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L^AT_EX

a short introduction

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2025 June 5

Overview

Introduction

How \LaTeX Works

Getting Started

Resources

Introduction

What is L^AT_EX? A typesetting program

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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
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    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:
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output: filename.pdf

L^AT_EX

Wikipedia

January 1, 2020

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

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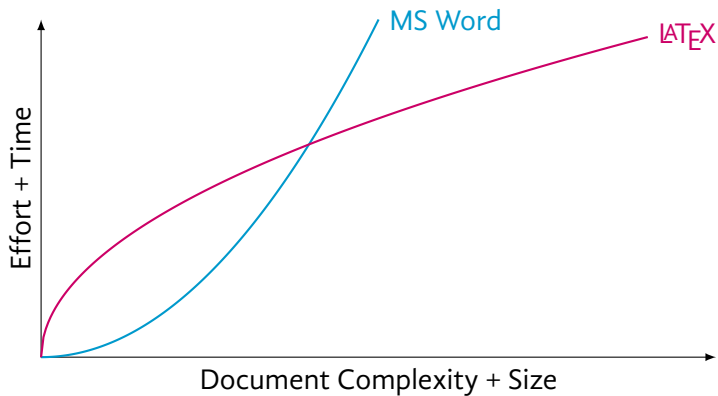
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- tables = pain

\LaTeX vs MS Word



How \LaTeX Works

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3. **“document”** this specific document, e.g. your thesis

Kernel: Putting Stuff on a Page

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Boxes:

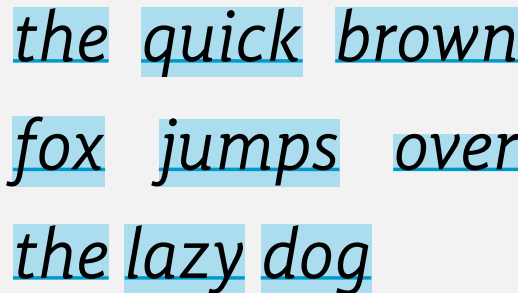
letters \rightarrow words \rightarrow lines
 \rightarrow paragraphs \rightarrow pages

Kernel: Putting Stuff on a Page

Boxes:

letters → words → lines
→ paragraphs → pages

Combining Boxes:



The diagram illustrates how words are grouped into boxes for typesetting. It shows the sentence "the quick brown fox jumps over the lazy dog" with each word enclosed in a light blue rectangular box. The boxes are arranged in three rows: the first row contains "the", "quick", and "brown"; the second row contains "fox", "jumps", and "over"; and the third row contains "the", "lazy", and "dog".

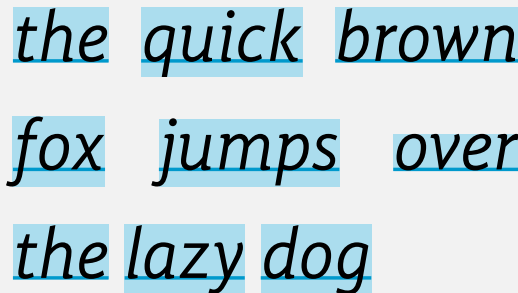
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Combining Boxes:

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



*the quick brown
fox jumps over
the lazy dog*

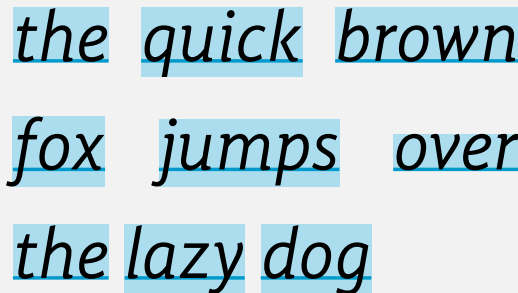
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Combining Boxes:

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



The diagram illustrates the TeX layout process for the sentence "the quick brown fox jumps over the lazy dog". Each word is enclosed in a light blue rectangular box. The boxes are arranged in three rows: "the quick brown" on the first row, "fox jumps over" on the second row, and "the lazy dog" on the third row. The spaces between the words are represented by horizontal lines of varying lengths, indicating the "glue" between boxes. The text is rendered in a black serif font.

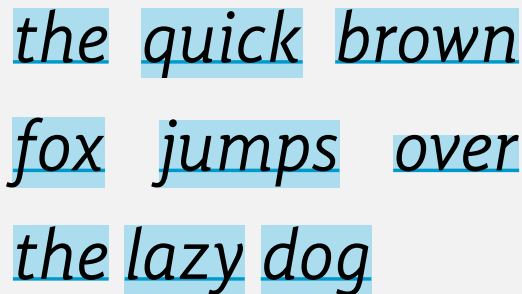
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- **modes:** horizontal, vertical, math
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- **floats:** “float” around (figures/tables)



The diagram illustrates how text is organized into boxes in L^AT_EX. It shows the sentence "the quick brown fox jumps over the lazy dog" with each word enclosed in a light blue rectangular box. The boxes are arranged in three rows: the first row contains "the", "quick", and "brown"; the second row contains "fox", "jumps", and "over"; and the third row contains "the", "lazy", and "dog". This visualizes the concept of "boxes" as a way to manage text layout and spacing.

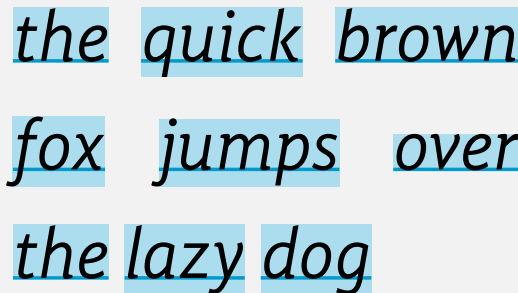
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Combining Boxes:

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- **penalties:** avoid “bad” layouts



The diagram illustrates how words are represented as boxes in LaTeX. It shows three lines of text: "the quick brown", "fox jumps over", and "the lazy dog". Each word is enclosed in a light blue rectangular box. The boxes are arranged to show how they fit together on a line, with spaces between them. The text is in a serif font.

Getting Started

Editors

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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

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

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Your First Document

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

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- sections, subsections, etc.

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

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