LaTeX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

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Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Previously

- Pros and cons of LATEX

- Why bother with learning LATEX
  - for consistent/structured lay-out
  - better automation of workflow

- Compiling, referencing, formula's, text control

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

This session we look at

- Packages (controlling the preamble)

- Figures (how to insert them?)

- Tables (inserting plain tables)

- Automatizing tables (complex tables)

- Better looking references

- Making slides

Note: we will only touch upon these subjects
Note2: All materials can be downloaded from
http://thomasdegraaff.nl/LaTeX-Workshop/notes/02-more-notes.html

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

The use of packages

- Typically, packages are used to change appearance
- To ensure no errors, usually opt for the full installation or have access to internet
- There are lots of them, see CTAN
- Often used packages
  - amsmath, graphicx, subfig, marvosym, microtype, booktabs, lipsum, pdflscape, fullpage, natbib
- format:

```
1  \usepackage[colorlinks=true,citecolor=magenta,
2              urlcolor=magenta]{hyperref}
```

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

The use of classes

- Typically one uses the `article` class
- However, there is as well a `book`, `mininal`, `report`, `beamer` class etcetera
- Specific user written classes are `memoir` and `elsarticle` classes
- Classes come with options such as

```
1  \documentclass[12pt, a4paper]{article}
```

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

General structure

```latex
\documentclass[twocolumn, a4paper]{article}
% Preamble: how should it look like
\usepackage{multicol, lipsum}
\usepackage[english, german]{babel}
\begin{document}
        % Body: the real contents
        \lipsum
\end{document}
```

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Exercise: fluff it up!

With a cool paper:

1. Use the `scrartcl` class with options: 11pt, abstracton, notitlepage
2. Now add option parkskip (and perhaps twocolumn)
3. One by one add the following packages and see what happens:
   1. package fullpage
   2. package fourier
   3. package setspace with command thereafter `doublespace`

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

natbib & biblatex

Default format is BibTeX—customizable (however limited).
Default is good (except: use natbib!)
If you want to customize quite a lot: biblatex package!

```
1  \usepackage[style= authoryear-icomp,
2             backend=bibtex,
3             natbib=true,
4             firstinits=true,
5             backref=true,
6             maxnames=2,
7             maxbibnames=10]
8                     {biblatex}
9  \bibliography{mybib.bib}
10
11 \printbibliography
```

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Exercise: cite or perish

Create a reference list by:

1. citing some people, note:

```
1  \cite{refid} % in text citation
2  \citep[][]{refid} % between parentheses
3
```

2. Indicate where the bibliography should be

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Figures

Figures/graphs and tables in a floating environment

```
1  \begin{figure}[htbp!]}
2      \center
3      \includegraphics[]{ligatures_latex}
4      \caption{A figures about ligatures}
5      \label{fig:ligatures}
6  \end{figure}
```

Figures can be `.pdf`, `.jpg`, `.png` and a whole lot of other types (but not bitmaps!)

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Exercise: insert cool picture

1. Insert the file `Powerphluff.jpg` and use the command

```
1            width = 0.8\textwidth
```

   to control the size

2. Give the figure an appropriate caption (something perhaps with source)

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages,
packages,
and
packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Tables

```latex
1  \begin{table}[t!]
2         \caption{This is the caption}
3         \begin{tabular}{lcr}
4                 \hline
5                 first & row & data \\
6                 second & row & data \\
7                 \hline
8         \end{tabular}
9         \label{tab:example}
10 \end{table}
```

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Referencing

Internal references are a breeze

```
1  \label{}        % Label something
2  \ref{}          % Refer to that
3  \footnote{}     % Add footnote
4  \thanks{}       % For in title
5
```

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

dcolumn and booktabs package

```latex
\usepackage{booktabs, dcolumn} % in preamble
\newcolumntype{d}{D{.}{.}{2}}  % in preamble
\begin{table}[t!]
        \caption{This is the caption}
        \begin{tabular}{ldd}
                \toprule
                Student & Grade 1 & Grade 2 \\
                \midrule
                Mike    & 7.8 & 9   \\
                Andrea  & 6   & 8.2 \\
                \bottomrule
        \end{tabular}
        \label{tab:example2}
\end{table}
```

Exercise: Create a lame table

Create the following table

Table: Average grades

First name	Surname	Grade
Sherlock	Holmes	7.9
John H.	Watson	8.1

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Some R code

```
library(texreg)

control <- c(4.17, 5.58, 5.18, 6.11, 4.50, 4.61, 5.17, 4.53, 5.33, 5.14)
treated <- c(4.81, 4.17, 4.41, 3.59, 5.87, 3.83, 6.03, 4.89, 4.32, 4.69)
group <- gl(2, 10, 20, labels = c("Control", "Treated"))
weight <- c(control, treated)
m1 <- lm(weight ~ group - 1)
m2 <- lm(weight ~ group)

texreg(list(m1, m2), dcolumn = TRUE, booktabs = TRUE, file = "Table.tex",
use.packages = FALSE, label = "tab:3", caption = "Two linear models.",
float.pos = "hb!")
```

which saves a file "Table.tex" to the same directory

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Exercise: Be as lazy as possible!

Now

```
\input{Table.tex}
```

produces your table

- Do it!

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Slides

Slides are typically made with the beamer class

```
1   \documentclass{beamer}
2   \title{Another lecture}
3   \author{By a wisecrack lecturer}
4
5   \begin{document}
6     \frame{\titlepage}
7
8     \begin{frame}{Introduction}
9   %        Typically a quote from a long
10  %        dead philosopher that should
11  %        make the lecturer look smart
12  %        but usually does not.
13    \end{frame}
14  \end{document}
```

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Beamer style

You can change the beamer style by:

```
1  \usetheme{Hannover}
2  \usecolortheme{dove}
3
4  % to remove those navigation symbols
5  \beamertemplatenavigationsymbolsempty
6
```

(https://www.hartwork.org/beamer-theme-matrix/ gives all possible combinations

LATEX for Economics and Business Administration (Part II)

Thomas de Graaff

Introduction
Recap
Agenda

Packages, packages, and packages
references

Figures

Tables
Referencing
Automizing tables

Slides
Beamer class

Conclusion

Exercise: Create slides or powerphluff!

Create a couple of slides containing at least

- Titlepage
- Introduction
- Conclusion

In conclusion

- LATEX is a very powerful structured language especially suitable for
    - large complex documents;
    - documents with many formula's.

- Big advantage: you really need to think

- Not for every one; steep learning curve, but

- large community (google it)

- Markup language (especially, Markdown) becomes more and more wide-spread: LATEX is a good start