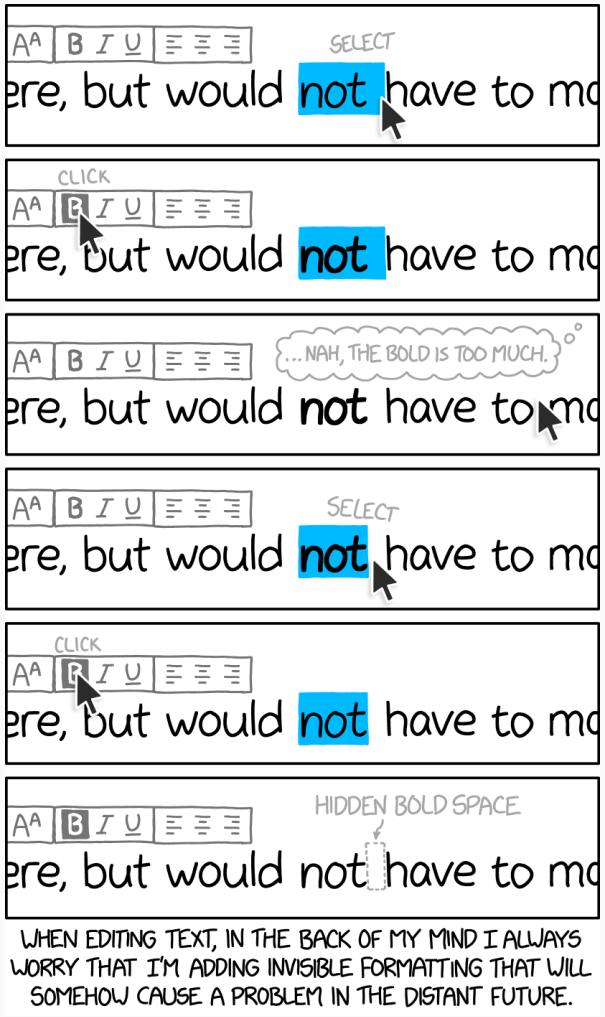
Something to consider...



https://xkcd.com/2109/

An Introduction to LaTeX

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What is LaTeX?

What is LaTeX

It is **not** a "what you see is what you get" editor (WYSIWYG).
LaTeXconverts plain text files (.tex) into (typically) PDFs

```
\begin{equation}
      x = \frac{ - b \pm \sqrt{b^2 - 4 a c}}{2a}
\end{equation}
```

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{1}$$

More LaTeX

```
\begin{equation}
  \int_0^a x^n dx = \frac{1}{n+1}\
  a^{n+1} \qquad n \geq 0
\end{equation}
```

$$\int_0^a x^n dx = \frac{1}{n+1}\ a^{n+1} \qquad n \geq 0 \tag{2}$$

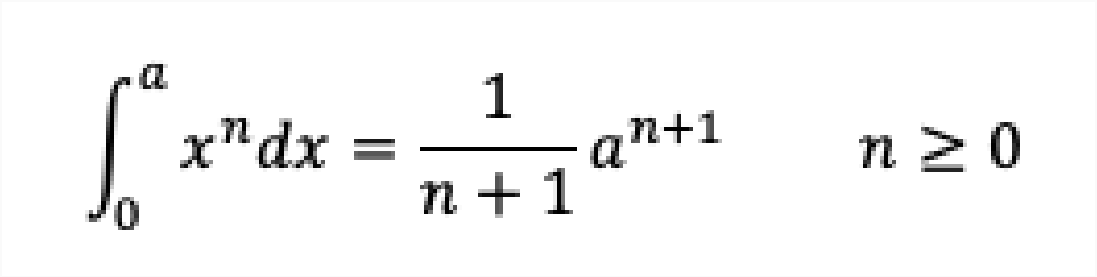
The Why

Widespread use in Academia

1. Almost all journals, especially in Math, CS, and Physics either prefer or mandate LaTeXas the document submission format
2. Discrete Math (CSCI 358) uses LaTeXfor all of your homework
3. It can make your project / homework submissions look much more professional

Better looking equations (arguably)

- Word



$$\int_0^a x^n dx = \frac{1}{n+1} a^{n+1} \qquad n \geq 0$$

- LaTeX

$$\int_0^a x^n dx = \frac{1}{n+1}\ a^{n+1} \qquad n \geq 0 \tag{3}$$

Quality of Life

- Use your favorite text editor to write those long papers
- Use git to version control and collaborate on writeups
- More control over how your document is formatted without having drag everything to how you like it
- A better “default” look instead of just bolding headings

“Hello World” document

```
\documentclass{article}
\usepackage[margin=1in]{geometry}
\begin{document}

\title{Title Here}
\author{Jacob Vossen}
\maketitle
\begin{abstract}
The abstract text goes here.
\end{abstract}
\section{Introduction}
Here is the text of your introduction.
\subsection{Subsection Heading Here}
Write your subsection text here.
\section{Conclusion}
Write your conclusion here.

\end{document}
```

- This slide exists to remind Jake to show you the example Hello World document

Parts of a LaTeX document

The Header

```
\documentclass{article}
\usepackage[margin=1in]{geometry}
\begin{document}
```

- Document class - typically `article`, but you would change this if you where working on a book or thesis (or slides like these)
- Packages - easiest way to extend LaTeXto include more functionality (in this case, setting margins away from the default 2 inches)

The Title

```
\title{Title Here}
\author{Jacob Vossen}
\maketitle
```

- Title is automatically created and formatted with `maketitle`

The Body

```
\section{Introduction}
Here is the text of your introduction.
\subsection{Subsection Heading Here}
Write your subsection text here.
```

This is the meat of writing LaTeXdocuments, using section, subsection, and subsubsection etc to structure your document, adding in equations when you need them.

Examples

- If you didn't guess already, these slides are in LaTeX! You can find them at `https://github.com/jakevossen5/acm-w-latex-talk`
- Some other examples...

How to get Started with LaTeX

In approvement order of most tech-intensive to least tech-intensive

1. Overleaf - The Google Docs equivelent of LaTeX- everything is in browser
2. ⟨Texpad, Texstudio, Texmaker⟩ are all desktop apps designed for out of the box LaTeXusage
3. Using pdflatex (on macOS: brew cask install mactex) + the text editor of your choice

Things That Suck in LaTeX

- The error messages are not the best, usually point to something quite a ways after what is actually wrong
- You have to rely almost entirely on third party documentation (Overleaf)
- Making tables can be a pain
- Adding diagrams exactly where you want them is difficult as well
- It can be frustrating when your English homework doesn't compile

Getting Help on LaTeX

Official documentation is not great, try the following places for good documentation / tutorials

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4. Google - you are a comp sci after all

Personal Suggestions

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3. Be willing to put some upfront cost in for long term benefit - it can be a bit of a frustrating experience to start but a rewarding one if you commit to it.
4. Use git!