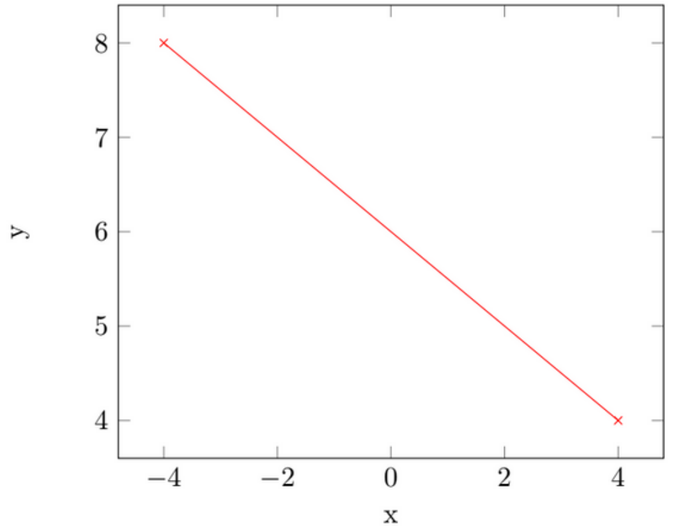
Equations / Plots

Your turn! (In new section)

Try to replicate

$$F(y) = \int_{-\infty}^{y} \frac{1}{\sqrt{2\pi\sigma^2}} e^{\frac{-(x-\mu)^2}{2\sigma^2}} dx$$

Try to replicate



Bibliography

When creating a reference
Create a new file in file section
and name it [example].bib
In that file:

```
@article{nameofrefence,
    author  = "Patricia Mizurova",
    title   = "The memories of InfPals",
    year    = "2022",
    journal = "The NewYork Times",
    volume  = "1",
    number  = "1",
    pages   = "11-33"
}
```

Bibliography

In your latex document:

\cite{nameoftherefence}

in text

\bibliographystyle{alpha}

\bibliography{sample}

at the end of you document

Bibliography

Your turn! (In new section)
Write this sentance and add a reference in example "InfPALS are the bestest you now ;)."

Presentation

```
\documentclass{beamer}
\title{Sample_title}
\author{Anonymous}
\institute{Overleaf}
\date{2021}
\begin{document}
    \frame{\titlepage}
        \begin{frame}{Sample frame title}
            This is some text in the first frame.
        \end{frame}
\end{document}
```

Presentation

Your turn! (In new section)
Create a presentation 3 slides about Edinburgh.
Slide 1 - Introduction
Slide 2 - 3 Top Tourists destinations (Bullet Points)
Slide 3 - Picture of Calton hill