Introduction to LaTeX

A LaTeX Presentation

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Lesson Progress

Introduction
Welcome to LaTeX

- Lamport TeX

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- Written as LaTeX or LaTeX.

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- Pronounced lay-tek

Introduction
Why we use LaTeX

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Since LaTeX is so versatile, once you get used to it, you will find that you can do almost anything in it.

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When using LaTeX, it is important to remember that it makes correct design choices 99% of the time. Accept what it does, as it does it for a reason.

For example, LaTeX uses very large margins by default. It may look odd, but it actually sets the margins to make lines the size that studies have shown is best for readability (60–70 characters). This is easy to change of course.

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Environments LaTeX uses environments to create things too complex for commands. They start with \begin{environment} and end with

Introduction
Installing

Installing LaTeX is easy, but there are lots of options for installing it.

Listed below are the easiest solutions for the main desktop operating systems. Some of these work on all operating systems, but certain ones are easier with certain operating systems.

GNU/Linux and BSD Install TeX Live from your distro's repo

macOS MacTeX is supposed to be good

Windows MikTeX is a distribution that comes with many programs for editing and compiling LaTeX, such as TexWorks.

If you have difficulty installing LaTeX, you can try an online editor such as overleaf.com

You can also check https://www.latex-project.org/get/ if you are not satisfied with any of these options.

Introduction

Let's start

In this presentation, we will show how to write a LaTeX document that proves the quadratic formula.

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Preamble
The beginning

Our document is split into two sections.

The preamble and the main document.

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- Packages
- Document title
- Author
- Date (defaults to date when document was compiled)
- Miscellaneous information about your document

Preamble
Example

Let's code our preamble.

```
1  \documentclass[12pt]{article} % Use the article class.
2
3  \usepackage[margin=1in]{geometry} % Use 1 inch margins.
4  \usepackage{parskip} % Simplified formatting of paragraphs.
5  \usepackage{amsmath} % Package from AMS that makes formatting
       LaTeX math easier.
6  \usepackage{amssymb} % AMS package for mathematical symbols.
7
8  \title{Quadratic Proof} % The title of our document.
9  \author{Vincent Macri} % The author's name.
10 \date{March 29, 2017} % The date of this document.
11
12 \frenchspacing % LaTeX puts extra space after periods by default.
       This line disables that.
```

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Setup
Subtitle

LaTeX uses sections to split up parts of the document.

In school assignments, you will usually have each question be its own section. If a question has more than one "subquestion", you can create a "subsection" as well.

Example

```
\section{Prove that $1 + 1 = 2$}\\
\subsection{Extend the previous proof to $1+2 = 3$}
```

Setup
Title page and table of contents

The `\maketitle` command is used to generate a title page.

Example

```
\maketitle
```

The `\tableofcontents` command will generate a neat table of contents out of your sections.

Example

```
\tableofcontents
```

If your items aren't showing up in your table of contents, try recompiling.

Lesson Progress

The Document

Let's actually start

Time to actually start our document!

Let's explain how we prove the quadratic formula using our words before we derive it.

Example

```
\section{Prove the quadratic formula}
We will prove this by deriving it from $ax^2 + bx + c = 0$.

This is fairly trivial.
```

Most of the math we do right now is just using formulas and solving for things.

The align environment is useful for this. We put an asterisk into the name of the environment to get rid of equation numbering.

Example

```
\begin{align*}
\end{align*}
```

The Document

Math symbols

Here is a list of useful LaTeX math symbols:

$\therefore$	`$\therefore$`
$\because$	`$\because$`
$\approx$	`$\approx$`
$\rightarrow$	`$\rightarrow$`
$\neq$	`$\neq$`
$\pm$	`$\pm$`
$\times$	`$\times$`
$\cdot$	`$\cdot$`
∞	`$\infty$`