

Please go to
www.overleaf.com
and make an account
...
or open your favourite L^AT_EX editor

L^AT_EX

A SHORT INTRODUCTION

Jesse Knight

University of Toronto
Libraries

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Overview

Introduction

Getting Started

Examples

INTRODUCTION

What is L^AT_EX?

A typesetting program: *content* \rightarrow *a document*

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A typesetting program: *content* \rightarrow *a document*

input: filename.tex

\LaTeX

output: filename.pdf

```

1 \documentclass{article}
2 \usepackage{amsmath}
3 \title{\LaTeX}
4 \author{Wikipedia}
5 \date{January 1, 2020}
6
7 \begin{document}
8   \maketitle
9   \LaTeX{} is a document preparation system for the \TeX{} typesetting
    program. It offers programmable desktop publishing features and
    extensive facilities for automating most aspects of typesetting and
    desktop publishing, including numbering and cross-referencing, tables
    and figures, page layout, bibliographies, and much more. \LaTeX{} was
    originally written in 1984 by Leslie Lamport and has become the
    dominant method for using \TeX; few people write in plain \TeX{}
    anymore. The current version is \LaTeXe.
10
11   % This is a comment, not shown in final output.
12   % The following shows typesetting power of LaTeX:
13   \begin{align}
14     E_0 &= mc^2 \\\
15     E &= \frac{mc^2}{\sqrt{1-\frac{v^2}{c^2}}}
16   \end{align}
17 \end{document}

```



\LaTeX

Wikipedia

January 1, 2020

\LaTeX is a document preparation system for the \TeX typesetting program. It offers programmable desktop publishing features and extensive facilities for automating most aspects of typesetting and desktop publishing, including numbering and cross-referencing, tables and figures, page layout, bibliographies, and much more. \LaTeX was originally written in 1984 by Leslie Lamport and has become the dominant method for using \TeX ; few people write in plain \TeX anymore. The current version is $\text{\LaTeX} 2_{\epsilon}$.

$$E_0 = mc^2 \quad (1)$$

$$E = \frac{mc^2}{\sqrt{1 - \frac{v^2}{c^2}}} \quad (2)$$

Advantages of L^AT_EX

- superb control and formatting
- automatic numbering, cross-references, ... everything!
- beautiful output
- consistent and version control
- easy to learn, hard to master, lots of issues
- LaTeX fontset is the best

Advantages of L^AT_EX

- ▶ separate content and formatting
- ▶ automate numbering, cross-references, ... everything!
- ▶ beautiful math
- ▶ comments and version control
- ▶ no version compatibility issues
- ▶ it's free!

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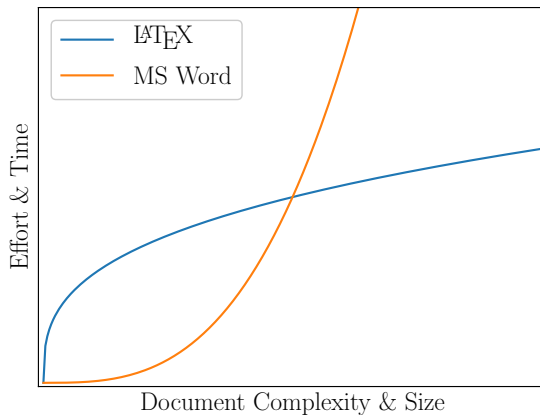
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L^AT_EX vs MS Word



How does L^AT_EX Work?

Three layers:

1. “primitives” – e.g. `\def\pi{3.14}` defines a macro `\pi` to contain “3.14”
+ “kernel” – e.g. tools to combine primitives
2. “classes” – e.g. an article, which should have: title, author, sections, etc.
+ “packages” – e.g. modify or extend a basic class
3. “document” – e.g. this specific article (including content!)

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GETTING STARTED

Your First Document

```
\documentclass{article}  
% document header  
\begin{document}  
  % document content  
  Hello World  
\end{document}
```

But first: Overleaf → “New Project”

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But first: [Overleaf](#) → “New Project”

Document Elements

• `\title{author, date}`

• `\section{}`

• `\textit{}`

• `\documentclass{article}`

• `\begin{document}` & `\end{document}`

• `\begin{figure}` & `\end{figure}`

• `\begin{equation}` & `\end{equation}`

Document Elements

- ▶ title, author, date
- ▶ sections
- ▶ math
- ▶ floats: figures & tables
- ▶ cross-references & table of contents
- ▶ citations & bibliography
- ▶ appendices & code

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EXAMPLES

Putting it all Together

Putting it all Together

- ▶ e.g. article: [example](#)
- ▶ e.g. thesis: [example](#)
- ▶ e.g. poster: [example](#)
- ▶ e.g. CV: [example](#)

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Helpful Resources

- ▶ [Overleaf](#) – online \LaTeX writing application
- ▶ [\$\text{\LaTeX}\$ Install Guide](#) – to install \LaTeX on your computer (offline)
- ▶ [TeXstudio](#) – great editor for composing \LaTeX “code” (offline)
- ▶ [\$\text{\TeX}\$ Stack Exchange](#) – Q & A style how-to and debugging help
- ▶ [\$\text{\LaTeX}\$ Cheat Sheet](#) – a really nice reference for common commands
- ▶ [Github Repository](#) – example documents: article, thesis, CV, poster, slides