LaTeX Course 2011

Part 6: Companion tools

Arho Virkki

VTT Technical Research Centre of Finland

The need for extra tools

As seen earlier, LaTeX is a capable system for typesetting. For productive work, we still need

- citation management system,
- advanced drawing tools,
- perhaps some more exotic LaTeX add-on packages, and
- a proper version control system (e.g. cvs, svn or git)[1]

[1] These tools are not discussed in this course. Nevertheless, LaTeX users get their full power, as the manuscripts are text – similar to software source code.

BibTeX

BibTeX is the de facto standard for LaTeX citatioin management (written by Oren Patashnik and Leslie Lamport in 1985). It has

- An uncomplicated structure:
  - the database can be modified by hand and
  - it is easy to write programs that can handle BibTeX files.
- A lot of BibTeX tools already exists, including
  - `bibtool`
  - `bibtex2html`
  - `...`

BibTeX...

BibTeX-database is just a plain text file. Example:

```
@Article{gro67,
  author  = {Fred S. Grodins and ...},
  title   = {Mathematical analysis and ...},
  journal = {Journal of Applied Physiology},
  volume  = {22},
  number  = {2},
  pages   = {260-276},
  year    = {1967},
  url     = {Grodins - Maadsotrcs.pdf}
}
```

BibTeX...

- The record begins with the type, for example `@article`, `@book` or `@techreport`.
- The first string is the key for the citation, which can be used in the text as `\cite{lyhenne}`.
- All fields are key-value pairs, like `pages={260-276}`.
- All fields are separated by commas.

The format of the record is hence

```
@tyyppi{field, field, ..., field}
```

BibTeX...

- The authors are introduced in the order *first_name last_name* and
- the names are separated with keyword `and`.

For example,

```
J. Doe and O. Normalverbraucher and
M. Meikalainen
```

The style of the Bibliography is defined by a separate style sheet. This can usually be downloaded from the home page of the journal the article is being submitted.

BibTeX...

The style sheet can e.g. define that the title begins with a capital letter, and all the following words are written in lower case. In this case, for example,

```
Stability of the Human Respiratory
Control System I: Analysis of a
Two-Dimensional Delay State-Space Model
```

becomes

```
Stability of the human respiratory
control system i: analysis of a
two-dimensional delay state-space model
```

which was not necessarily the original intention.

BibTeX...

If we need to fix the presentation of a word, that part of the text can be written inside extra curly braces { }

```
... System {I}: {A}nalysis of a ...
```

which makes these parts immutable.

BibTeX and natbib

Using the add-on package

```
\usepackage{natbib}
```

we get two additional commands in addition to the basic `\cite{}`:

- `\citet{}` — the *textual* and
- `\citep{}` — the *parenthetical citation*.

that enable taking the citations as part of the text.

BibTeX and natbib...

Example:

```
\citet{Foo88} showed that... furthermore ...
in the last decade \citep{Bar93,Baz96}.
```

produces

> *Fooman et al. (1988) showed that... furthermore ... in the last decade (Barnos et al., 1993; Bazel et al., 1996).*

depending of the chosen style.

BibTeX usage

Example: If BibTeX database is stored in the file

`citations.bib`, it can be cited in the text using the command `\cite{key}`, provided that the file has been added to the list of citation files:

```
\bibliographystyle{apalike}
\bibliography{citations}
```

where `apalike.bst` is one of the default style sheets available.

BibTeXin usage...

In case that the document (here `text.tex`) is compiled for the first time, one needs to run all the commands

```
latex text
bibtex text
latex text
latex text
```

until all is done.

Style sheet tricks

One of our very first examples had the command

```
@Article{gro67,
  ...,
  url      = {Grodins - Maadsotrcs.pdf}
}
```

where `url` refers to the file name in the local machine. This, of course, has no meaning for other users, and the field is best to be removed from the public version of the file.

Style sheet tricks...

Because the `.bib` files are just ordinary text, removing a field is easy.

Example: (`sed` = strean editor)

```
sed --in-place '/url/ d' citations.bib
```

The same can also be done with a proper Python or R program.

Beamer

Beamer is an additional package for writing slides.

- You write ordinary LaTeXand
- Prosper makes to output to look like it was produced using “the power point method”.
- — except for the formulas, which will still be typeset with the LaTeXquality.
- The style definitions of the current slide set are

```
\usetheme{Warsaw}
\usecolortheme{seahorse}
\usefonttheme{professionalfonts}
```

Beamer...

Beamer comes installed by defauld with LiveTeX, and compiling the slides (in `slides.tex`) is straightforward:

```
pdflatex slides
```

- You had better to choose a program that automatically notices the update `pdf`-file.
- Under linux, `evince` automatically notices any change in the file. For Mac OS X, the editor usually incorporates a proper previewer.

Beamer example

The following commands tell LaTeX that the document is a slide set (and sets some extra preferences)

```
\documentclass[13pt]{beamer}
\usetheme{Warsaw}
\usecolortheme{seahorse}
\usefonttheme{professionalfonts}
\setbeamertemplate{navigation symbols}{}

\begin{document}
...
```

Beamer example...

Each slide begins and ends with

```
\begin{frame}[fragile]
\frametitle{The slide title}
This goes to the slide
...
\end{frame}
```

The extra argument `[fragile]` is not always necessary, but it enables using the `verbatim` environment.[2]

[2] Which is heavily used e.g. for these slides.

Beamer example...

These slides are actually bad. Good slides have as little text as possible, and

- **the text is large enough and it**
- **has lots of free space around it.**

In addition,

- *each slide contains at most 4 key elements, and*
- *the audience is not expected to read and listen at the same time.*