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L^AT_EX

a short introduction

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Imperial College London

2025 June 5

Overview

Introduction

How \LaTeX Works

Getting Started

Resources

Introduction

What is \LaTeX ? A typesetting program

What is L^AT_EX? A typesetting program

input: filename.tex

```

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.
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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}}}
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output: filename.pdf

L^AT_EX

Wikipedia

January 1, 2020

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$$E_0 = mc^2 \tag{1}$$

$$E = \frac{mc^2}{\sqrt{1 - \frac{v^2}{c^2}}} \tag{2}$$

Advantages + Disadvantages

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what you see is what you get

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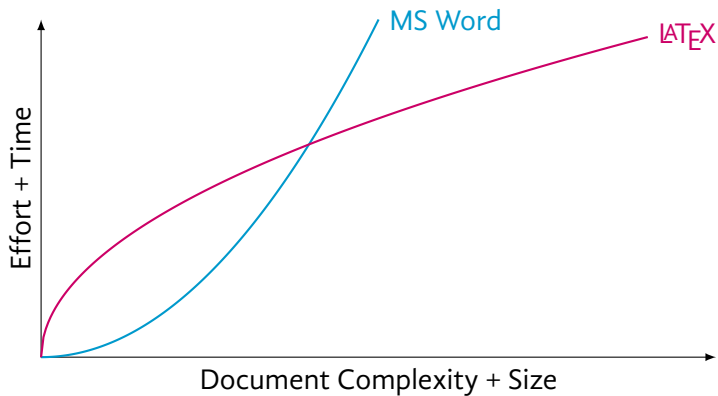
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what you see is what you get
- tables = pain

\LaTeX vs MS Word



How \LaTeX Works

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2. **“classes”** types of document, e.g. an article, having: format, title, etc.
+ **“packages”** modify or extend a class, e.g. adding graphics
3. **“document”** this specific document, e.g. your thesis

Kernel: Putting Stuff on a Page

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Boxes:

Kernel: Putting Stuff on a Page

Boxes:

→ characters

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- characters
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Boxes:

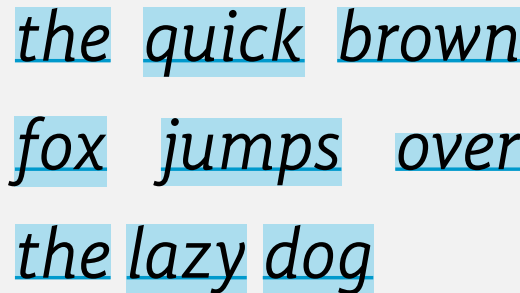
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Kernel: Putting Stuff on a Page

Boxes:

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- lines
- paragraphs
- pages

Combining Boxes:



The diagram illustrates how words are represented as boxes in LaTeX. It shows three lines of text in a cursive font. Each word is enclosed in a light blue rectangular box with a thin blue underline. The first line contains 'the', 'quick', and 'brown'. The second line contains 'fox', 'jumps', and 'over'. The third line contains 'the', 'lazy', and 'dog'. The boxes are positioned such that they align with the words and their underlines, demonstrating how LaTeX uses boxes to manage text layout.

*the quick brown
fox jumps over
the lazy dog*

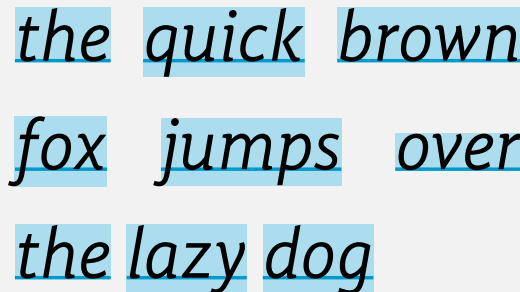
Kernel: Putting Stuff on a Page

Boxes:

- characters
- words
- lines
- paragraphs
- pages

Combining Boxes:

- **modes:** horizontal, vertical, math



The diagram illustrates how text is organized into boxes. It shows the sentence "the quick brown fox jumps over the lazy dog" arranged in three lines. Each word is enclosed in a light blue rectangular box, demonstrating how individual characters or words can be treated as separate boxes in L^AT_EX.

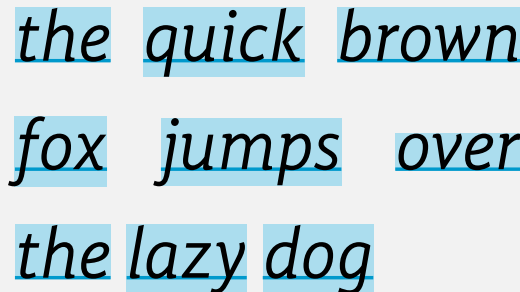
Kernel: Putting Stuff on a Page

Boxes:

- characters
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Combining Boxes:

- **modes:** horizontal, vertical, math
- **glue:** stretchy space



The diagram illustrates how text is laid out using boxes. It shows three lines of text in a serif font. Each word is enclosed in a light blue rectangular box. The boxes are arranged to show how they fit together on a line. The first line contains 'the', 'quick', and 'brown'. The second line contains 'fox', 'jumps', and 'over'. The third line contains 'the', 'lazy', and 'dog'. The boxes are of varying widths to accommodate the different lengths of the words.

the quick brown
fox jumps over
the lazy dog

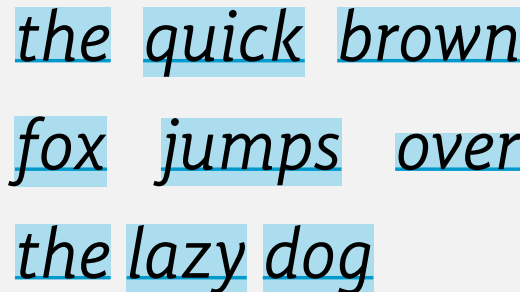
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Boxes:

- characters
- words
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- pages

Combining Boxes:

- **modes:** horizontal, vertical, math
- **glue:** stretchy space
- **penalties:** avoid “bad” layouts



The diagram illustrates how words are represented as boxes in LaTeX. It shows three lines of text in a cursive font. Each word is enclosed in a light blue rectangular box. The first line contains 'the', 'quick', and 'brown'. The second line contains 'fox', 'jumps', and 'over'. The third line contains 'the', 'lazy', and 'dog'. The boxes are positioned such that they represent the width of each word, demonstrating how they would be used to control horizontal spacing and alignment in a document.

Getting Started

Editors

Editors



Editors



- no install + package management

Editors



- no install + package management
- must have internet connection

Editors



- no install + package management
- must have internet connection
- pay to integrate reference database

Editors



- no install + package management
- must have internet connection
- pay to integrate reference database
- some collaborate features

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- no internet connection required
- free to integrate reference database
- DIY collaborate
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Your First Document

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

Document Elements

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- title, author, date
- sections, subsections, etc.

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Resources

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- [Github Repository](#) example documents & “cheat sheets”