LaTeX for Economics and Business Administration

Thomas de Graaff

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Why LaTeX?
Technicalities
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LaTeX for Economics and Business Administration

Thomas de Graaff

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Why this workshop?

- In the *social sciences* few attention to what tools to use (and why)

- LaTeX is used very much in the scientific world and *works* brilliantly together with
  - statistical packages, such as `Stata` and `R`,
  - markdown/HTML,
  - reference managers.

- Why *I* want to give this workshop
  - intrinsic interest
  - my goal: pre-conferences workshops / courses

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What I want (and don't want) with this workshop

- Give a general introduction of why some tools work together
  - LATEX
  - reference managers
  - (statistical) output
- Give an introduction to LATEX
  - First the basics + using references
  - Next workshop: some advanced stuff
- What *I* do not want
  - Tell you what applications to use (**you** need to decide and make a **well-informed** decision)

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Background

- TEX has been devised by Donald E. Knuth in the late 70's

- LATEX is a set of macro's around TeX and devised in the 80's

- LATEX is a *typesetting program*, not a *Word processor*
    - It is actually some code that needs to be compiled
    - Code is typed in by an editor

- So,
    - Huge differences between Word and LATEX
    - for LATEX you need an editor:
        - Specific editors: TexStudio, TexShop, RStudio
        - General editors: Sublime, TextMate, Notepad++, Vim, Emacs

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Disadvantages

- Not WYSIWYG
- You nead to learn (quite) some commands
  - Learning curve, but
  - hurray for cheat sheets and Google
- Difficult to cooperate with people that went to the *dark side*
- *Basic* LATEX has *difficulties* with incorporating new fonts (Hoefler, minion pro)
  - XeTeX
  - For the purists: LATEX does it right (LATEX vs Word)

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Advantages

- Free (as in beer) and ubiquitous
- WYSIWYM
- Consistent lay-out throughout the whole document (including tables, appendices, formulas, source code, etc)
- Internal references are a breeze (references, ToC, ToT . . .)
- Forced to structure documents
- Macros, thus scriptable
- Large community, thus a package for almost everything (books, articles, presentation, posters, exams, musicscores)
- Superior typography & output
- Many free LATEX templates

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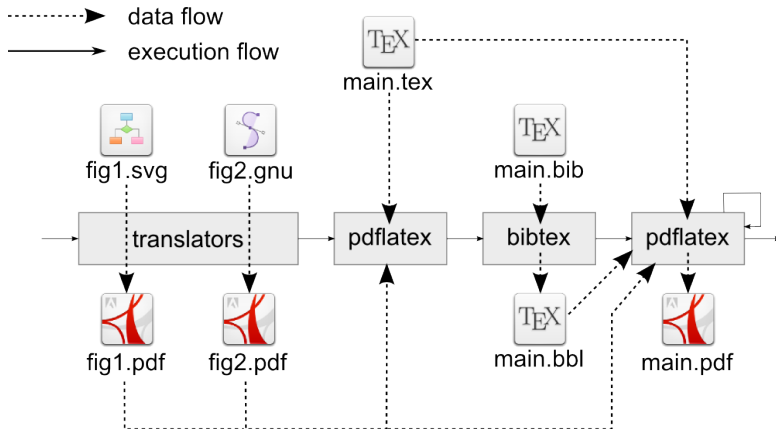Exercises
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LaTeX versus Markdown

- Markdown (all variants): lightweight markup language that can export to `.doc`, `.html`, and `.pdf`.

- Much easier then LaTeX but less flexible

- Used by writers/blogs even for complete websites

- But good interaction with LaTeX; if not only for formula's

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How does LATEX work in practice?

- You edit a `.tex` file without thinking about how it looks
    - distraction free writing (yeah right)
- You then compile it
    - LATEX is unforgiving: if there is an error, usually it does not compile
    - Typically, errors are missing brackets or parentheses.
- Typically, source `.tex` file is compiled into `.pdf`

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A process diagram

Figure: Process diagram

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Code, documentation and output

1. Synonyms

2. All based on `.txt` files

3. Encompasses almost anything
   - data itself (`.csv`, `.txt`)
   - set of commands for data cleaning and statistical analysis (`.do`, `.R`)
   - database with references (`.bib`)
   - text for articles, presentations or websites (`.tex`, `.html`)

4. Only output is displayed/interpreted differently (e.g., in a browser or pdf viewer)

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Folder structure of your new project (theses, paper, assignment & research)

- Think *a priori* about project set-up
  - Seperate analysis, data and output files
- Be careful with source data!
  - Seperate source and derived data files
  - Typically
    - you get/collect data
    - transform data
    - analyse data
  - Keep track of all these stages!

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A quick tour

- Preferences

- Keyboard shortcuts

- LaTeX dropdown menu

First: organize!

1. Create a specific workshop folder somewhere where you can find it.

2. Think about versioning system and a back-up system

3. E.g.: use dropbox and/or Time Machine

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Exercise 1: Open from template and fill in!

```latex
1   \documentclass[]{article}
2   %opening
3   \title{}
4   \author{}
5
6   \begin{document}
7
8   \maketitle
9
10  \begin{abstract}
11
12  \end{abstract}
13
14  \section{}
15
16  \end{document}
```

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Exercise 2: Create a paper structure

```
1  \section{}
2  \subsection{}
3  \subsubsection{}
4
```

Note that the following are used for books

```
1  \part{}
2  \chapter{}
```

And for bigger projects:

```
1  \include{}
2  \input{}
```

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Intermezzo: preamble

Part before \begin document is called preamble

```
1   \documentclass[]{article}
2
3   % This is where packages are loaded
4   % and specific commands are given that
5   % determine how the lay-out!
6
7   \begin{document}
```

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Intermezzo: white spaces and special characters

An empty line starts a new paragraph and consecutive white spaces are treated as one

```
1  One paragraph

2

3  Second        paragraph (just one white space)
```

The following characters are reserved # $ % & _ { } ~ \ and should be used as follows

```
1  \# \$ \% \^ \& \_ \{ \} \~{} \textbackslash{}
```

So, with a backslash before except for the backslash (does this make sense?)

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Exercise 3: Create a table of contents

More complex text structures are relatively easy, just insert (after \begin document)

```latex
1  \tableofcontents
2  \listoffigures
3  \listoftables
```

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Lists

- Itemization

```
1  \begin{itemize}
2          \item blue
3          \item red
4  \end{itemize}
```

- Enumeration

```
1  \begin{enumerate}
2          \item first item
3          \item second item
4  \end{enumerate}
```

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Further text control

- Bold

```
1  \textbf{bold}
```

- Emphasize

```
1  \textit{italics} or \emph{emphasized}
```

Formula's

content...

Tables

content...

Figures

content...

Referencing

content...

BibTeX

content...