VG100 Fall 2022 Introduction to Engineering
TC Lab1

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Feedback on the Pitch

- Act more like a team
- Format consistence (font, color, etc.)
- Proper reference (especially important in your final report!)
- Time control

Keep practicing for the coming progress report and symposium!

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Why LaTeX?

- A professional way of presentation
- Neat formatting
- Really handy and convenient when typing formulas
- (However...)

Some Very Basic Usage

- Part *I*. Fonts
  - **Bold**.
  - *Italics*.
  - Underline.
  - Discovering what you need by using internet.
- Part *II*. Text Formatting (Paragraph, Spacing, etc.)
  - Title
    * \section —— Primary Title.
    * \subsection —— Secondary Title.
    * \subsubsection —— Level 3 Title.
  - Spacing
    * In LATEX, Spacing, Backspace and Tab key are denoted as "a single space".
    * Then how to space between lines? —— Two Backspaces!
    * \\—— means to change the line.
    * \newpage —— to begin at a new page.

Some Very Basic Usage

- Part *III*. Table
  One of the best ways to present data is to use tables. LaTeXoffers a decent way to create tables and tabulations.

A Simple Example

Left Title	Centered Title	Right title
My favourite class	xxx	xxx
VG100	xxx	xxx

Related Code

```
\begin{table}
    \centering
    \begin{tabular}{||l|c|r||}
        \hline
        Left Title & Centered Title & Right title\\
        \hline
        My favourite class & xxx & xxx \\
        \hline
        VG100 & xxx & xxx\\
        \hline
    \end{tabular}
\end{table}
```

Some Very Basic Usage

- Part *IV*. Math Formulas
  - The easiest ones are inline and between-the-line formulas (equations). For inline formulas, $a^2 + b^2 = c^2$ is the inline equations. The syntax is to use $ sign.
    For between-the-line formulas,

$$a^2 + b^2 = c^2$$

    The syntax is to use $$ sign.

Some Very Basic Usage

- Part *V*. Include Graphs
  - First, add "graphicx" package.
  - Second, use the syntax "\includegraphics[options]{filename}"

Practice

For each group, create a latex file on your own.
In the first section, create a table to introduce your group. Include each group member's name, Student ID and e-mail address. In the first section, introduce a maths formula that you like.
In the second section, include a graph of your second project with caption. Describe it briefly.
Hints: refer to the overleaf documentation for help.

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Types of Figures

Schematic, actual photograph, bar chart, histogram, gannt chart...
Each kind of graph applies to certain circumstances.
Go to the website listed in the reference.

Plotting with Excel

When you want to do data visualization to present your data in a x-y axis to show their relationship, Microsoft Excel can be a useful tool. Also you can make use of other tools like Origin, Matplotlib in python, etc.

Demo time!

Practice

For the following circumstances, choose the proper way of graphing to visualize the data.

- There are 50 students in class 1. Among them, 60% are boys and 40% are girls.
- Show the trend of population change in city A from year 2014 to year 2018 listed below.

Population in city A from 2014 to 2018

Year	Population (million)
2014	20
2015	21
2016	21
2017	23
2018	24

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References

- https://github.com/SJTU-UMJI-Tech/LaTeX
- Lin, Chengzhang. VG100_TC_LAB7_LATEX001.
- Lin, Chengzhang. LATEX_practice_sheet.
- https://datavizcatalogue.com/search.html