

COMP516 Practical 7

(non-assessed)

11 November 2008

This practical continues last week's \LaTeX practical. We have already seen how internal references work. In this practical you will learn how bibliographies and references to material listed in a bibliography are created in \LaTeX documents. This document can be found at

<http://www.csc.liv.ac.uk/~ullrich/COMP516/notes/practical7.pdf>

\LaTeX uses a dedicated list environment for bibliographies, called `thebibliography`. An example for the use of this environment is the following:

```
\begin{thebibliography}{1}
\bibitem{BH1991}
Franz Baader and Bernhard Hollunder.
\newblock  $\mathcal{KRIS}$ : Knowledge representation and inference system.
\newblock {\em SIGART Bulletin}, 2(3):8--14, 1991.
\bibitem{Staerk2005}
Robert~F. St{"a}rk.
\newblock Formal specification and verification of the {C\#} thread model.
\newblock {\em Theoretical Computer Science}, 343(3):482--508, 2005.
\end{thebibliography}
```

The ‘{1}’ following `\begin{thebibliography}` indicates that the bibliography should be typeset in ordinal-number style. That means the macros `\bibitem{BH1991}` and `\bibitem{Staerk2005}` will be replaced by the numbers ‘1’ and ‘2’, respectively. At the same time, these numbers will be associated with the ‘labels’ `BH1991` and `Staerk2005`.

The values associated with these ‘labels’ can be ‘accessed’ using the `\cite` macro. Examples of its use are:

```
In \cite{BH1991}, Baader and Hollunder describe the \mathcal{KRIS} system.
St{"a}rk \cite{Staerk2005} deals with thread models. The papers \cite{BH1991,Staerk2005}
are examples of journal articles.
```

Typesetting this text in the presence of the bibliography above would result in

In [1], Baader and Hollunder describe the \mathcal{KRIS} system. Stärk [2] deals with thread models. The papers [1,2] are examples of journal articles.

The `thebibliography` environment together with `\cite` macros would allow us to emulate the approach to citing and the construction of bibliographies we have seen for MS Word in Practical 3. However, using the `BIB \TeX` tool, developed by Oren Patashnik and Leslie Lamport in 1985, we can make this process much more user-friendly. For an overview see

<http://en.wikipedia.org/wiki/BibTeX>

`BIB \TeX` assumes that all information on the sources that you use and might want to cite in one of your documents are maintained in a style-independent in one or more text-based ‘bibliography files’. Just as for \LaTeX files, there are specialised editors or even distributed database systems which allow you create and maintain `BIB \TeX` files, but a plain text editor is enough for a start.

In the following we will create a `BIB \TeX` file and see how it can be used to add references and a bibliography to `small.tex`. It is assumed that your file `small.tex` is currently in the state we have reached at the end of the last practical.

1. We first want to see how we can achieve the same results as in Practical 3 using \LaTeX . Add the following text to `small.tex` **before** `\printindex`.

```

\subsection{Citations}
In \cite{GS1996}, Giunchiglia and Sebastiani presented an approach to
building decision procedures for the modal logic  $K_{(m)}$ 
(or its syntactic variant, the description logic  $\mathcal{ALC}$ )
based on DPLL procedures for propositional logic. As a
proof-of-concept they implemented the \textsc{Ksat} system based
on this approach. In a comparison with other systems, among them
the  $\mathcal{KRIS}$  system described in \cite{BH1991}, they
demonstrated the effectiveness their approach.

```

In our first lab session, we were asked to locate papers `\cite{GS1996,BH1991}` on the web. The library subscription to the ACM digital library allows us to download `\cite{BH1991}` without charge. However, the library only has a subscription for Springer Lecture Notes in Computer Science from volume 1186 onwards, which means that access to articles in LNAI 1104 incurs a charge.

Finally, in our first lab session we were also asked to locate papers `\cite{MDS2003,Staerk2005}`.

You may notice that this is the same text we have used in Practical 3, only that the references are now given using the `\cite` macro.

2. Save `small.tex` and execute `latex small` in a terminal window. You will see \LaTeX displays a number of warnings (page numbers and line numbers will depend on the exact state of `small.tex`):

```

LaTeX Warning: Citation 'GS1996' on page 3 undefined on input line 99.
LaTeX Warning: Citation 'BH1991' on page 3 undefined on input line 105.
LaTeX Warning: Citation 'GS1996' on page 3 undefined on input line 109.
LaTeX Warning: Citation 'BH1991' on page 3 undefined on input line 109.
LaTeX Warning: Citation 'BH1991' on page 3 undefined on input line 111.
LaTeX Warning: Citation 'MDS2003' on page 3 undefined on input line 117.
LaTeX Warning: Citation 'Staerk2005' on page 3 undefined on input line 117.
LaTeX Warning: There were undefined references.

```

These warnings indicate that \LaTeX does not yet have any clue what sources you are referring to with your references.

3. Let's change that by creating a \LaTeX file. Edit a new file called `mysources.bib`. Add the following text to `mysources.bib` (continues on the following page):

```

@ARTICLE{BH1991,
  AUTHOR      = {Baader, Franz and Hollunder, Bernhard},
  TITLE       = {\mathcal{KRIS}: Knowledge Representation and Inference System},
  JOURNAL     = {SIGART Bulletin},
  YEAR        = {1991},
  VOLUME      = {2},
  NUMBER      = {3},
  PAGES       = {8--14},
}

```

```

@INPROCEEDINGS{GS1996,
  AUTHOR      = {Giunchiglia, Fausto and Sebastiani, Roberto},
  TITLE       = {Building decision procedures for modal logics from propositional
    decision procedures --- the case study of modal K},
  BOOKTITLE   = {Proceedings of the 13th International Conference on Automated
    Deduction (CADE-13)},
  YEAR        = {1991},
  PAGES       = {583--597},
  PUBLISHER   = {Springer},
  SERIES      = {LNAI},
  VOLUME      = {1104},
}

@ARTICLE{Staerk2005,
  AUTHOR      = {St{\a}rk, Robert F.},
  TITLE       = {Formal specification and verification of the {C\#} thread model},
  JOURNAL     = {Theoretical Computer Science},
  YEAR        = {2005},
  VOLUME      = {343},
  NUMBER      = {3},
  PAGES       = {482--508},
}

@INPROCEEDINGS{MDS2003,
  AUTHOR      = {Till Mossakowski and Michael Drouineaud and Karsten Sohr},
  TITLE       = {A temporal-logic extension of role-based access
    control covering dynamic separation of duties.},
  BOOKTITLE   = {Proceedings of the 10th International Symposium on Temporal
    Representation and Reasoning / 4th International Conference on
    Temporal Logic (TIME-ICTL 2003)},
  YEAR        = {2003},
  PAGES       = {83--90},
  PUBLISHER   = {IEEE Computer Society Press},
}

```

The file now contains four entries, two of **type** article and two of type inproceedings. There are many more (see the Wikipedia article for a complete list). Each entry has a **key**, e.g. BH1991, Staerk2005. These must be identical to those used in the `\cite` macros in your \LaTeX document. The order of entries does not matter, nor does the order of attributes like AUTHOR, TITLE, etc.

Save the file `mysources.bib` in the same directory where `small.tex` is currently stored.

4. Now we have to establish a connection between `small.tex` and `mysources.bib`. The connection should be a bibliography in *ordinal-number style* which should appear in our document in front of the index.

To do this, add the text

```

\bibliography{mysources}
\bibliographystyle{plain}

```

to `small.tex` **before** `\printindex`, and save the file. These two lines are intended to give \LaTeX the information it needs to produce a bibliography for you. However, \LaTeX will

not read your \LaTeX file to find this information, it will only read the file `small.aux`. So, we first have to make sure that the information is passed from the file `small.tex` to the file `small.aux`.

5. We do so by executing `latex small`. You should still get the same warnings regarding your citations and an additional warning

```
No file small.bbl
```

\LaTeX has already picked up that there should be a bibliography and it expects that bibliography to be in a file `small.bbl`. But, since we haven't used \BibTeX yet, this file doesn't exist.

6. Finally, everything is prepared to give \BibTeX a try. Execute `bibtex small` in a terminal window. You should see the following diagnostic output:

```
This is BibTeX, Version 0.99c (Web2C 7.5.4)
The top-level auxiliary file: small.aux
The style file: plain.bst
Database file #1: mysources.bib
```

This shows that everything was ok. If there would be references in `small.tex` for which there is no entry in `mysources.bib`, then you would see warnings like

```
Warning--I didn't find a database entry for "BaaderHollunder1991"
```

There is now also a file `small.bbl`. Have a look at it. You will see that it contains a `thebibliography` environment; that's your list of references.

7. Execute `latex small` **twice** in a terminal window. This should finally get rid of all the warnings. Why twice? In the first execution, \LaTeX will process the `thebibliography` environment which associates ordinal numbers with the 'labels'/keys in the `cite` macros. Only during the second execution can \LaTeX then replace those macros with the right numbers. Have a look at the DVI file and see what the typeset document looks like.
8. An alternative to the ordinal-number style that you have seen in one of our lectures is the *abbreviation style*. To change to this style is easy. **Replace** the line

```
\bibliographystyle{plain}
```

in `small.tex` by

```
\bibliographystyle{alpha}
```

and save the file. Execute `latex small`, then `bibtex small`, then `latex small` twice.

Have a look at the DVI file and see how your references and the bibliography have changed.

9. The third style that you know is the *number style* for references. Edit `small.tex`, add

```
\usepackage{natbib}
```

directly after

```
\documentclass{article}
```

and change the `bibliographystyle` to `plainnat`, that is, change

```
\bibliographystyle{alpha}
```

to

```
\bibliographystyle{plainnat}
```

Save the file `small.tex` and update the DVI/PostScript/PDF file for `small.tex` by executing the commands `latex small.tex`, `bibtex small`, `latex small.tex`, and then, optionally, `dvips` and `ps2pdf`.

See how the sample text and the list of references has changed. Note, for example, that the first sentence of the section on Citations now reads

In Giunchiglia and Sebastiani [1991], Giunchiglia and Sebastiani presented an approach to building decision procedures for the modal logic $\mathcal{K}_{(m)}$ (or its syntactic variant, the description logic \mathcal{ALC}) based on DPLL procedures for propositional logic.

10. We know that this is stylistically wrong. Take a look at the file

```
/usr/share/texmf/tex/latex/natbib/natbib.sty
```

Read the documentation you find at the start of the file. Then make corrections to the section on Citations such that all references are in a correct style.

11. Here are a few more exercises. Extend the file `mysources.bib` by two more entries (continues on the following page):

```
@BOOK{Dawson2005,  
  AUTHOR = {Dawson, Christian},  
  TITLE  = {Projects on computing and information systems: a student's guide},  
  PUBLISHER = {Pearson},  
  YEAR    = {2005},  
}
```

```
@INCOLLECTION{HHSS2006,  
  AUTHOR      = {Horrocks, Ian and Hustadt, Ullrich and Sattler, Ulrike  
and Schmidt, Renate A.},  
  TITLE       = {Computational Modal Logic},  
  BOOKTITLE   = {Handbook of Modal Logic},  
  PUBLISHER   = {Elsevier},  
  YEAR        = {2006},  
  EDITOR      = {Blackburn, Patrick and van Benthem, Johan and Wolter, Frank},  
  CHAPTER     = {4},  
  PAGES       = {181--245},  
  MONTH       = nov,  
}
```

12. If you want an entry to appear in your bibliography, but you don't want to have a corresponding reference in your text, then \LaTeX allows you to do so with the `\nocite` macro. For example, add

```
\nocite{HHSS2006}
```

to the section on Citations in `small.tex`. Save the file `small.tex` and update the DVI/PostScript/PDF file for `small.tex` by executing `latex small.tex`, `bibtex small`, `latex small.tex` twice, and then, optionally, `dvips` and `ps2pdf`.

Check that the typeset text in the section on Citations hasn't changed, but we have an additional entry in our bibliography.

13. If you want to quote a few words from a source, then you would put those words into double quotes and add a reference to the source at the appropriate point (e.g. after the end of the quote). \LaTeX distinguishes between opening double quotes ‘ ‘ and closing double quotes ’ ’. Try to replicate the following sentences:
 - According to Dawson [2005], rolling wave planning “is an incremental planning method”.
 - Some experts in planning claim that it is “important to have a strategy for managing and chunking vision” [Dawson, 2005].
14. This form of quotation is inappropriate if you quote several sentences from a source. In such a case you would want to clearly separate the quoted text from the rest. You already know that in \LaTeX you can use the `quote` environment to do so. You start such an environment using `\begin{quote}` and you end it using `\end{quote}`. Anything between those two is part of the quote. Try to replicate the following example:
 - Dawson [2005] states that

Before selecting any strategy, the project planning team should consider organizational climate and basic planning assumptions. Project planners hold many assumptions, or are influenced by organizational behaviours that reward certain assumptions.
15. This concludes today's practical. Have a look at the Wikipedia entry for $\text{BIB}\LaTeX$ to learn more about it. Also, have a look at <http://www.bibsonomy.org/> for some fun.