LaTeX - a short introduction

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What is LaTeX?

- typesetting system for creating printer ready scientific texts (by Leslie Lamport)
- collection of macros and higher layer interface to the layout program TeX(Donald E. Knuth)
- contains predefined document classes and powerful commands

$\Rightarrow$ concentrate on writing your text instead of formatting

What do I need ?

- an editor for plaintext:

  `emacs`, `vim`, `metapad` (Windows)

- or (optionally) a LaTeX environment:

  TeX`nicCenter` (Windows), aucTeX for `emacs`

- a LaTeXdistribution:

  `te`TeX, `mik`TeX (Windows)

- a graphic program to create PostScript or PNG images:

  `xfig`, the imagemagick suite

Tools

latex: compiles source `.tex` file into preview format `dvi`

bibtex: creates bibliographic entries from output of initial `latex` run and a `.bib` file

dvips: creates printer format PostScript from `dvi`

ps2pdf: converts PostScript to PDF

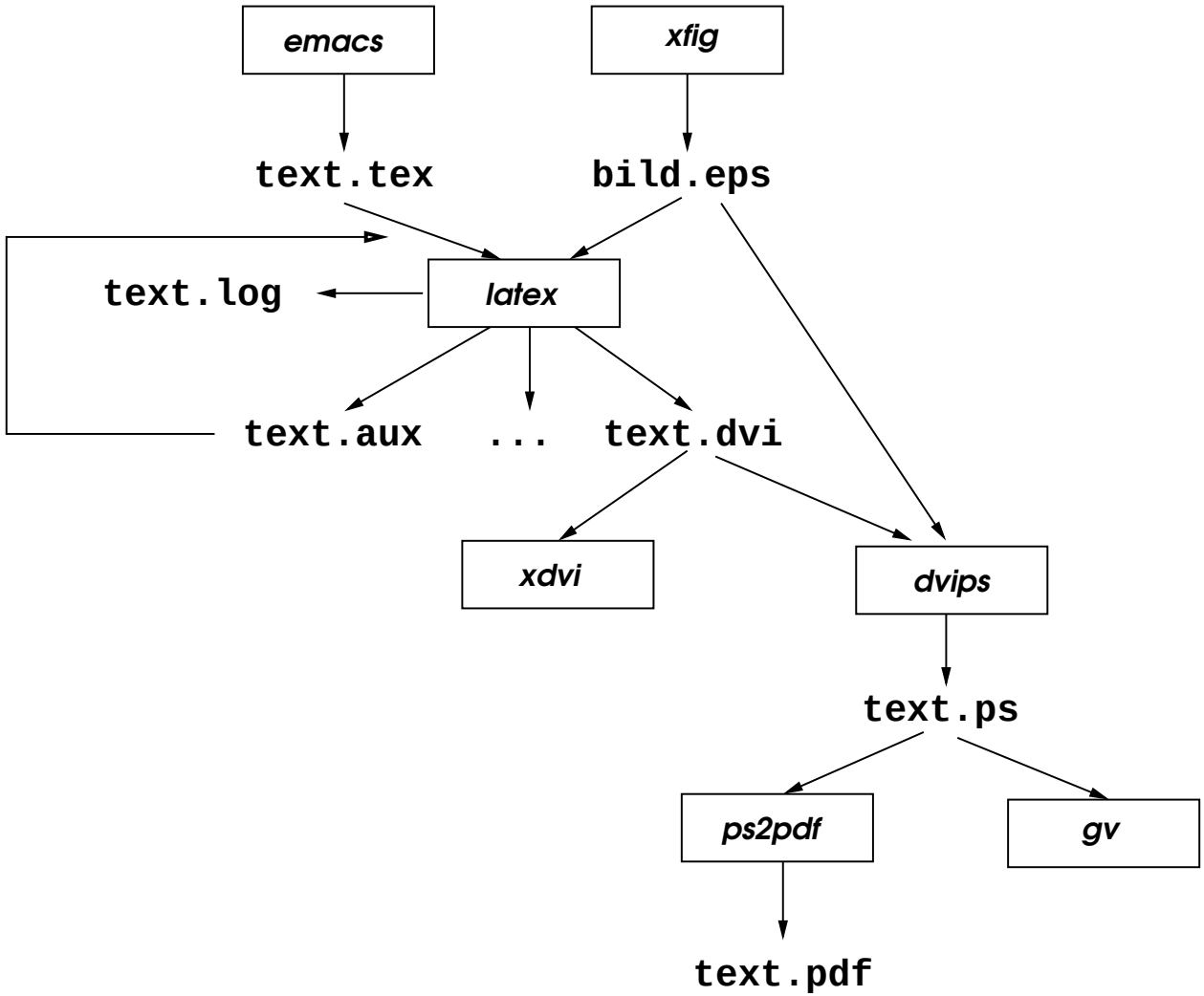
pdflatex: compiles source `.tex` file into PDF

xdvi: preview `.dvi`

gv, ghostview: preview PostScript

pspresent: fullscreen PosttScript presentation

A typical LaTeX run



How to compile your TEX source

- use `C-c C-c` from emacs to call `latex`, `bibtex`, `dvips`, `ps2pdf`, etc. with correct parameters
- from command line:

```
latex text
bibtex text
latex text; latex text
dvips -Ppdf text.dvi -o text.ps
ps2pdf text.ps
```

- on errors: type h to get help, type x to stop compilation

- the percentage sign (%) preceeds comments
- LaTeXcommands start with a backslash (\)
- everything before `\begin{document}` is document wide
- first LaTeXcommand in file `\documentclass` determines the overall style, e.g. letter, article, report, book, prosper (style for elaborate presentation slides, like these), etc.
- `\usepackage` for loading extensions, e.g. for German language, umlauts, graphics, colors, etc.
- text goes between `\begin{document}` and `\end{document}`

A small LaTeX example


```
\documentclass[a4paper,10pt]{article}
\usepackage{german}
\usepackage[T1]{fontenc}
\usepackage[latin9]{inputenc}
\usepackage{hyphenat}
\usepackage{url}
\usepackage{ifpdf}
\ifpdf \usepackage[pdftex,bookmarks]{hyperref} \fi
\bibliographystyle{gerplainurl}
\sloppy
\title{A small sample \dots}
\author{My, myself, and I}
\date{\today}

\begin{document}
\maketitle
\tableofcontents
...
\end{document}
```

Structure your text with LaTeX


```
\chapter{title}
\section{...}
\subsection{...}
\subsubsection{...}
\appendix{...}
```

addition of a `*` prevents numbering and inclusion in table of contents:

```
\subsection*{...}
```

Marking up text

- *Emphasis*: `{\em ...}` or `\textem{...}`
- Typewriter: `{\tt ...}` or `\texttt{...}`
- SMALL CAPS: `{\sc ...}` or `\textsc{...}`
- **Bold**: `{\bf ...}` or `\textbf{...}`
- *Italics*: `{\it ...}` or `\textit{...}`
- *Slanted*: `{\sl ...}` or `\textsl{...}`
- Sans Serif: `{\sf ...}` or `\textsf{...}`
- Small: `{\small ...}`
- Large: `{\large ...}`

Bibliography

- you need a `.bib` file with bibliographic records, e.g. our `bibdb.bib`
- citing other documents is done by citation key (from the `.bib` file):
  `\cite{kriewel:01}`
- `bibtex` will create a bibliography for you, if you add the `\bibliography` command at the end of the document
- there are several predefined styles for citations and bibliographies available

Links . . .

- A LaTeX distribution for Windows: http://www.miktex.org
- A LaTeX editor/environment for Windows: http://www.texniccenter.org
- German LaTeX user group: http://www.dante.de
- International LaTeX user group: http://www.tug.org
- A LaTeX course on the web: http://lefti.amigager.de/latex/main.tex
- The comprehensive TeX archive network: http://www.ctan.org
- A style for diploma theses:
  http://www.is.informatik.uni-duisburg.de/teaching/material/diploma.tgz

. . . and Literature

- A short introduction to LaTeX: /usr/share/doc/texmf/latex/general/l2kurz.dvi.gz
- L. Lamport, *LaTeX: A Document Preparation System (2nd Edition)*. Addison-Wesley (1994)
- M. Goosens, F. Mittelbach, A. Samarin, *A LaTeX Companion*. Addison-Wesley (1995).
- H. Kopka, P.W. Daly, *A Guide to LaTeX, 4th Edition*. Pearson Education (2003).