

Proseminar Wurzeln der Informatik

\LaTeX 2 _{ϵ} Introduction

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Theory of Hybrid Systems

SS 2014

Part I General $\text{\LaTeX} 2_{\epsilon}$ Introduction

Part II $\text{\LaTeX} 2_{\epsilon}$ Document

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Part IV BIBTEX : References in $\text{\LaTeX} 2_{\epsilon}$

Part I

General $\text{\LaTeX} 2_{\epsilon}$ Introduction

Two Typesetting Philosophies

WYSIWYG

“What you see is what you get – but usually not what is printed.”

- e.g. Microsoft Word or OpenOffice
- much freedom in layout
- no compilation phase

T_EX

“Tell the computer what you want to be printed.”

- Donald E. Knuth, “The T_EXbook”, 1984 (L^AT_EX: macro package for T_EX by Leslie Lamport)
- typesetting text and mathematical formulas in a professional way
- document has to be compiled into, e.g., a PDF

From: The Not So Short Introduction to L^AT_EX 2_ε

Distributions

Linux
[T_EXLive](#)

Windows
[MiK_TE_X](#)

Mac
[Mac_TE_X](#)

Distributions

Linux
[TeXLive](#)

Windows
[MiKTeX](#)

Mac
[MacTeX](#)

Recommended Editors

Linux
[Kile](#)

Windows
[TeXnicCenter](#)

Mac
[TeXShop](#)

- Concise \LaTeX 2 $_{\epsilon}$ introduction:
www.ctan.org/tex-archive/info/lshort/english/lshort.pdf
- Detailed \LaTeX 2 $_{\epsilon}$ user guide:
www.latex-project.org/guides/usrguide.pdf

Part II

L^AT_EX 2_ε Document

Setting up the Environment

A short excursion to [Subversion](#):

- Software versioning and revision control system
- [Repository](#) (server) and [working copy](#) (local computer)
- All changes are documented and can be reverted

What you need:

- username: *testflorian*
- password: ...
- repository url:

https://svn-i2.informatik.rwth-aachen.de/repos/proseminar_roots_of_cs

Most Important Subversion Commands

Check out the repository contents into your working space:

- `svn checkout --username testflorian repository url`

Update your existing working copy with the contents of the repository

- `svn update`

Check your changes into the repository

- `svn commit -m "comment"`

Put files under version control

- `svn add file or folder`

Compare different versions of your document

- `svn diff --revision number:number`

Delete something in repository

- `svn remove file or folder`

Windows tool: [TortoiseSVN](#)

Very Rough Structure of a $\text{\LaTeX} 2_{\epsilon}$ Document

```
\documentclass{article}
\usepackage{...}
:
\newtheorem{theorem}{Theorem}[section]
\newcommand{\True}{\ensuremath{\textit{True}}}
\hyphenation{this-is-a-very-long-word-whose-hyphanation-must-be-defined wurst}

\begin{document}
:
\end{document}
```

Part III

Beamer: Presentations in $\text{\LaTeX} 2_{\epsilon}$

Slides for the presentation:

```
\documentclass{beamer}
```

Handouts for printing: All overlays are shown simultaneously.

```
\documentclass[handout]{beamer}
```

Creating Slides: The Frame environment

```
\begin{frame}  
  \frametitle{The title}  
  The content  
\end{frame}
```

Designing your slide:

- use a meaningful frametitle
- frame contents
 - \LaTeX commands e.g. `itemize`
 - do not overload your slides

Table of Contents

Automatically created from the sections and subsections

```
\tableofcontents[<comma-separated option list>]
```

Useful options:

- `currentsection`: Show all but the current section semi-transparent.
- `currentsubsection`: Show all but the current subsection semi-transparent.
- `hideallsubsections`: Show only the sections.
- `hideothersubsections`: Show only the subsections of the current section.

- 1 Handouts and Slides
- 2 \LaTeX Beamer Themes
- 3 Structure the Slide
- 4 Colours
- 5 Overlays
- 6 Documentation

- **color theme**: defines, which colours are used
- **inner theme**: contents of the slide
 - titlepage
 - itemize, enumerate and description environments
 - block, theorem and proof environments
 - figures and tables
- **outer theme**: elements used on all slides
 - head- and footline
 - frametitle
 - sidebars
 - logo
 - navigation symbols and bars

Just further information, please use our template!

Title of the block

The content of the block.

Title of the exampleblock

This is the content of the exampleblock.

Title of the alertblock

This is the content of the alertblock

The Theorem Environment

Theorem (Title of the theorem)

The content of the theorem environment.

proof name.

The content of the proof.

Analogous environments:

- definition
- corollary
- fact
- lemma
- proof
- define your own...

Using Columns

First column

Insert any \LaTeX -code inside a column:

Second column

e.g. position a picture



Third column

- use `itemize` or
- 1 `enumerate`-environments

```
\begin{columns}[<alignment option>]
  \begin{column}{<width>}
  \end{column}
\end{columns}
```

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```
\begin{columns}[<alignment option>]
  \begin{column}{<width>}
  \end{column}
\end{columns}
```

Alignment options (vertical alignment):

- `b`: Align the bottom lines of the columns.
- `c`: Center the columns vertically.
- `t`: Align the baselines of the first lines (e.g. for text).
- `T`: Align the tops of the first lines (e.g. for mixed text and pictures)
- `totalwidth=<width>`: Define the width the columns may use.

The Use of Colours

- Use colours to emphasize important aspects
- Use a consistent colour scheme
e.g. green for examples, red for alerts, ...
- Use beamer-friendly colours!
- Pre-defined colors:

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- Pre-defined colors:

red

green

blue

cyan

magenta

yellow

- Basic: `\pause`
Text after `\pause` appears on the next slide.

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Text after `\pause` appears on the next slide.
- Advanced: `\only`, `\uncover`, `\onslide`, `\visible`, `\invisible`, `\alt`, `\temporal`, ...
Show some content only on certain slides.
Subtle differences:
 - Show or hide on given slides?
 - Show only on slides or show alternatives beforehand or afterwards?
 - Reserve space for the content?

- Also integrated into other commands ...

`\item<...>`, `\includegraphics<...>`, `\label<...>`

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- ... in TikZpictures ...

u_1

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`\item<...>`, `\includegraphics<...>`, `\label<...>`

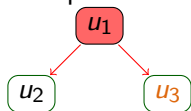
- ... in TikZpictures ...

 u_1

- Also integrated into other commands ...

`\item<...>`, `\includegraphics<...>`, `\label<...>`

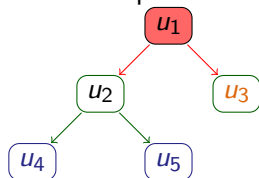
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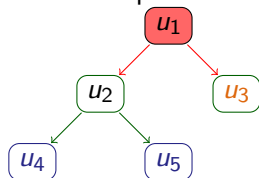
- ... in TikZpictures ...



- Also integrated into other commands ...

`\item<...>`, `\includegraphics<...>`, `\label<...>`

- ... in TikZpictures ...



- ... and as environments.

`\onlyenv`, `\altenv`

- helpful information for \LaTeX in general
en.wikibooks.org/wiki/LaTeX
- specific symbols from \LaTeX packages
search for symbols `a4`
<http://detexify.kirelabs.org/classify.html>
- extensive \LaTeX Beamer user guide
search for `beamer user guide`
- creating \LaTeX graphics with TikZ and PGF
www.texample.net/tikz/

Part IV

BIBTEX: References in L^AT_EX 2_ε

- Central folder for .bib files
- Different files for different topics
- string.bib:

```
@STRING{Incs = {LNCS}}  
@STRING{sv = {Springer-Verlag}}
```

- crossref.bib (use: crossref={Incs3385})

```
@PROCEEDINGS{Incs3385,  
  ... ,  
  volume = {3385},  
  series = Incs ,  
  publisher = sv , ... }
```

```
@INPROCEEDINGS{Platzer:RealWorldVerification:2009,  
  author = {Andr{\'}e Platzer and ... and ...},  
  title = {Real World Verification},  
  booktitle = {CADE},  
  year = {2009},  
  editor = {Renate A. Schmidt},  
  volume = {5663},  
  series = Incs ,  
  pages = {485--501},  
  publisher = sv ,  
  bibdate = {2009-07-29},  
  bibsource = {DBLP, http://dblp.... },  
  isbn = {978-3-642-02958-5},  
  url = {http://dx.doi... } }
```

Entries: Some hints

- Make use of different literature types as `inproceedings`, `article`, `book`, ...
- Use expressive `BIBTEX` key names such as `Author:Topic:Year`.
- Fill in as many fields as possible.
- Separate different authors by “and”.
- Use the brackets `... ..` to prevent automatic conversion to lower-case.
- Make use of document identification standards:
 - ISBN (International Standard Book Number)
 - ISSN (International Standard Serial Number)
 - URI (Uniform Resource Identifier)
 - DOI (Digital Object Identifier)

Using BIBTEX Use in a L^AT_EX Document

- Citation: `\cite{entry-label}`

- Switching bibliography to German:

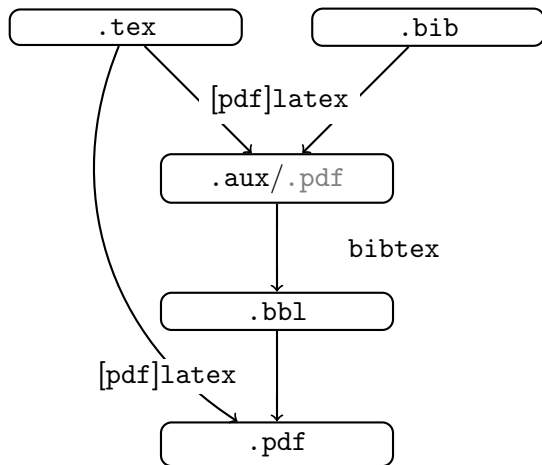
```
\documentclass[... , ngerman , ...]{...}  
\usepackage[ngerman]{babel}  
\usepackage[fixlanguage]{babelbib}  
\selectbiblanguage{ngerman}  
\bibliographystyle{babalpha}
```

- Order of .bib file inclusion:

```
\bibliography{string , my_bibfile1 , my_bibfile2 ,  
             crossref}
```

- Other label styles: alpha (author-date combination); plain, unsrt, abbrev (numeric)
- Other bibliography format: openbib (documentclass option)

Tool Chain



- Detailed BIB_TE_X documentation:
<http://www.ctan.org/tex-archive/biblio/bibtex/contrib/doc/>
- Comfortable BIB_TE_X database editor:
<http://jabref.sourceforge.net/>
- Powerful reimplementations of BIB_TE_X:
<http://www.tex.ac.uk/tex-archive/help/Catalogue/entries/biblatex.html>
- Anything else:
<http://www.bibtex.org/>