A Gentle Introduction to LaTeX

Alexander Haarmann & Allison Koh

Hertie School

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Introduction

Welcome!

- Introduction
- Writing in LaTeX& formatting text
- Collaborating with others
- Tips & tricks
- Troubleshooting & first steps on your own
- Short outlook beyond textdocuments
- Outlook beyond Overleaf

Introduction

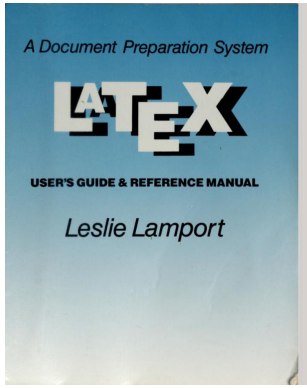
Welcome!

Short introductory round

- next to name: Why are you interested in LaTeX?
- What would you like to learn about it?
- Do you have any experience with any markup languages (e. g. HTML)?

What is LaTeX?

"LaTeX is a software system for document preparation." [1]



Examples of different document types

- theses
- reports
- books
- articles
- letters
- presentations
- posters
- music etc.

Differences to Many Word Processors

- Most word processors come equipped with a fixed range of functionality
  LaTeX is highly modular & customisable

- Most word processors are/ claim to be WYSIWYG nowadays (What you see is what you get)
  LaTeX follows WYSIWYM principle (What you see is what you mean)

⇒ (Descriptive) markups are used for formatting & to include non-text elements & functions

⇒ Files are plain text file that can be edited in any editor

⇒ Files needs to be compiled

```
This is an \emph{extraordinary}example!
```

This is an extraordinary example!

History of LaTeX

- TeX (abbreviation of τεχνη) developed by Donald Knuth in the mid 1970s & published in 1978
- TeX's core functionality limited, specific functionality added by macros
- Leslie Lamport wrote an extended set of macros published in 1984; it got known as **La**mport's **TeX** or LaTeX

Why is LaTeX the Way it is?

Alternatives – Development of WordPerfect

Year	Version	(New) Features
1979	v1	code highlighting ($500, four 360kB floppy disks)
1983	v3	"WordPerfect is almost unusable without its manual of over 600 pages!" [2]
1986	v4.2	footnotes & endnotes
1989	v5.1	pull down menus, print preview, support for tables ($500, 4.5MB)
1993	v6	graphics mode ($450, 15MB)

⇒ Many capabilities & capacities needed for typesetting equations, electronic circuits, indexing, extensive manuals, & books not available

- Hardware & software diversity, incompatibilities, & capabilities

Advantages & Disadvantages

+ Advantages

- LaTeX & software is free of cost & free to use (even though not copylefted)
- Utilises low resources
- Focus on content of the document not format & shape (cf. iA Writer)
- Nicer output according to rules of typesetting (cf. InDesign)
- Stability & replicability
  - performs (complex) tasks reliably
  - across OS': LaTeX runs on Windows, MacOS, Linux, Unix, Android
  - across different hardware & periphery
  - over time

– Disadvantages

- General learning curve
- Might take a while to sort out new settings & formatting

⇒ We **CANNOT** recommended to start converting your thesis/ book if submission date is next week!

Structure of a Document

document class (article, presentation, book etc.)

frontmatter (definitions, packages, settings)

begin of document

mainmatter (content of output)

Hello, here is some text without a meaning. This text…

end of document

Basic Structure of LaTeX-Commands

- "\" indicates start of most commands
- Most often commands follow the following structure:
  \<*command name*>[*optional arguments*]{*necessary arguments/ content*}
- Commands can be combined & nested together

Limited Applicability of Command

- \emph{This part of the sentence is emphasised}, this one not.
- 1\superscript{st}

"Environments"

\begin{itemize}

...

\end{itemize}

$ $

Global Applicability/Until Further Notice

- \definecolor{StdBackgr1}{RGB}{200,0,32}
- \Large

Let's get started!


```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[english]{babel}
\begin{document}


\end{document}
```

Entering Text...

For entering and formatting text, tables, figures, and the use of bibliographies etc., please, refer to Allison's presentation!

Tips & Tricks

- Formatting text in your editor can help to increase readability
- Playing with colours, “todonotes”
- Comments & tracking changes available in Overleaf
- Keep the code & use of packages simple when working with others & publishing articles
- Often, several ways lead to the same result
- Backup your *.tex-file regularly
- Compile rather often
- Compile only what is needed (calling sub-documents, inserting images instead of compiling TikZ-figures)
- Learning from examples

Troubleshooting

- Errors are inevitable!
- Try to track down errors yourself (e. g. by commenting out lines)
- Try to rummage through forums to find solutions for your questions: e. g. `https://latex.org/forum/`
- Establish a "minimum example"
- Account for what you have tried so far if you consult others
- Netiquette

Collaboration with Others

Once you need to resort to MS-Word...

Using your individual bibliography

- Using JabRef/ BiBTeX in combination with wrappers (e. g. BiBTeX4Word or **DocEar4Word**)
- LibreOffice & OpenOffice offer native support of JabRef/ BiBTeX
- Conversion to e. g. Zotero & using other compatibles

Exchange with Other WordProcessors

- LaTeX ⇒ WordProcessor: LaTeX2RTF, LaTeX2HTML, Pandoc, **UniPDF**
- WordProcessor ⇒ LaTeX: Word2LaTeX & Writer2LaTeX Excel2LaTeX & Calc2LaTeX
- Online table editors with LaTeX-output: e. g. `https://www.tablesgenerator.com/` or `https://latex.codecogs.com/eqneditor/editor.php`

Presentations

documentclass: beamer
Vast majority of commands work as usual
Additional commands are:

- \begin{frame}, \end{frame}
- (\frametitle{})
- \begin{block}, \end{block}
- overlay is achieved using separate slides with same page number
- <+->, <2>, <2-3>, <2->, \uncover{}, \only{}

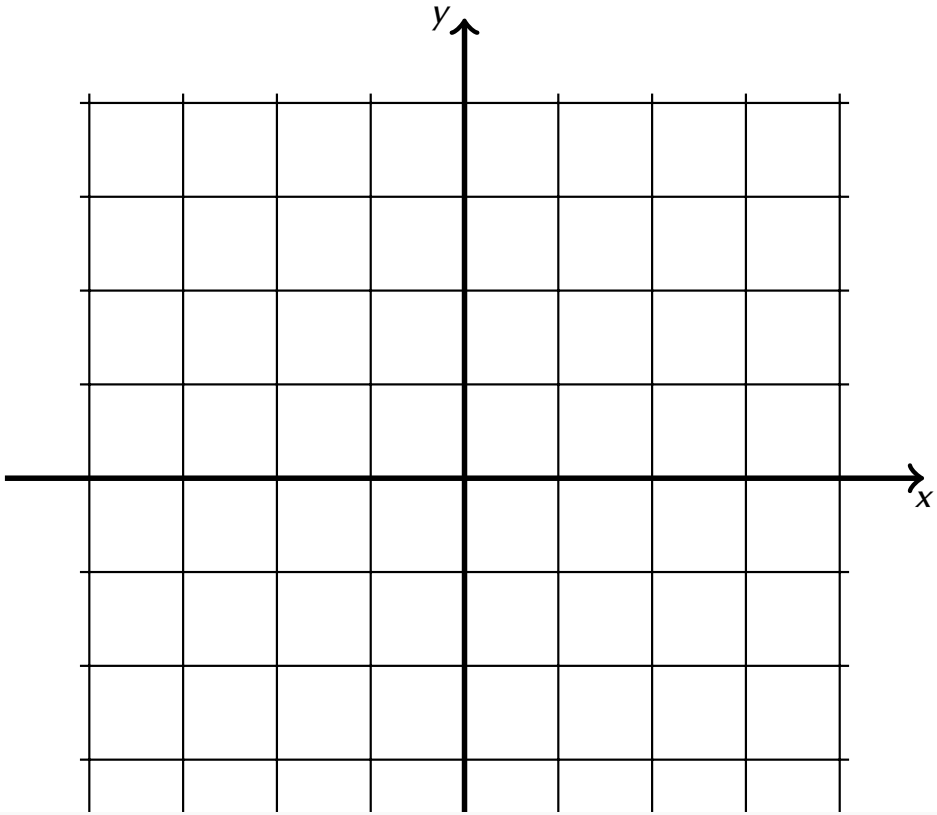
Posters

documentclass: baposter
Vast majority of commands work as usual
Main additional command:

- \headerbox{<*Box title*>}{name=<*internal name of box*>,column=*x*,span=*y*,below=<*name of other box*>,row=<*vertical adjustment*>}{*content*}

PGF/TikZ

- PGF: **P**ortable **G**raphics **F**ormat; TikZ: *TikZ **i**st **k**ein Zeichenprogramm* (TikZ is *no* drawing programme)
- follows logic of absolute & relative positioning & mathematical curve sketching
- `https://texample.net/tikz/examples/`



Beyond Overleaf

- Overleaf great for collaborative work
- Downsides: cost, requires online access, requires upload of data
- 2 major LaTeX distributions: MiKTeX (Win) & TeXlive (Win, MacOS, Linux, Unix)
- Myriad of LaTeX-editors (e. g. TeXmaker, TeXstudio, TeXnicCenter, Kile, LyX)
- Overview:
  `https://en.wikipedia.org/wiki/Comparison_of_TeX_editors`
- Recommendations for choosing an editor
  - choose right operating system
  - choose whether you need/ prefer instant compilation
  - pick one that is easy to customize & has customisable auto-completion
  - pick one relatively light-weight
  - opting for a widespread version ensures better support

Q & A

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Bibliography I

[1] Leslie Lamport. LATEX: a document preparation system. Reading, Mass.: Addison-Wesley Pub. & Co., 1986.

[2] Gregg Pearlman. "WordPerfect ST/ Proving why it's the IBM PC best seller". In: Antic magazine 7.1 (1988). URL: https://www.atarimagazines.com/v7n1/wordperfectst.html (visited on 10/06/2021).