LaTeX

250H

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- It is free and can be downloaded at https://www.latex-project.org/get/
- We highly recommend you learn it now as you typeset your homework!

History

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- According to Wikipedia, TeX is intended to be pronounced like tech with the letters of the name being represent by the capital Greek letters tau, epsilon, and chi, as TeX is an abbreviation of τέχνη
  - Τέχνη is greek for both "art" and "craft", which is also the root word of technical

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- Leslie Lamport in the early 1980's then used TeX as the basis for LaTeX which has a lot more macros in it and has become the standard

Starting a document

```
\documentclass{article}

\usepackage[utf8]{inputenc}

\begin{document}

% text will go here

\end{document}
```

- \documentclass{*document class*}
  - article
    - Short documents and journal articles
    - Most commonly used

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- \documentclass{*document class*}
  - article
    - Short documents and journal articles
    - Most commonly used
  - report
    - Longer documents
  - book
  - letter
  - slides
    - Rarely used
    - Replaced by beamer
  - beamer
    - Slides in the Beamer class format

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- \usepackage[utf8]{inputenc}
  - The inputenc package translates various standard and other input encodings into a ‘LATEX internal language’.
  - utf8 is one of these encodings

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- \usepackage[*options*]{*package name*}
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  - Options is an optional list of keywords that trigger special features in the package

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  - Options is an optional list of keywords that trigger special features in the package
- Some Useful Packages:
  - amssymb
    - Adds more symbols and formats
  - amsmath
    - Adds options for displaying equations
  - xcolor
    - Add color to a doc
  - graphics
    - Add pictures to a doc

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- *% comment*
  - Creates a comment just like how comments are used in other programing languages

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- \begin{*environment*}

  \end{*environment*}
  - Tells LaTeX that anything in the middle of the begin and end follow a specific environment

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- Common Environments:
  - document
    - Creates a document
  - equation
    - Creates an equation
  - tabular
    - Inserts a table
  - figure
    - Inserts a table
  - enumerate
    - Creates a numbered list
  - itemize
    - Creates a bulleted list

Typing Math

- $ allows you to enter math mode
  - $ $ will make it so that the equation is inline with your other text
  - $$ $$ will make it so that the equation is on its own line and is centered

Typing Math

- $\frac{x}{y}$
  - $\frac{x}{y}$

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- $\frac{x}{y}$
  - $\frac{x}{y}$
- x_{y}
  - x_y

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  - $\frac{x}{y}$
- x_{y}
  - x_y
- x^{y}
  - x^y

Typing Math

- $\frac{x}{y}$
  - $\frac{x}{y}$
- x_{y}
  - x_y
- x^{y}
  - x^y
- $x \equiv a \pmod{b}$
  - $x \equiv a \pmod{b}$

Typing Math

- $\frac{n!}{k!(n-k)!} = \binom{n}{k}$
  - $$\frac{n!}{k!(n-k)!} = \binom{n}{k}$$

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  - $\frac{n!}{k!(n-k)!} = \binom{n}{k}$
- $\sqrt[3]{x}$
  - $\sqrt[3]{x}$
- $\sum_{i=1}^{10} i$
  - $\sum_{i=1}^{10} i$
- $x \times y$
  - $x \times y$

Text Formatting

- \textit{}
  - Makes text italicized

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- \textit{}
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- \textbf{}
  - Makes text bold

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  - Underlines text
- \vspace{}
  - Adds vertical space (you would need to specify how much by something like\vspace{1 cm})

Text Formatting

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  - Makes text italicized
- \textbf{}
  - Makes text bold
- \underline{}
  - Underlines text
- \vspace{}
  - Adds vertical space (you would need to specify how much by something like\vspace{1 cm})
- \hspace{}
  - Adds horizontal space (you would need to specify how much by something like\hspace{1 cm})

Tables

```
\begin{center}
\begin{tabular}{ c c c }
 %cell1 & %cell2 & %cell3 \\
 %cell4 & %cell5 & %cell6 \\
 %cell7 & %cell8 & %cell9
\end{tabular}
\end{center}
```

- \begin{center}

  \end{center}
  - Tells LaTeX that anything in the middle of the begin and end should be aligned to the center

Tables

```
\begin{center}
\begin{tabular}{ c c c }
 %cell1 & %cell2 & %cell3 \\
 %cell4 & %cell5 & %cell6 \\
 %cell7 & %cell8 & %cell9
\end{tabular}
\end{center}
```

- \begin{tabular}{ c c c }

  \end{tabular}
  - Tells LaTeX to create a table

Tables

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```

- \begin{tabular}{ c c c }

  \end{tabular}
  - Tells LaTeX to create a table
  - { c c c }
    - Tells LaTeX that everything in the cell should be centered and we have 3 columns
    - Note: this will not have any separator lines in between each column and row

Tables

```
\begin{center}
\begin{tabular}{ c c c }
 %cell1 & %cell2 & %cell3 \\
 %cell4 & %cell5 & %cell6 \\
 %cell7 & %cell8 & %cell9
\end{tabular}
\end{center}
```

- \\
  - Creates a new line

Tables

```
\begin{center}
\begin{tabular}{ c c c }
 %cell1 & %cell2 & %cell3 \\
 %cell4 & %cell5 & %cell6 \\
 %cell7 & %cell8 & %cell9
\end{tabular}
\end{center}
```

- \\
  - Creates a new line
- &
  - Creates a new cell

Figures

```
\begin{figure}

  \includegraphics{%where the image is on your computer}

  \caption{%caption}

  \label{%whatever you want to label it as to reference later}

\end{figure}
```

- \begin{figure}

  \end{figure}
  - Creates figure environment

Figures

```
\begin{figure}
  \includegraphics{%where the image is on your computer}
  \caption{%caption}
  \label{%label name}
\end{figure}
```

- \includegraphics{*graphic name*}
  - Inserts the graphic

Figures

```
\begin{figure}
  \includegraphics{%where the image is on your computer}
  \caption{%caption}
  \label{%label name}
\end{figure}
```

- \includegraphics{*graphic name*}
  - Inserts the graphic
- \caption{*text for your caption*}
  - Inserts a caption below the picture

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```
\begin{figure}
  \includegraphics{%where the image is on your computer}
  \caption{%caption}
  \label{%label name}
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- \includegraphics{*graphic name*}
  - Inserts the graphic
- \caption{*text for your caption*}
  - Inserts a caption below the picture
- \label{*Label Name*}
  - Creates a label so you can reference the figure in the text of a document
    - \ref{*Label Name*} will do this

Helpful Links

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  - Online LaTeX editor
  - Allows you to have source code on the left and compiled pdf on the right

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- http://detexify.kirelabs.org/classify.html
  - Allows you to draw the symbol you are looking for and it gives you the LaTeX code