An Introduction to LaTeX

ACM

New York University

2019

Why bother?

Most of us begin our word processing journey with huble intentions

Get the thing typed!

So why bother with LaTeX?

Why bother?

1. It's beautiful.
   - *Especially* for math.
   - Try and find a paper on Arxiv not written in LaTeX.
2. It was created by scientists, for scientists.
   - Large and active community.
   - Online support is readily found.
3. It's powerful; extremely rich package community.
   - Almost as ridiculous as python's package system.

Who's it for?

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   - Journal articles and theses, with or without complex math notation.
   - The technical publishing industry.
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3. "You take care of writing, and we'll take care of presentation."

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How does this work?

1. You specify the input in a source file.
   - Vi/Vim, Emacs, Sublime, ...
   - TeXMaker, TeXStudio, Overleaf, ...
2. LaTeX processes the content and decides how best to typeset it.

```
I have a test \textbf {tomorrow}, but here I am \dots
```

I have a test **tomorrow**, but here I am ...

Some Examples...

```
\begin{enumerate}
\item \textit{Very} important first thing.
\item \textbf{Extremely} important second thing.
\item \underline{Ultra} important third thing.
\end{enumerate}
```

1. *Very* important first thing.
2. **Extremely** important second thing.
3. Ultra important third thing.

Some Examples. . .

```
\begin{figure}
    \centering
    \includegraphics{./cat.jpg}
\end{figure}
```

Some Examples...

```
$\forall \varepsilon > 0, \exists \delta > 0$ such that
if $d(x, y) < \delta \implies d(f(x), f(y)) <
\varepsilon$.
```

$$\Downarrow$$

$\forall \varepsilon > 0, \exists \delta > 0$ such that if $d(x, y) < \delta \implies d(f(x), f(y)) < \varepsilon$.

Shift in perspective

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1. You're right; kinda. There's a learning curve for the syntax.
2. Describe "What it is", not "How it looks".
3. Let LaTeX and its packages do the rest.

Packages: Infinite Power

Packages are varied, powerful, and sometimes hilarious.

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1. Beamer. Slideshow documentclass, what this is written on!
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3. amsmath, amsthm, etc. Amazing extended math symbols from AMS.
4. Fun packages:
    1. Coffee Stains.
    2. avremu. Technically LaTeX is turing complete so...

Learning LaTeX

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2. Start LaTeX'ing!

Beginnings

```
\documentclass{article}
\begin{document}
Salve, munde! %minted coloring latex in latex
\end{document}
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Documentclass is a special command, that basically defines the entire format. It takes the formatting you define and derives the typographic form of the pdf to reflect the choices you made.

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What exactly is this \begin{document} \end{document}? An enviornment:

1. Performs an action on a block of text.

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What exactly is this \begin{document} \end{document}? An enviornment:

1. Performs an action on a block of text.
2. You can make your own!

Beginnings

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Ok . . . , now we have code. How do we turn this into something usable?

Practical Demo: Introduction of Enviornments

1. GUI: Overleaf
2. CLI: pdflatex and pandoc+markdown.