Introduction to LaTeX beamer

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Abstract

You will learn what LaTeX is and how to use it for presentations.

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Summary

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Introduction: LaTeX

What is LaTeX?

- LaTeX is a document markup language and document preparation system for the TeX typesetting program.
- $\longrightarrow$ You write your text and indicate which part is the title, the main text, a table, etc. LaTeX will do the layout for you.

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- MS Word is "What you *see* is what you get."
- LaTeX is "What you *mean* is what you get."
- $\longrightarrow$ You have to compile your document (twice) before you see how it looks like.

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Introduction: LaTeX

LaTeX combines the work of a designer and typesetter. The author therefore needs to inform LaTeX by using commands what the program needs to do with the text. LaTeX then is able to design the text itself.

Advantages:

- freeware
- use of mathematical equations is well supported
- platform independent
- only a few simple commands define the structure
- simple use of cross-references, the table of content and the bibliography

Disadvantages:

- requires some practice
- bigger changes require greater effort within one layout

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Some helpful comments

- Make sure that if you \begin something, you should also \end it.
- Everything you write down after % will not be shown in the document; use this if you want to make comments.
- Save all the files to be included in the file (BibTeX, figures, etc.) in the same folder.
- Make sure you are connected to the internet if you need to install extra packages automatically.

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Opening credits

The opening credits are necessary for every document, whether or not it is an article, book or presentation you are creating.

Your document always starts with:

\documentclass[options]{class}

$\longrightarrow$ here: \documentclass[11pt]{beamer}

The packages provide you with additional commands. Most of the packages you need for this course are already included in the template we provide you.

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Slides

Once the opening credits are complete we start our document with \begin{document}. At the very end we also need to close the document with \end{document}.

Now slides can be created with:

\begin{frame}[t]
\frametitle{Title}
...
\end{frame}

On the slide any text can be inserted.

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Titlepage

A title page can easily be created by using the following command:

```
\begin{frame}[t]
\thispagestyle{empty}
\titlepage
\end{frame}
```

All information about the title, author, date and institute you have to enter before:

```
\title{ }
\subtitle{ }
\author{ }
\institute{ }
\date{ }
```

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Table of contents

The table of contents is created automatically based on the
\section{} and the \subsection{} you define in the text.

```
\begin{frame}[t]
\frametitle{Structure}
\tableofcontents
\end{frame}
```

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Exercise

Download the presentation template.

Exercise 1:

Search the internet for today's news
(e.g. http://www.nytimes.com/) and choose an news article to
create a presentation about.

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Exercise

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Exercise 1:

Search the internet for today's news
(e.g. http://www.nytimes.com/) and choose an news article to
create a presentation about.

Exercise 2:

Open the LATEX-template for the presentation and create your
personal titlepage, a table of content with two sections and two
more slides with text.

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Enumerations

With the following command items with bullet-points are created:
```
\begin{itemize}
\item {This is my first bullet-point}
\item {This is my second bullet-point}
\end{itemize}
```

- This is my first bullet-point
- This is my second bullet-point

By using the command enumerate, the items are numbered:
```
\begin{enumerate}
\item {Text number 1}
\item {Text number 2}
\end{enumerate}
```

1. Text number 1
2. Text number 2

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Tables

Tables can be positioned on the top, bottom, a different page or where you are typing (t,b,p,h). Also the number of columns need to be defined, this is done with the commands center, left or right (c,r,l).

To go to the next line, you need two backslash to indicate the end of the current line.

```
\begin{table}[h]
\begin{tabular}{cc}
1 & 2 \\
3 & 4 \\\hline
5 & 6 \\
\end{tabular}
\end{table}
```

1	2
3	4
5	6

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Graphics

The graphic you like to include has to be saved in the same folder as the LaTeX-Document. The [ht] defines the place the graphic is included, (e.g. here, top). Also you have to include the command \centering, if you like to center the graphic on your slide.

```
\begin{figure}[ht]
\centering
\includegraphics[scale=0.15]{bild.png}
\caption{This is your caption}
\label{label-bild}
\end{figure}
```


Figure: This is your caption

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Mathematics

Creating mathematical formulas is really easy with LaTeX. Some special packages need to be used (you can find them in the template).
Use $ ...$ and $$ ...$$ to indicate mathematical environment.

For example, `$$ a^2 + \alpha \cdot \frac{1}{2}$$` yields

$$a^2 + \alpha \cdot \frac{1}{2}$$

For more information:
http://en.wikibooks.org/wiki/LaTeX/Mathematics.

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Exercise

Exercise 3:

Please insert a graphic on the next slide. The graphic could be a picture of your article or you can simply google a nice graphic.

Exercise 4:

Please write down the equation

$$\frac{a^2}{1} + b^2 = 1 \cdot c^2$$

and if you have still time left try

$$\sum_{k=0}^{n} k = \frac{n(n+1)}{2}.$$

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Animation

With Beamer even more animation options are possible. Some possibilities and examples are explained in the following slides. E.g. animation of a slide, boxes or columns.

Slide structure

If you like to delay parts of the slide, the command \pause can be used. This command is well recommended for enumerations.

Animation

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Bullet points will be successively shown here:

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Example:

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- Point 1 \pause
- Point 2 \pause

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Slide structure

If you like to delay parts of the slide, the command \pause can be used. This command is well recommended for enumerations.

Example:

Bullet points will be successively shown here:

- Point 1 \pause
- Point 2 \pause
- Point 3

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Exercise

Exercise 5:

Select five topics of your article or the newspaper and create a slide with bullet-points on it. Animate the bullet-points, so that they appear after each other.

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Exercise

Exercise 5:

Select five topics of your article or the newspaper and create a slide with bullet-points on it. Animate the bullet-points, so that they appear after each other.

Exercise 6:

Copy the same text onto the next slide and highlight some words with the commands \textbf{...}, \emph{...} or \alert{...}.

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Overlays 1/4

Overlays allocate Latex items to the slides, which appear consecutively. The space for the non-visible items is reserved.

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Example 1:

Overlays can be use as an alternative to \pause. After the command \begin{itemize} the command [<+->] has to be inserted:

- Point 1

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- Point 1
- Point 2

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By using overlays the slide structure can be specified even more.

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Overlays 2/4

By using overlays the slide structure can be specified even more.

Example 2:

- By using \item<2,4> this sentence only appears on slide
  number 2 **and** 4.

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Overlays 2/4

By using overlays the slide structure can be specified even more.

Example 2:

- By using \item<3-5> this sentence appears from slide number 3 **to** 5.

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Overlays 2/4

By using overlays the slide structure can be specified even more.

Example 2:

- By using \item<2,4> this sentence only appears on slide number 2 **and** 4.
- By using \item<3-5> this sentence appears from slide number 3 **to** 5.
- By using \item<4-> this sentence appears **from** slide number 4 up to the end.

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Overlays 2/4

By using overlays the slide structure can be specified even more.

Example 2:

- By using \item<3-5> this sentence appears from slide number 3 **to** 5.
- By using \item<4-> this sentence appears **from** slide number 4 up to the end.
- By using \item<5> this sentence **only** appears on slide 5.

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Overlays can also be used for other commands.

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Example 3:

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Overlays 3/4

Overlays can also be used for other commands.

Example 3:

With \textbf<4->{...} this sentence is printed in bold type
from page 4 on. This sentence is emphasized with \emph<5>{...}
only on page 5. With \alert<4-5>{...} this sentence is stressed
on slide 4 and 5.

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Overlays 3/4

Overlays can also be used for other commands.

Example 3:

With `\textbf<4->{...}` this sentence is printed in bold type from page 4 on. This sentence is emphasized with `\emph<5>{...}` only on page 5. With `\alert<4-5>{...}` this sentence is stressed on slide 4 and 5.

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Overlays 3/4

Overlays can also be used for other commands.

Example 3:

With `\textbf<4->{...}` **this sentence is printed in bold type from page 4 on**. *This sentence is emphasized with* `\emph<5>{...}` *only on page 5.* With `\alert<4-5>{...}` this sentence is stressed on slide 4 and 5.

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Overlays 4/4

By using the command \only the structure of the slide can be determined as well, however the space for the non-visible items is **not** reserved.

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Overlays 4/4

By using the command `\only` the structure of the slide can be determined as well, however the space for the non-visible items is **not** reserved.

Example 4:

This sentence will be replaced by an other sentence on the next slide.

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Overlays 4/4

By using the command \only the structure of the slide can be determined as well, however the space for the non-visible items is **not** reserved.

Example 4:

It is important that no blank spaces are allowed between the \only-instructions.

For this slide the commands \only<2>{...} and \only<3>{...}had been used.

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Exercise

Exercise 7:

On the next slide we like you to use overlays for the text you wrote in exercise two; after this please use the second slide and use overlays and the command \only.

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Boxes

Boxes can be used to divide or to emphasize some parts of the slide.

Title of the box

Here, you can see a standard box.
`\begin{block}{Title of the box}`

...

`\end{block}`

Example

Here, you can see an example box.
`\begin{exampleblock}{Example}`

...

`\end{exampleblock}`

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Boxes

Alert box

Here, you can see an alert box.
`\begin{alertblock}{Alert box}`
`...`
`\end{alertblock}`

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Exercise

Exercise 8:

The following slide(s) should contain three boxes: one main box, one example box and one alert box.

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Columns

Slides can also be divided into columns with the command
\begin{columns}[t] ... \end{columns} . Therefore you
need to enter the width of the column in percent.

Animation

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\begin{columns}[t] ... \end{columns} . Therefore you
need to enter the width of the column in percent.

Example:

With the command
\begin{column}{0.6\textwidth}
... \end{column} the text of
column 1 is 60% of the total text width.

The text in column
2 is 30% of the
total width.

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Columns

Complete example:

```
\begin{columns}[t]
\begin{column}{0.5 \textwidth}
...
\end{column}
\begin{column}{0.3 \textwidth}
...
\end{column}
\end{columns}
```

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Results and References

If you want to cite a book or an article you should use a BibTex
file. Each entry there has a n identifier you can use in your text.
By using \cite{NJF1950} together with the .bib-file you can get
for example Nash (1950).

Theorem 1 (Myerson (1984))

Theorems can be displayed with the command
\begin{Theorem}[\cite{MRB1984}]
...
\end{Theorem}

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Exercise

Exercise 9:

Finally create a new entry in the literature.bib-file of the article "A Strategic Model of Social and Economic Networks" by Jackson and Wolinski (1996). Afterwards cite the article by using \cite{...} in your presentation.

Hint: Most publishers (or jstor) offer the possibility to download the citation information. You can search using google to find the publisher's page for the article (Elsevier/ScienceDirect). Then download the bibtex-information by looking for a citation export (in BibTeX).

Conclusion

We hope you all are now able to create really nice presentations without becoming desperate over MS PowerPoint.

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Conclusion

We hope you all are now able to create really nice presentations without becoming desperate over MS PowerPoint.

Good luck for your next presentation!

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Thank you very much for your attention.

References

Myerson, R. B. (1984). Two-person bargaining problems with incomplete information. *Econometrica*, 52(2):pp. 461–488.

Nash, John F., J. (1950). The bargaining problem. *Econometrica*, 18(2):pp. 155–162.

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