

Introduction to L^AT_EX

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Why L^AT_EX?

Single-slide elevator pitch

- It makes beautiful documents by default.

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- It **automates** a lot of the tedious busywork (table of contents, numbered sections, cross-references, etc.).

Why \LaTeX ?

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- The document is saved as **plain text**, which lends itself well to version control systems such as **git**.
- The output is a PDF, so it looks the same everywhere.

Why L^AT_EX? (ctd.)

Cool stuff out of the box

Behold this formula:

$$f = \lambda_x \lambda_Y \cdot \frac{1}{2} \left(\frac{\sqrt[3000]{\frac{4 + \frac{x}{12}}{\sum_{i=1}^k y_i}} + e^\pi}{\tau \sin(x^2 + 0.5x + \epsilon)} \right)$$

Why L^AT_EX? (ctd.)

Third-party packages

L^AT_EX also comes with a massive collection of third-party packages for specific use cases (like numbered examples or glosses).

- (1) a. Look, an example!
- b. * Look, an second example!
- (2) Das ist ein wunderschönes Beispiel!
d̥ʌs ʔis ʔɛ 'ʊʏndʒ̥ʃ̥eɪnəs 'b̥æɪf̥b̥iːl
this is a beautiful example
'This is a beautiful example!'

(Look how nicely the star in (1b) lines up!)

Nothing is ever perfect

Downsides

- Not really suitable for tasks that require finegrained control over the graphical design (the slides are already pushing it).
- \LaTeX 's error messages can be a bit... opaque at times.
- Passing \LaTeX documents around across different computers can sometimes be a bit janky.
- Documents that contain multiple languages/scripts is not as straight-forward as it could be (\XeLaTeX tries to address this).

Little history lesson

\TeX

- Pronounced $[\text{t}\epsilon\text{k}]$ (or $[\text{t}\epsilon\text{x}]$, $[\text{t}\epsilon\text{ç}]$, etc.)
- Created in 1978 by Donald Knuth.
- Computerised type-setting system.
- Nowadays considered a bit too low-level for day-to-day use.

Little history lesson

$\text{T}_{\text{E}}\text{X}$

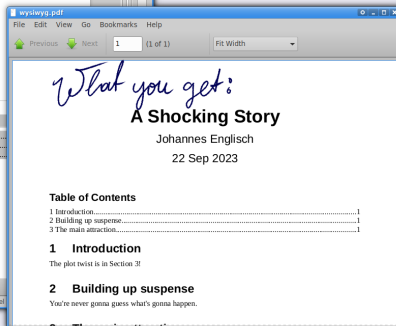
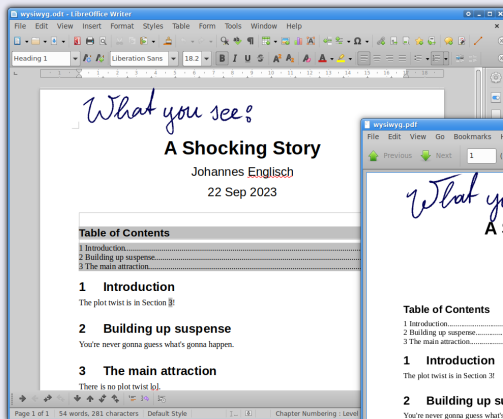
- Pronounced $[\text{t}\epsilon\text{k}]$ (or $[\text{t}\epsilon\text{x}]$, $[\text{t}\epsilon\zeta]$, etc.)
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\LaTeX

- Pronounced $[\text{la}:\text{t}\epsilon\text{k}]$ or $[\text{leit}\epsilon\text{k}]$. (or $[-\text{t}\epsilon\text{x}]$, $[-\text{t}\epsilon\zeta]$, etc.)
- Created in 1984 by Leslie Lamport.
- Built on top of $\text{T}_{\text{E}}\text{X}$.
- Provides a way smoother experience when making documents.

WYSIWYG vs. WYSIWYM

‘What You See Is What You Get’



WYSIWYG vs. WYSIWYM (ctd.)

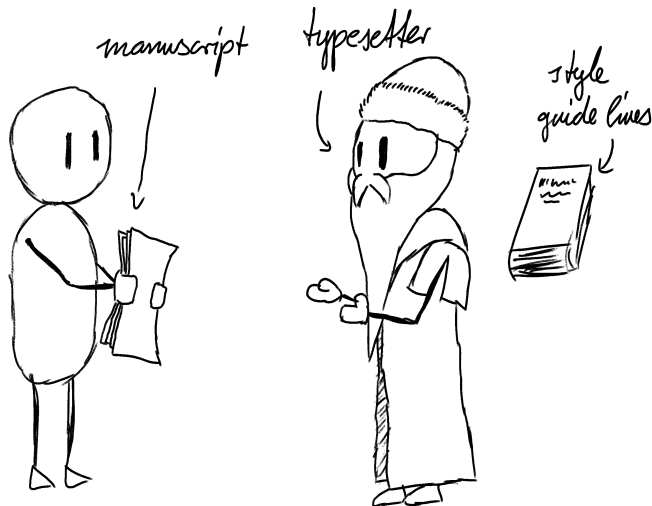
'What You See Is What You *Mean*'

The image shows two side-by-side windows illustrating the difference between WYSIWYG and WYSIWYM editing.

Left Window (WYSIWYM): Displays the source LaTeX code for a document named `wysiwym.tex`. The code includes commands like `\documentclass{scrartcl}`, `\title{A Shocking Story}`, `\author{Johannes Englisch}`, `\date{\today}`, `\begin{document}`, `\maketitle`, `\tableofcontents`, `\section{Introduction}`, `The plot twist is in Section-\ref{sec:main}.`, `\section{Building up suspense}`, `You're never gonna guess what's gonna happen.`, `\section{The main attraction}`, `\label{sec:main}`, `There is no plot twist lol.`, and `\end{document}`. Handwritten blue text "What you see" is written over the code.

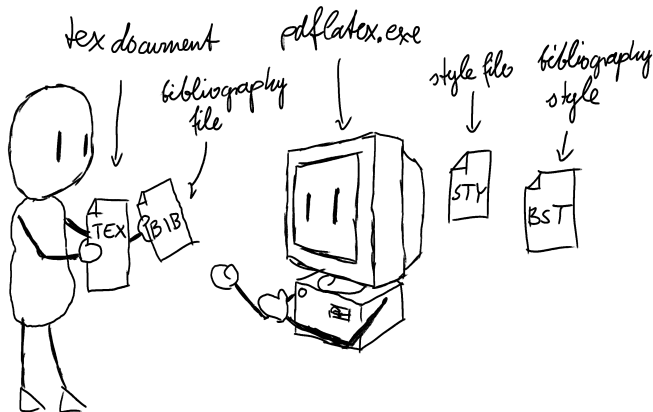
Right Window (WYSIWYG): Displays the rendered PDF output of the same document. The title is "A Shocking Story" by Johannes Englisch, dated September 22, 2023. It includes a table of contents and the main text. Handwritten blue text "What you get" is written over the rendered content.

How it works



Type-setting then

How it works (ctd.)



Type-setting now

Where do the files come from?

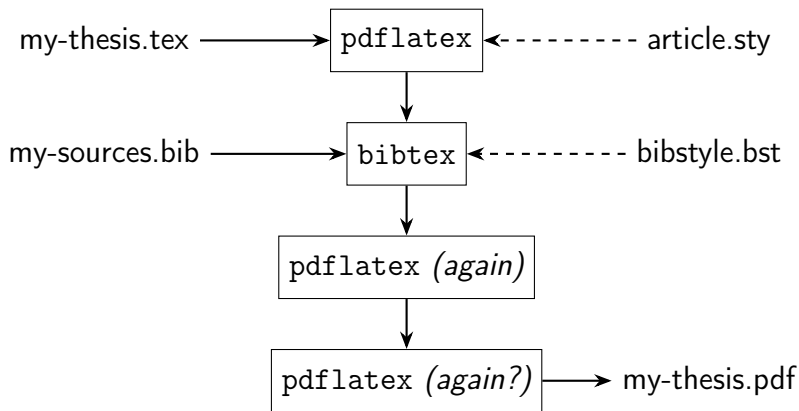
The manuscript

- *The $T_E X$ file*: Written by you.
- *The $B_I B T_E X$ file*: Can be hand-written; in practice people export them from their favourite bibliography program.

The style guide

- *The style file*: Either from your \LaTeX installation or provided by publisher/journal.
- *The bibliography style*: Provided by publisher/journal; there's also a script you can use to make your own.

How the ~~sau~~sage PDF is made



(No worries, you don't have to do this manually.)

What do you need?

\LaTeX itself

- Windows: [MiKTeX](#)
- macOS: [MacTeX](#) (via [homebrew](#) or using [the installer](#)).
- GNU/Linux: \TeX Live (it's in the repos).

What do you need? (ctd.)

A text editor with \LaTeX support

- [Texmaker](#).
(Good cross-platform pick; recommended for beginners.)
- [T_EXworks](#) on Windows, [T_EXshop](#) on macOS, [Kile](#) on GNU/Linux.
(Haven't looked at those in like 12 yrs.)
- Power editors: [Vim](#), [Neovim](#), [GNU Emacs](#).
(That's what I use – not recommended for beginners.)

What *do* you see?

```
< > wysiwym.tex
1 \documentclass{scrartcl}
2
3 \title{A Shocking Story}
4 \author{Johannes Englisch}
5 \date{\today}
6
7 \begin{document}
8
9 \maketitle
10
11 \tableofcontents
12
13 \section{Introduction}
14
15 The plot twist is in Section~\ref{sec:main}.
16
17 \section{Building up suspense}
18
19 You're never gonna guess what's gonna happen.
20
21 \section{The main attraction}
22 \label{sec:main}
23
24 There is no plot twist lol.
25
26 \end{document}
27
```

What do you see? (ctd.)

```
wysiwym.tex
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27
```

PREAMBLE

DOCUMENT

What do you see? (ctd.)

The image shows a LaTeX source file named `wysiwym.tex` with several commands and handwritten annotations explaining their syntax:

- `\documentclass{scrartcl}`
- `\title{A Shocking Story}`
- `\author{Johannes Englisch}`
- `\date{\today}`
- `\begin{document}`
- `\maketitle` (Annotated with **COMMAND** and an arrow pointing to it)
- `\tableofcontents` (Annotated with an arrow pointing to it)
- `\section{Introduction}`
- The plot twist is in Section~\ref{sec:main}.
- `\section{Building up suspense}`
- You're never gonna guess what's gonna happen.
- `\section{The main attraction}`
- `\label{sec:main}`
- There is no plot twist lol.
- `\end{document}`

Handwritten annotations on the right side of the image:

- `\foo` ← no arg
- `\foo{}` ← no arg
- `\foo{bar}` ← 1 arg
- `\foo{bar}{baz}` ← 2 args
- `\foo[bar]{baz}` (with a bracket under `[bar]`) ← optional argument

What do you see? (ctd.)

```
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1 \documentclass{scrartcl}
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18 You're never gonna guess what's gonna happen.
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20 \section{The main attraction}
21 \label{sec:main}
22
23 There is no plot twist lol.
24
25 \end{document}
26
27
```

SWITCH
↓
{ ... \small{} ... } ...
↑ normal text smaller text normal text

What do you see? (ctd.)

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26 \end{document}
27
```

Handwritten annotations:

- `\begin{document}` is circled in blue. A white arrow points from it to the word "ENVIRONMENT" written in white.
- A white arrow points from the word "ENVIRONMENT" to the word "args" written in white.
- Below "args", two white arrows point down to the code `\begin{foo}[bar]{baz}` and `\end{foo}` written in white.

Let's get our hands dirty!



What now?

Some links

- The \LaTeX book on [Wiki Books](#).
- ... which has a [chapter on linguistics](#).
- <https://tex.stackexchange.com/>
- [Detexify](#): If you don't know the \LaTeX command for a special symbol, just draw it into the field.
- I don't think Overleaf is a good idea but [their documentation section](#) is pretty rad.
- These slides:
<https://github.com/johenglisch/latex-intro-2023-10>