BibTeX course notes

Science library. Informatics
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Contents

Preface

This paper deals with the practical exercises in the BibTeX-course. The exercises will help you build the bibliography given in the article entitled *User interface* from Encyclopedia of computer science[1].

1 Bibliographies and reference lists

What is a bibliography?

A bibliography is a list of literature sharing some common aspect. This might be a person, a subject, an area (national bibliographies) and others.

- Within computer science there are a lot of bibliographies covering the different parts of the field. Many of these bibliographies are available in the service *The Collection of Computer Science Bibliographies*[2].

  This service contains bibliographies in many categories: *Artificial Intelligence, Compiler Technology, Programming Languages and Type Theory, Database Research, Distributed Systems, Networking and Telecommunications, Computer Graphics and Vision, Logic Programming, (Computational) Mathematics, Neural Networks, . . .*

  All together more than 3 000 000 records (duplicates included).

- *Digital Bibliography & Library Project* (DBLP -see our home page) contains mainly journal articles, conference papers and links to the home pages of computer scientists.

- *National bibliographies* are another type of bibliography. They cover all that is published within a country.

- *Person bibliographies* usually cover all that is written by and about a certain person.

What is a reference list? Why refer?

Without a reference list, a thesis is not finished. When working with research you always base your work more or less on previous works done by others. If you don't cite them when you do, it will be considered theft or plagiarism.

The reference list in your thesis should contain information on *every* document that you either cite, are referring to or from which you use ideas, definitions, illustrations, graphs, statistics or other results.

The body text must contain *citations* which are pointers to the reference list. The reference list contains all the information that is necessary to locate and access the source.

Now, how far should you go in citing? This varies from discipline to discipline.

When giving definitions of concepts you should always cite the source, because this tells the reader what context your operate within.

What might be considered as common knowledge, like the fact that the earth moves around the sun[3], need not be cited. What is common knowledge in one discipline, might not be in another. It also depends on for whom you are writing.

You should cite the primary source. A secondary source might not have understood or cited the primary source correctly.

The importance of consistent and correct references

The purpose of the reference list is to show what previous research your own work is based on and to give the readers of your work a chance to evaluate it.

This means that references must contain the necessary and sufficient information elements to identify and locate the described document.

This course deals with the question of making a proper reference list using the tool BibTeX.

2 BibTeX

2.1 Literature about BibTeX

Dag Langmyhr has written a short guide to BibTeX (in Norwegian)[4]. You will find English texts on BibTeX in [5, 6, 7] which may be borrowed from the library.

A wiki-book on LaTeX includes a useful page on BibTeX [8].

2.2 GUI for BibTeX

You will find several tools for handling BibTeX-references on the net. Among these are:

- *JabRef* which you can download from http://jabref.sourceforge.net/. It is written in Java and is said to run on Windows, Mac and Linux.

- *Zotero* is an elegant add-on for the Firefox web browser. It may be downloaded from http://www.zotero.org. The add-on may be used for collecting and editing references downloaded from web pages. Zotero may export references in BibTeX-syntax to a bib-file which may be used with LaTeX.

  Zotero was also mentioned in the master introduction lecture, you will find the slides via
  http://tinyurl.com/ifibib

2.3 The bib-file

References are collected in a file with the extension *bib*. The connection between the LaTeX file and the references in the bib-file is established by using identifiers (see below).

The bib-file may reside in the same file catalogue as the LaTeX file or you may put it in file catalogue ~/texmf/bibtex/bib where BibTeX always will find it.

2.4 Emacs and the bib-file

Emacs uses a certain BibTeX-mode when you open a bib-file.

Create a folder called *bibtexcourse* in your home directory.

Open a file named *references.bib* in Emacs by giving the command:

```
> emacs references.bib &
```

You will see a menu called *Entry-Types*. When you want to enter a new reference in your bib-file, you choose reference type from this menu. Observe that there are keyboard short cuts for this operation.

After chosing a reference type you will see a list of empty fields, like this (*article in journal* or Ctrl-c Ctrl-e Ctrl-a):

```
@Article{,
  author =        {},
  title =         {},
  journal =       {},
  year =          {},
  OPTkey =        {},
  OPTvolume =     {},
  OPTnumber =     {},
  OPTpages =      {},
  OPTmonth =      {},
  OPTnote =       {},
  OPTannote =     {}
}
```

2.5   Fields

The fields prefixed *OPT* are optional, the others are mandatory. Sometimes two or more fields are prefixed with *ALT*. You must enter data into one of them.

The fields are separated by comma.

The text in the fields must be surrounded by quotes (" ") or curly braces ({}). There are two exceptions: you may enter clean numbers (a four digit year) and macros without quotes (or braces).

2.6   Uppercase letters and initials

Information in some of the fields will be edited according to the BibTeX-style you have chosen. Uppercase letters might be converted to lowercase. If you want to keep your own layout (e.g. acronyms like ACM and IEEE or person names in titles) put curly braces around your text.

Initals in personal names should be entered with period and a blank, like this `Knuth, D. E.`.

2.7   Identifiers

Every reference in the bib-file must include a unique identifier. It must be entered right after the first curly brace. A comma concludes the identifier.

As you are going to use this identifier when citing in your main LaTeX-document you should construct it easy to memorize, like: shneiderman1983 and olsen1992.

2.8   Some useful Emacs functions

- Emacs: TAB sets the cursor at the end of the current field
- Emacs: Ctrl-J at the beginning of the next field

- Emacs: If you select the menu `BibTeX-Edit > Operating on Buffer or Region > Validate Entries` a syntax check is performed on the bib-file.

- Emacs: Ctrl-c Ctrl-c concludes the entering of a reference. You will be warned about empty mandatory fields. Emacs will propose an identifier if you have not entered one yourself. Empty optional fields will be removed.

- Linux: you may print the whole bib-file by using the command `printbib myfile.bib`. This generates a dvi file that may be printed. The references will be sorted by identifier. If you want the list in a special style you use the command `printbib -s style myfile.bib`.

2.9 Macros

Some information occurs often. It may be journal titles, publisher names, personal names and so on. To save typing and to ensure consistency you may use *macros*. The definition of the macro must appear in the beginning of the bib-file. Examples:

```
@string{shn = "Ben Shneiderman"}
@string{ojd = "Ole-Johan Dahl"}
@string{atch = "ACM Transactions on Computer-Human Interaction"}
@string{aw = "Addison-Wesley"}
```

Then you might enter (without curly braces or quotes):

```
author = ojd
editor = shn
journal = atch
publisher = aw
```

The macros will be expanded during the bibtex processing.

Some styles have build-in macros for the most common journal titles (see a list in [4, p.12]).

If you are using several bib biles it will be convienient to gather all your macros in one single file that should be loaded first (see page 10).

Erase everything in your bib-file and enter the macro for `atch`.

2.10 The most important reference types

Article

Mandatory:	*author, title, journal, year*
Recommended:	*volume, number, pages.*

Book

Mandatory:	*title, publisher, year* and at least one of *author* or *editor*.

InBook/InCollection

The type *inBook* is meant for paragraphs, chapters and page interval in a book. The type *inCollection* is meant for independent contributions in a book or collection (anthology).

Mandatory for InBook:	*author/editor, title, chapter, publisher, year.*
Mandatory for InCollection:	*author, title, booktitle.*
Recommended:	*publisher, year.*

InProceedings – conference paper

Mandatory:	*author, title, booktitle.*
Recommended:	*year, publisher, pages.*

Mastersthesis/PhdThesis

Mandatory for both:	*author, title, school, year.*

TechReport

Mandatory:	*author, title, institution, year*
Recommended:	*number*(report number)

2.11   The crossref option

If you have several references from the same collection or conference it would be rather cumbersome to enter the shared information concerning the collection or the conference.

The solution is to enter a reference (book, collection or proceedings) that covers the whole document with the shared information, like book title.

The references concerning the parts (chapter, paper) might then include the field **crossref** containing the identifier of the shared document.

BibTeX will then merge the information from the part (e.g. *inBook/Book*, *inProceedings/Proceedings*) and the whole.

When using the crossref option make sure that the part references appears **before** the whole references in the bib file. *inBook* before *Book*.

2.12   URLs

All reference types in BibTeX may include the field *url*, but only the harvard styles will show the data from this field.

The solution is to put the URL in the note field together with the date that the URL was last accessed.

Date is important by several reasons. First of all: web pages have a tendency to change over time, you should document which version (date) you are referring to. Second: the documents often change their URLs.

It is also recommended that you keep a printed copy of the page for later control. *Examples*: [2, 3]

To ensure a proper typographical handling of the URL you should use the command \url which is included in the url-package. Include the following in the LaTeX-header:

```
\usepackage[T1]{url}
\urlstyle{sf}
```

Then you enter the note field like this:

```
note = {\newline
\url{http://www.ifi.uio.no/~dag/latex-links/bibtex-guide.pdf}
(2010-09-27)}
```

and you might see the result in the reference list [4].

3   Exercise 1: Building the bib-file

We will now import references from external sources and enter one by hand. The references are found on the accompanying sheet which is also the reference section of this document.

Usually you will download the reference in parallel with downloading the full document. *Make it a habit to fetch the reference data alongside fetching the document.* It will save you a lot of work later on.

1. **Hutchins et al., 1986 [9]**
   Google Scholar
   Search for `Hutchins 1986 direct` in Google Scholar (via Library home page). Before studying the hit list, do this: select *Scholar preferences* from the cogwheel up right. Scroll down to the section on *Bibliography manager*. Tick off *Show links to import citations into* and select BibTeX in the pull down menu. Save the preferences.

   Take a look at the first hit in the list. Click the link *Import into BibTeX*. You will then see the reference with BibTeX-syntax. Is this the reference we were looking for?[1]

   Study other reference candidates down the page. Do you notice any peculiarities?[2]

   Collection of Computer Science Bibliographies (CCSB)
   We will now try to find the reference in the CCSB. Click **Search** in the horisontal menu in the start page. Enter *Hutchins* in the search field and select *author* as qualifier and *1986* as publication year.

   The second hit is the one we're after. To the right you will see two links: *BibTeX* and *4 duplicates*. Study the four duplicates and go back to take a look at the BibTeX-link. Copy the reference into your bib-file.

2. **Olsen, 1992 [10]**
   Google Scholar
   Go back to Google Scholar and try to find this reference by searching for *olsen user interface management*. Click *Import into BibTeX* link. Is it OK?[3]. Copy the reference to the bib-file.

---

[1]No
[2]A lot of citations of the relevant document are listed
[3]Yes

3. **Your own thesis**
   Entering data from scratch
   Select the correct reference type from the menu and enter data in the mandatyory fields. Enter the command `Ctrl-c` `Ctrl-c` to clean up the record and generate an identifier.

---

4. **Johnsen et al., 1989 [11]**
   IEEE Xplore

   This reference you will find in the *IEEE Xplore* service. Search for *johnson xerox star* and tick the reference and click *Download citations*. Choose *Citation only* and *BibTeX*. Finally click *Download citations*. Copy the reference to the bib-file.

5. **Shneiderman 1983 [12]**
   IEEE Xplore
   Search for *Shneiderman 1983* and follow the procedure above.

---

6. **Jacob, 1986 [13]**
   This reference we will find in *ACM Digital Library*.

   A general description of the procedure: Click the title of the article in a hit list. The page which appear has a grey text box to the right, marked *Tools and Resources*. At the bottom of this box there is a BibTeX-link.

   Move to the *ACM Digital Library* from the library home page. Click *Journals and Transactions* under the *Browse the digital library* header. You will get a list of all the journals of ACM (some called *transactions*). Locate the journal *ACM Transactions on Graphics*[4]. Navigate to the journal page, then to the publication archive, to the correct issue and finally to the table of contents.

   Study the BibTeX reference. Note that ACM abbreviates the journal name. Copy the reference to your bib-file and correct the journal name.

7. **Hartson, 1989 [14]**
   ACM Digital Library
   Locate the journal *Computing Surveys*. See above.

8. **Myers, 1995 [15]**
   ACM Digital Library
   Locate the journal *ACM Transactions on Computer-Human Interaction*. See above.

---

9. **Foley, 1987 [16]**
   Collection of Computer Science Bibliographies (CCSB)
   Click **Search** in the horisontal menu on the start page. Enter *Foley* in the search field and select *author* as qualifier and *1987* as publication year.

10. **Foley, 1990 [17]**
    See above.

---

[4]Use Ctrl-f to search within the list

11. **Shneiderman, 1992 [18]**
    See above.

12. **Stephenson, 1999 [19]**
    See above.

---

4   Exercise 2: Using the bib-file with a document

In this exercise you will use text located in the URL
    http://folk.uio.no/knuthe/bibtex/exampletext.html
Copy the text into Emacs in a file called *userinterface.tex*. Your job is to replace
every doble-* reference with a proper LATEX citation command.

4.1   Citing

You must use a `cite` command when you want to include a citation in your
text. The command takes the reference identifier as mandatory parameter, like
this:

    \cite{identifier}

The identifier must be written exactly as it appears in the bib-file.
    If you want to cite several references in the same cite command, it would
look like this:

    \cite{identifier1, identifier2}

If you want to refer to a certain page within the document the cite takes another
parameter:

    \cite[page 47]{identifier}

If you want a reference to appear in your reference list without explicitly citing
it, you may write:

    \nocite{identifier}

    If you replace *identifier* with *, all of the references in your bib-file will a
appear in your reference list.

4.2   Locating and using a reference from the bib-file

An Emacs add-on (RefTeX) makes it easy to handle citations[20]. The package
is recommended also by other reasons. It handles internal crossreferences in the
tex file and makes it easy to use table of contents in Emacs.
    You put Emacs in RefTEX mode by giving the command `M-x reftex-mode`.
Please note the new top menu (Ref). You may set Emacs in RefTeX mode
initially by adding these commands to the .emacs file:

```
(autoload 'reftex-mode "reftex" "RefTeX Minor Mode" t)
(autoload 'turn-on-reftex "reftex" "RefTeX Minor Mode" nil)
(add-hook 'LaTeX-mode-hook 'turn-on-reftex)
```

This mode will make it possible to locate references by regular expressions: Place the cursor where the cite-command should be. Select `\cite` from the Ref menu (or use the command Ctrl-c [). Enter the regular expression plus Return. Eventually you will get a hist list. You may navigate in the hit list by using the up/down arrows and selecting a reference by return. A cite command will appear with the correct identifier. The point of using easy-to-remember identifiers is not that important any longer.

If you require two or more citations in your cite-command, just place the cursor before the last curly brace and repeat the RefTeX cite-command.

Now, replace the doble-* citations with proper cite-commands in the rest of the text.

4.3   BibTeX styles

Several bibliographic styles are defined in BibTeX. Her are some commonly used styles:

- *plain* – the reference list is sorted alphabetically by first author and given a running number. The citation is a number in brackets.

- *unsrt* – looks like plain, but the list is sorted in the same sequence as the citations appear in the document. The current document uses *unsrt*.

- *abbrv* – as plain, but with compacted references.

These styles are variations of numbered styles which is frequently used in computer science literature.

If you have a lot of references in your document, it is more user friendly when the citation includes author name and year (Shneiderman, 1983). Such styles are included in the packages *chicago* and *harvard*. If you want to use such styles, you must include the package in the header of the LaTeX-file:

```
\usepackage{chicago}
\usepackage{harvard}
```

4.4   Generating the reference list

Put these commands in the LaTeX-file where you want the reference list to appear:

```
\bibliography{references}   (the bib-file)
\bibliographystyle{plain}   (the style)
```

If you use several bib-files, separate them by comma and if you use a separate file for macros (macros.bib) it might look like this

```
\bibliography{macros,references}
\bibliographystyle{plain}
```

Running LaTeX on the tex-file all `\cite`, `\bibliography` and `\bibliographystyle` commands are noted in the aux-file and you get the message:

```
LaTeX: there were unresolved citations
```

Then you run the command `> bibtex tex-filename` (without extension) and hopefully get the message

    BibTeX finished successfully. Run LaTeX again to get citations right.

Running LaTeX will give the message:

    You should run LaTeX again to get references right

and finally, after running LaTeX once more:

    LaTeX: successfully formatted {n} pages.

If you want to see the result, click on the DVI-symbol.
Try the *agsm*-style from the harvard-package and repeat the procedure.

4.5   The reference list header

The header of the reference list is taken from the value of a LaTeX-variable. The name of the variable is *refname* when using the document class *article*, and *bibname* for the *book* document class. The default values of these variables are *References* and *Bibliography* respectively.

You may give these variables new values by using the `renewcommand` like this:

    \renewcommand{\refname}{Literature}

4.6   Including the reference list in the contents

The reference list is not included in the contents automatically. To add an entry in the content you give this command:

    \addcontentsline{toc}{section}{\refname}

where the reference is to appear.

The redefinition of the `refname` variable and the `addcontentsline`-command should appear together to ensure consistency:

    \renewcommand{\refname}{Literature}
    \addcontentsline{toc}{section}{\refname}

4.7   Referring backwards

When your document grows, it will be difficult to remember just where you cited a certain reference.

You may use the package *hyperref* which generates backward citations. That is, for every reference in the reference list page numbers are added to show where the reference is cited. To achieve this, you add the following command in the LaTeX-header:

    \usepackage[pagebackref=true]{hyperref}

If `pagebackref` is set to `false` the page numbers disappear from the reference list. The hyperref package also generates internal and external links in the document.

(notes)

Literature

[1] Robert J. K. Jacob. User interface. In Anthony Ralston, Edwin D. Reilly, and David Hemmendinger, editors, *Encyclopedia of computer science*, pages 1821 – 1826. Nature publishing Group, 4 edition, 2000. 2

[2] Alf-Christian Achilles and Paul Ortyl. The Collection of Computer Science Bibliographies.
http://liinwww.ira.uka.de/bibliography/index.html (2012-08-20). 2, 6

[3] Nicolaus Copernicus. *De Revolutionibus Orbium Coelestium*. apud. Ioh. Petreium, 1543. Se også:
http://ads.harvard.edu/books/1543droc.book (2012-08-20). 2, 6

[4] Dag Langmyhr. *Lokal guide til BibTeX*, Desember 2008.
http://www.ifi.uio.no/~dag/latex-links/bibtex-guide.pdf (2012-08-20). 3, 5, 7

[5] Helmut Kopka and Patrick W. Daly. *A guide to LATEX2ε : document preparation for beginners and advanced users*. Addison-Wesley, 2 edition, 1995. 3

[6] Helmut Kopka and Patrick W. Daly. *Guide to LATEX: tools and techniques for computer typesetting*. Addison-Wesley, 4 edition, 2004. 3

[7] Apostolos Syropoulos, Antonis Tsolomitis, and Nick Sofroniou. *Digital typography using LATEX*. Springer, 2002. 3

[8] Latex/bibliography management. Webpage, 2012.
http://en.wikibooks.org/wiki/LaTeX/Bibliography_Management (2012-08-20). 3

[9] E. L. Hutchins, J. D. Hollan, and Donald A. Norman. Direct manipulation interfaces. In Donald A. Norman and Stephen W. Draper, editors, *User centered system design: new perspectives on human-computer interaction*, pages 87–124. Lawrence Erlbaum, Hillsdale, 1986. 7

[10] D.R. Olsen. *User interface management systems: models and algorithms*. Morgan Kaufmann, San Francisco, 1992. 7

[11] J. Johnson, T. L. Roberts, W. Verplank, D. C. Smith, C. H. Irby, M. Beard, and K. Mackey. The Xerox Star: a retrospective. *Computer*, 22(9):28–29, 1989. 8

[12] B. Shneiderman. Direct manipulation: A step beyond programming languages. *Computer*, 16(8):57–69, 1983. 0018-9162. 8

[13] Robert J. K. Jacob. A specification language for direct-manipulation user interfaces. *ACM Trans. Graph.*, 5(4):283–317, 1986. 8

[14] H. Rex Hartson and Deborah Hix. Human-computer interface development: concepts and systems for its management. *ACM Comput. Surv.*, 21(1):5–92, 1989. 8

[15] Brad A. Myers. User interface software tools. *ACM Trans. Comput.-Hum. Interact.*, 2(1):64–103, 1995. 200971. 8

[16] J.D. Foley. Interfaces for advanced computing. *Scientific American*, 257(4):127–135, 1987. 8

[17] James D. Foley. *Computer graphics: principles and practice.* Addison-Wesley, Reading, Mass., 1990. 8

[18] Ben Shneiderman. *Designing the user interface: strategies for effective human-computer interaction.* Addison-Wesley, Reading, Mass., 1992. 9

[19] Neal Stephenson. *In the beginning …was the command line.* Avon Books, New York, 1999. 9

[20] Carsten Dominik. *RefTeX user manual*, 4.34 edition, August 2009. http://www.gnu.org/software/auctex/manual/reftex.pdf (2012-08-20). 9