



BibTeX

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This session is about how LaTeX handles bibliographic references with the help of BibTeX.

We shall practice citing from a BibTeX database, using different styles, and we shall also practice building a BibTeX database.

As before, practice files are collected into a zipfile.

1 How BibTeX works

Different publishers have different requirements for bibliographic references:

- » What to include, in what order
- » Capitalization
- » Punctuation
- » Abbreviations
- » Styling of text

With BibTeX, you can maintain a single database of bibliographic references and generate the references for your paper automatically, and apply a bibliographic style matching the requirements of the publisher.

The bibliographic database is a plain textfile, which you can create and maintain with TexmakerX, but also with *e.g.* JabRef. *Rerun the T_EX Live installer* to get a menu shortcut for JabRef.

Here are some BibTeX database entries (more about this in section 5):

```

BibTEX database  @Article{biboostrum,
                    author = "Piet van Oostrum",
                    title = "Een tutorial over het gebruik van {Bib{\TeX}}",
                    journal = "{MAPS}",
                    volume = "30",
                    pages = "66--86",
                    year = 2004,
                    }

                    @Book{lcompanion,
                    Author = "Frank Mittelbach and Michel Goossens",
                    Title = "The {\LaTeX{}} Companion",
                    Publisher = "Addison-Wesley",
                    year = 2004,
                    Edition = "2nd",
                    }

```

Below a very short LaTeX source which references the above entries from `bibdemo.bib`:

```

\documentclass{article}
\bibliographystyle{plain}
\begin{document}

See \cite{lcompanion} and \cite{biboostrum}.

\bibliography{bibdemo} % this line specifies bibdemo.bib as database
\end{document}

```

which produces the following output:

See [1] and [2].

References

- [1] Frank Mittelbach and Michel Goossens. *The LaTeX Companion*. Addison-Wesley, 2nd edition, 2004.
- [2] Piet van Oostrum. Een tutorial over het gebruik van Bib_TE_X. *MAPS*, 30:66–86, 2004.

You can put the `\bibliographystyle` command anywhere before the `\bibliography` command.¹

In order to get the references actually included, the Bib_TE_X program has to be run, and after that LaTeX has to be run at least twice: once for including the bibliography, once for resolving the cross-references. In *TexmakerX*, the Bib_TE_X command is in the Tools menu, and has a keyboard shortcut F11. It is also possible to reconfigure Quick Build to do all this in one go.

Bibliographic references have a lot in common with ordinary LaTeX cross-referencing, with the bibliographic entries providing a `\label`-type command, and the `\cite` commands being the corresponding `\ref` commands. The strings `lcompanion` and `biboostrum` are the labels in this cross-referencing scheme.

LaTeX writes, among other things, the requested citations to the `.aux` file, which is subsequently read by Bib_TE_X.

1. LaTeX used to be more restrictive in this respect. Therefore, many old-time LaTeX users still place the `\bibliographystyle` command right before the `\bibliography` command.

BibTeX writes the requested entries with the proper LaTeX formatting and with \bibitem reference labels to a .bbl file:

```
BibTeX output  \begin{thebibliography}{1}

                \bibitem{lcompanion}
                Frank Mittelbach and Michel Goossens.
                \newblock {\em The {\LaTeX{}} Companion}.
                \newblock Addison-Wesley, 2nd edition, 2004.

                \bibitem{biboostrum}
                Piet van Oostrum.
                \newblock Een tutorial over het gebruik van {\Bib{\TeX{}}}.
                \newblock {\em {\MAPS}}, 30:66--86, 2004.

                \end{thebibliography}
```

You can use \nocite instead of \cite if you don't want anything in the running text but do want an entry in the list of references:

```
\nocite{lcompanion}
```

Tip. You can quickly create a formatted printout of your BibTeX database with the \nocite{*} command (see testbib.tex from the practice files):

```
\nocite{*}
\bibliography{your_bibtex_file}
```

1.1 First practice

Run the above example: after unpacking the practice files, *e.g.* on your desktop or in My Documents, load bibdemo1.tex in TexmakerX. Then:

1. Run pdflatex (F6); now BibTeX knows which references to collect.
2. Run Bibtex (F11, or Tools / Bibtex); now BibTeX has created a LaTeX file with references.
3. Run pdflatex again; now pdflatex finds and includes the list of references.
4. Run pdflatex again; now pdflatex can resolve the references.

1.2 Bibliography styles

BibTeX comes with several bibliography styles. We already encountered plain. Another one is the alpha style, which creates labels from author names and the year of publication. The .bbl output file:

```
BibTeX output  \begin{thebibliography}{MG04}

                \bibitem[MG04]{lcompanion}
                Frank Mittelbach and Michel Goossens.
                \newblock {\em The {\LaTeX{}} Companion}.
                \newblock Addison-Wesley, 2nd edition, 2004.

                \bibitem[v004]{biboostrum}
                Piet van Oostrum.
                \newblock Een tutorial over het gebruik van {\Bib{\TeX{}}}.
                \newblock {\em {\MAPS}}, 30:66--86, 2004.

                \end{thebibliography}
```

The typeset result:

See [MG04] and [vO04].

References

[MG04] Frank Mittelbach and Michel Goossens. *The L_TE_X Companion*. Addison-Wesley, 2nd edition, 2004.

[vO04] Piet van Oostrum. Een tutorial over het gebruik van Bib_TE_X. *MAPS*, 30:66–86, 2004.

1.3 Practice

Try to recreate `Factors_refs.html` from the practice files as a L_AT_EX file with a proper list of references. Use the `factors.bib` bibliography database.

2 Author – Year citation styles

The classical bibliography styles didn't provide for author – year citation styles, such as in the examples below:

See Castaldo et al. from 2006 and Knuth (1990).

References

Castaldo, R. J., M. A. McKay, and V. Tosic (2006). Exposing gnu octave signal processing functions as extensible markup language (xml) web services. In *Proc. Canadian Conf. Electrical and Computer Engineering CCECE '06*, pp. 1442–1445.

Knuth, D. E. (1990). *The T_EXbook*, Volume A of *Computers and Typesetting*. Reading, MA, USA: Addison-Wesley.

or

See Castaldo et al. from 2006 and Knuth (1990).

References

R. J. Castaldo, M. A. McKay, and V. Tosic, in *Proc. Canadian Conf. Electrical and Computer Engineering CCECE '06* (2006), pp. 1442–1445.

D. E. Knuth, *The T_EXbook*, vol. A of *Computers and Typesetting* (Addison-Wesley, Reading, MA, USA, 1990).

Note the absence of labels in the list of references.

This style is provided by the `natbib` package². This is the L_AT_EX preamble code:

```
\usepackage{natbib}
\bibliographystyle{chicago} % first example
%\bibliographystyle{apsrev} % second example
```

Cite commands in the running text:

2. There are earlier attempts at author-year citation schemes, such as the `apalike` and `harvard` packages, but `natbib` can replace most of them.

See `\citeauthor{castaldo2006}` from `\citeyear{castaldo2006}` and `\cite{texbook}`.

A sample of citation commands supported by natbib:

```
\cite{tamethebeast}      Markey, 2005
\citet{tamethebeast}     Markey (2005)   'in-text'
\citep{tamethebeast}     (Markey, 2005)  'parenthesized'
\citet[noted]{lshort}    Oetiker et al. (2010, noted)
\citep*[lshort]          (Oetiker, Partl, Hyna, and Schlegl, 2010)
\citeauthor{tamethebeast} Markey
\citeyear{lshort}        2010
```

`\nocite` works as usual.

See the natbib manual for more variations and for customization options.

The entries in the .bbl file are more complex than before, because LaTeX needs more information for author-year citations:

```
\bibitem[\protect\citeauthoryear{Castaldo, McKay, and Totic}{Castaldo
  et~al.}{2006}]{castaldo2006}
Castaldo, R.-J., M.-A. McKay, and V.-Totic (2006).
\newblock Exposing gnu octave signal processing functions as extensible markup
  language (xml) web services.
\newblock In {\em Proc. Canadian Conf. Electrical and Computer Engineering
  CCECE '06}, pp.\ 1442--1445.
```

2.1 Practice

Try out natbib-style citation on the LaTeX-ified Factors_refs document.

3 Custom-bib/makebst: generating your own bibliography style

Publishers often have very specific requirements as to the formatting of bibliographic entries, without providing a bibliography style implementing this formatting. Even if a suitable style exists, it may be hard to find one, although the TeX FAQ has to offer some advice. One way out is creating your own .bst file.

If a style is almost correct, *and* if you can make some sense out of .bst files (a big if), then maybe you can fix it yourself.

Another option is makebst (package custom-bib). This is a two-step process: in the first step, you have to answer a very long list of questions. Your answers are written to an intermediate answers file. In the second step, a .bst file is generated from this list of answers. See the documentation of makebst for details, e.g. file-search for makebst in texdoctk.

4 The next step: biblatex

A radical reimplementaion of bibliography support is biblatex. Bibliography styles aren't written in the unfamiliar .bst syntax but in LaTeX, and the role of BibTeX is reduced to collecting and sorting the bibliographic data. LaTeX itself selects, arranges and formats the information from the bibliographic entries. Advantages include

- » some variations in bibliography style can be realized simply with package options, without editing .bst files
- » better support for non-Western languages

- » more citation options, because LaTeX has access to all the bibliographic information
- » easy per-chapter bibliographies

4.1 Getting started with biblatex

You can easily experiment with biblatex. For starters, use the package option `natbib` or `natbib=true` so that you don't need to change the cite commands in your LaTeX source just yet. `Latexbib` uses mostly the same database format and requires only a few small changes in the preamble and at the end of your document. Preamble commands for the two examples below:

```
% first example:
\usepackage[style=numeric,natbib=true]{biblatex}
% second example:
%\usepackage[bibstyle=authoryear,citestyle=authortitle,block=ragged]{biblatex}
% both
\bibliography{bibdemo}
```

and at the end:

```
\printbibliography
\end{document}
```

Output:

See [2] and [1].

References

- [1] Lance J. Bachmeier and James M. Griffin. “New evidence on asymmetric gasoline price responses”. In: *The Review of Economics and Statistics* 85.3 (2003), pp. 772–776.
- [2] Frank Mittelbach and Michel Goossens. *The L_AT_EX Companion*. 2nd. Addison-Wesley, 2004.

and

See Mittelbach and Goossens, *The L_AT_EX Companion* and Bachmeier and Griffin, “New evidence on asymmetric gasoline price responses”.

References

- Bachmeier, Lance J. and James M. Griffin (2003).
 “New evidence on asymmetric gasoline price responses”.
 In: *The Review of Economics and Statistics* 85.3, pp. 772–776.
 Mittelbach, Frank and Michel Goossens (2004). *The L_AT_EX Companion*. 2nd.
 Addison-Wesley.

The author recommends using `bibtex8` rather than `bibtex`. This can be configured in e.g. `TexmakerX`.

In the absence of a biblatex counterpart of `makebst` (see section 3 above), a possible obstacle is finding a suitable biblatex style. Search for ‘biblatex-’ in the CTAN Catalogue to see what is available.

5 The .bib database file

We already saw that a Bib_TEX database is a plain text file, consisting of a series of entries, each with a label and several fields.

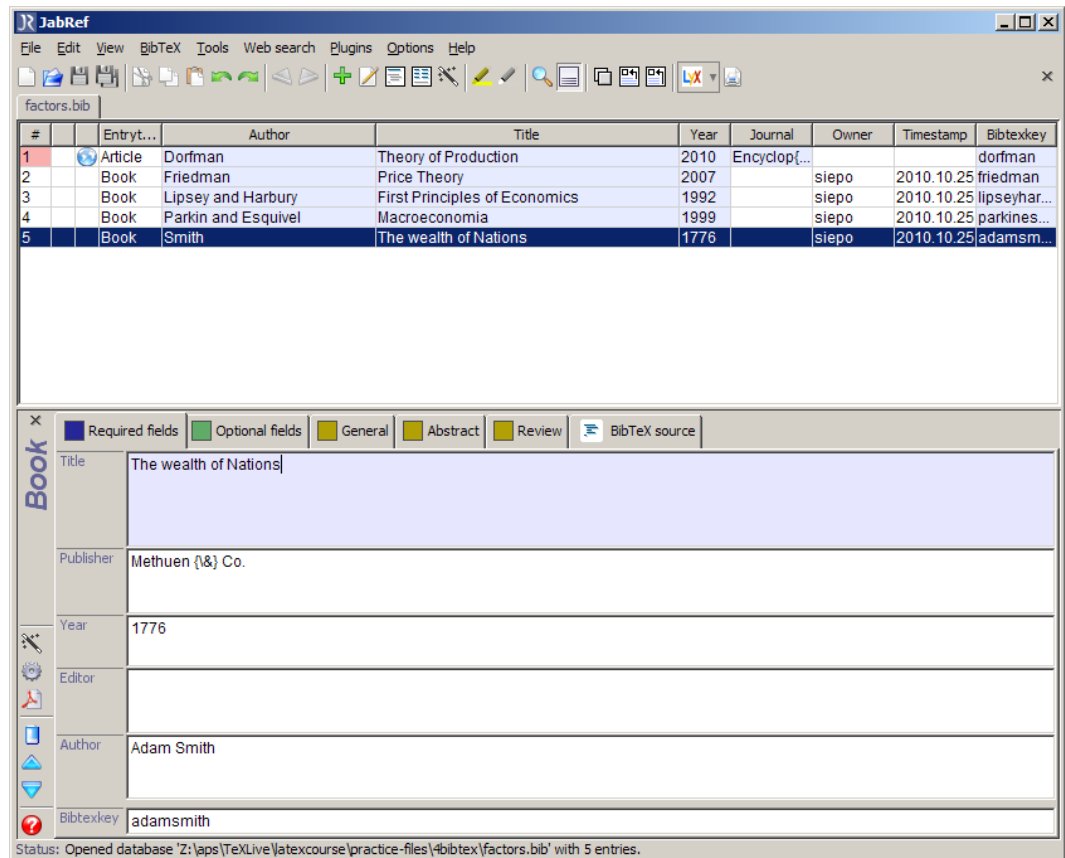


Figure 1. JabRef BibTeX editor

5.1 GUI BibTeX editors

It is perfectly feasible to hand-edit a BibTeX database, but there are intricacies, so perhaps it is more practical to use a reference manager such as JabRef (cross-platform, written in Java) or BibDesk (Mac OS only).

JabRef has various options for importing from and exporting to other formats, including End-Note, and can make use of online resources such as CiteSeer.

If you have rerun the T_EX Live installer, you'll have a new JabRef menu entry.

5.2 First example entry

```
@TECHREPORT{canond2003,
  author = "Marcel Canoy and Sander Onderstal",
  year = 2003,
  title = "Tight oligopolies: {I}n search of proportionate remedies",
  number = 29,
  institution = "{CPB} Netherlands Bureau for Economic Policy Analysis",
  address = "The Hague",
}
```

TECHREPORT is the type of the publication. Other types include `article` and `book`. Capitalization is not significant in BibTeX entry types and field names.

The key `canond2003` is used by the various cite commands.

The next few lines, until the closing brace, are field-value pairs. Most values are enclosed in double quotes. Numbers, however, can be listed 'bare'.

{CPB} is enclosed in braces to protect it against Bib_T_E_X's automatic capitalization.

Also notice the author field: this consists of two authors, each in *first last* format. The names are separated with 'and'.

5.3 Example: brace delimiters, alternate author syntax, accented letters

```
@Misc{clementsgalvao2001,
  author = {Clementz, Michael P. and Galv{\~a}o, Ana Beatriz},
  title = {A comparison of tests of non-linear cointegration with an application
    to the predictability of {US} interest rates using the term structure},
  year = 2001,
  howpublished = {Mimeo, Department of Economics, University of Warwick},
}
```

This example encloses values in braces rather than double quotes. This makes it possible to include double quotes without fuss. Nesting braces within braces is never a problem, which makes braces the more practical choice.

The author field uses the alternate syntax of *last, first*. The Bib_T_E_X manual (Patashnik (1988)) has more to say about the parsing of author's names.

You can include accented letters and other _T_E_X macros inside braces: {\~a}. If you use bib_t_e_x8 instead of bib_t_e_x you should be able to use accented letters outright.

Note that this entry has a different set of fields. The bibliography style determines which entry types are recognized and which fields are required or optional for each entry type. A field is never forbidden; at worst, it will be ignored.

5.4 Example: a predefined abbreviation and a dummy field

```
@string{AW = "Addison-Wesley"}
...
@Book{lcompanion,
  Author = "Frank Mittelbach and Michel Goossens",
  Title = "The {\LaTeX{}} Companion",
  Publisher = AW,
  year = 2004,
  Edition = "2nd",
  ignorablefield = "too fat for my backpack",
}
```

You can define abbreviations with @string entries. You can also create a .bib file with @string entries, and load it before the actual database file.

This entry also uses a dummy field ignorablefield for private information.

5.5 Example: author names with a 'von' part; number ranges

```
@article{meycra2004,
  author = {Meyer, Jochen and von Cramon-Taubadel, Stephan},
  title = {Asymmetric Price Transmission: A Survey},
  year = 2004,
  journal = {Journal of Agricultural Economics},
  volume = 55,
  number = 3,
  pages = {581-611},
}

@inproceedings{ricejava,
  author = "Istiqomah Istiqomah and Manfred Zeller and
    Stephan von Cramon-Taubadel",
}
```



```

    title = "Volatility and Integration of Rice Markets in Java, Indonesia",
    booktitle = "Tropentag 2005",
    year = 2005,
}

```

These examples feature an author's name with a 'von' part, first in *von last, first* syntax, then in *first von last* syntax. Again, Patashnik (1988) explains handling of author's names.

Also note that BibTeX will expand the range 581–611 to 581--611, producing a proper n-dash in the typeset output.

You can read a full description of the .bib format in the original BibTeX documentation, Patashnik (1988). This documentation doesn't cover extensions from e.g. the Natbib package and corresponding bibliography styles.

5.6 The url field

Many modern bibliography styles, including styles created with makebst/custom-bst, support an url field. It is a good idea to load the url package, to make sure that special characters such as underscores and tildes are rendered correctly, and to guarantee correct handling of various special characters. LaTeX source:

```

\documentclass{article}
\usepackage{natbib}
\bibliographystyle{plainnat}
\usepackage{url}
...
\nocite{biboostrum}
\bibliography{bibdemo}
\end{document}

```

BibTeX entry:

```

@Article{biboostrum,
  author = "Piet van Oostrum",
  title = "Een tutorial over het gebruik van BibTeX",
  journal = "MAPS",
  volume = "30",
  pages = "66--86",
  year = 2004,
  url = "http://www.ntg.nl/maps/pdf/30_15.pdf",
}

```

results in:

Piet van Oostrum. Een tutorial over het gebruik van BibTeX. *MAPS*, 30:66–86, 2004. URL http://www.ntg.nl/maps/pdf/30_15.pdf.

5.7 Urls in other fields

If the bibliography style doesn't use an url field, you can include an url in another field. 'How-published' is a good option, but only in combination with e.g. the Misc entry type, since it is ignored by most other entry types. Alternatively, the 'Note' field is supported by almost all entry types.

```

@Manual{tamethebeast,
  author = "Nicolas Markey",
  title = "Tame the BeAST, The B to X of BibTeX",
  year = 2005,
  note = "{\url{http://www.lsv.ens-cachan.fr/~markey/BibTeX/doc/ttb_en.pdf}}",
}

```

```

}
@Misc{some,
  author = "Au Thor",
  title = "Some title",
  howpublished = "\url{http://www.a.site.net/sometitle.html}",
}

```

LaTeX source:

```

\documentclass{article}
\bibliographystyle{plain}
\usepackage{url}
...
\nocite{*}
\bibliography{nourl}
\end{document}

```

- [1] Nicolas Markey. *Tame the BeaST, The B to X of BibTeX*, 2005. http://www.lsv.ens-cachan.fr/~markey/BibTeX/doc/ttb_en.pdf.
- [2] Au Thor. Some title. <http://www.a.site.net/sometitle.html>.

The natbib reimplementations plainnat, abbrvnat and unsrtnat of the corresponding classical bibliography styles do provide a url field and don't require the above workarounds.

More trickery for working around BibTeX's automatism can be found in Markey (2005) and in the BibTeX chapter of the TeX FAQ.

5.8 Practice

Try to create BibTeX entries from some of the items in the Economics_refs.html document. Check your work with the \nocite{*} command, as done above.

References

BibDesk. GUI bibliography manager for the Mac. URL: <http://bibdesk.sourceforge.net/>.

CTAN Catalogue. URL: <http://mirror.ctan.org/help/Catalogue/brief.html>.

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Lehman, Philipp (2010). *The biblatex Package*. Published as part of the biblatex package.

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Oetiker, Tobias et al. (2010). *The Not So Short Introduction to LaTeX_{2_ε}*. Included in most free TeX distributions. URL: <http://mirror.ctan.org/info/lshort/>.

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