GWTeX[1] Collective

▸ LaTeX Workshop

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Outline

- Introduction
- Goals
- Getting Started
- Math
- Formatting
- Images, Tables, and Figures
- Exercises
- Resumes
- Upon Request
  - Inserting Code
  - Journal Formatting

‣ Introduction

What are the differences between the Word document and the TeX document?

Introduction

Language Types

Programming (Java, C)

Markup (HTML, Markdown)

Typesetting (LaTeX)

Why use LaTeX?

Separation of formatting and text

Templates

Easy bibliographies/citation management

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Goals

- Understanding the capabilities of LaTeX

- Develop a foundation to be able to learn more independently

- Learn how to use templates, and create a resume in LaTeX

Preamble

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{graphicx}
\usepackage{amsmath}
\newcommand{\quadequation}{$\frac{-b\pm \sqrt{b^2
-4ac}{2a}}$}
\newcommand{\three}{3}
\title{New Document}
\author{me}
\begin{document}
\maketitle
\section{Section 1}
\subsection{Sub 1}
\subsection{Sub 2}
\end{document}
```

Document

Basic Formatting Title

- Define Title Parameters in Preamble
  - `\title{Document Title}`
  - `\author{Document Author}`
- After \begin{document}
  - `\maketitle`
- Look into `titlepage` for more advance title options

Basic Formatting Paragraphs Sections

- Paragraphs
  - 1 Line Breaks: Noting
  - 2 Line Breaks: Line Break + Indent
    - \noindent on next line
  - \\: Line Break **No** Indent
- section
  - subsection
    - subsubsection

Basic Formatting Text Modifiers

\textbf{**bold-face text**}

\textit{*italicized text*}

\underline{<u>underlined text</u>}

\textsc{SMALL CAPITAL TEXT}

\emph{}

\textsubscript{}

\textsuperscript{}

\texttt{`type-writer style text`}

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Basic Modifiers
Text Size

\tiny{tiny text}

\small{small text}

\large{large text}

\Large{larger text}

\huge{huge text}

\Huge{huge-er text}

Math Mode

- To enter Math Mode:
  - In line math: `$ Math $`
  - New line and Centered: `$$ Math $$`
  - Multi-step aligned equations: `\begin{align*}`
  - `1 & 2\\`
  - `ABC & 3`
  - `\end{align*}`

- \text{}
  - Write normal text in math mode
- \frac{num}{denom} $\frac{num}{denom}$
- \int $\int$
- \iint $\iint$
- \times $\times$
- \Re e \Im m $\Re \Im$
- \partial ∂
- \lim
  - \lim\limits_{x \to \infty}
- \ adds a blank character

Math
Basic Commands

- \alpha \Alpha α A
  - Same for all Greek letters
- \infty ∞
- \rightarrow \Rightarrow $\rightarrow \Rightarrow$
  - Same for other directions
- \leq $\leq$
- \pm $\pm$

Math Symbols

Math Modifiers

- ^ next character is a superscript
  - A^bc A^bc   A^{bc} A^{bc} A^{b^{c}} A^{b^c}
  - _ next character is a subscript
- \hat{text} $\widehat{text}$
- \bar{text} $\overline{text}$
- Example:
- $\Sigma_{k=0}^{N} k + 2$
  - `$\sum_{k=0}^N k+2$`

Math limits

- In the previous example, the parameters of the summation appeared to the right of the Σ. To fix that, add `\limits`

- `\sum\limits_{k=0}^{N}k+2`

$$\sum_{k=0}^{N} k + 2$$

Exercises

Figures

- `\begin{figure}[float-option]`
- `…contents`
- `\end{figure}`
- Float-Options
    - h: Here. Same [approximate] location as text
    - t: Top. Top of page
    - b: Bottom. Bottom of Page
    - p: Special page for only figures
    - *!: Ignore other LaTeX auto formatting
    - H: Exactly at the location specified
        - `\usepackage{foat}`

Figures
Table

- `\begin{figure}[h]`
  - `\centering`
  - `\begin{tabular}{|l|r|c|}`
    - `\hline`
    - `Header1 & Header2 & Header3\\`
    - `\hline`
    - `Content1 & Content2 & Content3\\`
    - `\hline`
  - `\end{tabular}`
  - `\caption{This is a \LaTeX table}`
- `\end{figure}`

Header1	Header2	Header3
Content1	Content2	Content3

Figure 1: This is a LaTeXtable

Figures
Images

- `\usepackage{graphicx}`
- `\begin{figure}[h]`
    - `\centering`
    - `\includegraphics[parameters]{file_name}`
    - `\caption{caption}`
- `\end{figure}`

- Parameters
    - `height = 3in`
    - `width = .7\textwidth`

Subfigures

- `%preamble`
- `\usepackage{subcaption}`
- `\begin{figure}[h]`
- `\begin{subfigure}[b]{.5\textwidth}`
  - `\includegraphics[width=\textwidth]{path}`
- `\end{subfigure}`
- `\begin{subfigure}[b]{.5\textwidth}`
  - `\includegraphics[width=\textwidth]{path}`
- `\end{subfigure}`
- `\end{figure}`

Itemize

- `\begin{itemize}`
  - `\item First Item`
  - `\item Second Item`
- `\end{itemize}`
- **First Item**
- **Second Item**

Itemize

- `\begin{itemize}`
  - `\item First Item`
    - `\subitem Subitem`
      - `\subsubitem Subsub item`
  - `\item Second Item`
- `\end{itemize}`
- **First Item**
  - Subitem
    - Subsubitem
- **Second Item**

Itemize

- `\begin{itemize}`
  - `\item First Item`
  - **`\begin{itemize}`**
    - **`\item Subitem`**
  - **`\end{itemize}`**
  - `\item Second Item`
- `\end{itemize}`
- First Item
  - Subitem
- Second Item

More Exercises

LaTeX Resumes

- https://www.overleaf.com/13490924tqxfzwgtgdhy#/52083750/

- https://www.overleaf.com/13490936svhnhynyxfxk#/52083795/

- https://www.overleaf.com/13490956qyvxsxnbgbzn#/52083864/

Some More Commands

- \textsc{Short capital letters}
- \clearpage fill page
- \hfill fill horizontally

New Command

▶ Useful for phrases or syntax that will be repeated often

▶ `\newcommand{\command_1}{Replacement Text}`

▶ `\newcommand{\command_2}[3]{#3 #2#1}`

▶ `\command_1 → Replacement Text`

▶ `\command_2{a}{b}{c} → cab`

Questions?
Anything Else?