

# Create Pretty Documents with $\text{\LaTeX}$ !

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Kane County Institute Day

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# What is T<sub>E</sub>X?

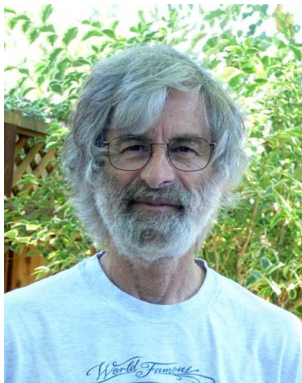


*Donald Knuth*

(Source: [www-cs-faculty.stanford.edu/~uno](http://www-cs-faculty.stanford.edu/~uno))

- Developed in 1978 by Donald Knuth for *The Art of Computer Programming (Volume 2)*
- A typesetting system (as opposed to a WYSIWYG text editor, like MS Word)
- Metafont (description language for vector fonts) and Computer Modern (a family of typefaces)

# What is L<sup>A</sup>T<sub>E</sub>X?



*Leslie Lamport*

(Source: <http://www.lamport.org/>)

- Originally released in the early 1980s by Leslie Lamport
- A simplified “rewrapping” of T<sub>E</sub>X for content creators
- L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>: *The New Standard L<sup>A</sup>T<sub>E</sub>X*

# Why use L<sup>A</sup>T<sub>E</sub>X?



**College Student**

@CollegeStudent

Follow



using microsoft word

\*moves an image 1 mm to the left\*

all text and images shift. 4 new pages  
appear. in the distance, sirens.

7:12 PM - 23 Sep 2017

62,133 Retweets 196,569 Likes



334



62K



197K

# Why use L<sup>A</sup>T<sub>E</sub>X?

- It makes things pretty.
- It's quicker. (After a sizable learning curve!)
- It's cross-platform.
- It's open source and free.
- It's the standard for mathematics publication.
- It's being integrated into text editors.
- It allows you to focus on content.

# What You Need To Get Started

**Distribution:** the typesetting system itself

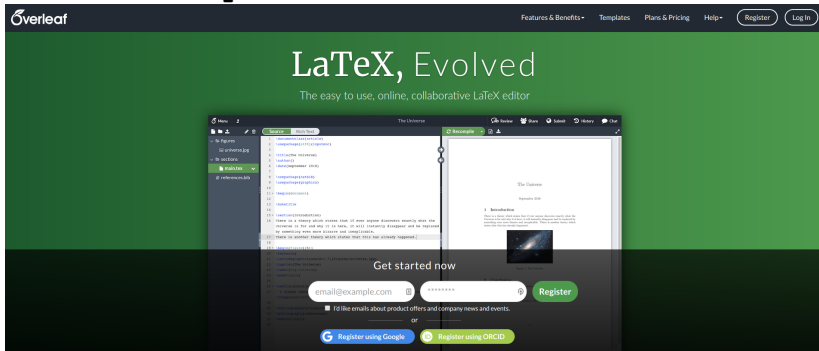
MiKTeX (Windows), MacTeX (MacOS), T<sub>E</sub>X Live (Windows and Linux)

**Editor:** a front-end to use L<sup>A</sup>T<sub>E</sub>X

Emacs, Kile, LyX (WYSIWYM), Overleaf, ShareL<sup>A</sup>T<sub>E</sub>X, Texmaker, T<sub>E</sub>XnicCenter, T<sub>E</sub>Xstudio, T<sub>E</sub>Xworks, Vim

# So let's try it already!

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<http://staff.imsa.edu/~fogel/latex>

# The Big Machinery

**Document Classes:** types of documents you can create, defines a set of basic  $\text{\LaTeX}$  commands

- **article:** for writing journal articles, short reports, etc.
- **beamer:** for creating slides or presentations (Like this one! 😊)
- **book:** for putting together books
- Others...

**Packages:** sets of use-specific  $\text{\LaTeX}$  commands to facilitate document creation

- **geometry:** for changing the page margins, etc
- **mathtools:** for typesetting mathematics (extension of `amsmath`)
- **tikz:** for drawing diagrams
- Many others...



# File Management

- **Class Files (.cls):** define the document classes, usually buried where  $\LaTeX$  is installed
- **Style Files (.sty):** define Beamer elements, usually buried where  $\LaTeX$  is installed
- **$\LaTeX$  Files (.tex):** where the user creates content
- **Input Files (images, etc.):** called by the user in the .tex file
- **BIB $\TeX$  Files (.bib):** stores information on references
- **Auxiliary Files (.aux, .log, etc.):** automatically generated by  $\LaTeX$  to produce the final document
- **Output Files (.pdf):** the final document

# The Basics

**Commands:** cause  $\text{\LaTeX}$  to do something, may use required arguments, optional arguments, both, or neither

```
\command[<optional>]{<mandatory>}
```

**Environments:** for formatting large portions of text

```
\begin{<environment>}  
  ...  
\end{<environment>}
```

**Comments:** ignored by  $\text{\LaTeX}$  when building the output

```
% this is a comment
```

# General Document Structure

```
\documentclass[<options>]{<class name>}

% PREAMBLE
\usepackage{<package name>}

% CONTENT
\begin{document}

...

\end{document}
```

# Troubleshooting Strategies

- Read the specific errors and warnings (and turn line numbering on in your editor!)
- CTAN (The Comprehensive T<sub>E</sub>X Archive Network), which hosts the user documentation for most packages
- [detexify.kirelabs.org](http://detexify.kirelabs.org), can draw symbols to figure out the correct command
- Google it!!!!!!!!!!!!!!!!!!!!!!

# Thanks!

