Using BibTeX

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Abstract

Module 7 will discuss how to manage and include references in a LaTeX document. BibTeX come with every TeX distribution and can be used to format citation automatically using various citation styles. Only two simple commands are needed in the LaTeX document. BibTeX packages that can be used in conjunction with BibTeX, and packages that could be used as alternatives to BibTeX will be discussed. The structure of a BibTeX database and exporting references from popular sources will be discussed as well.

1 What is BibTeX

The BibTeX program acts like a bibliographic manager for LaTeX. As with all bibliographic managers, you can store citation information in a database for later use. You can download much of the information without typing it manually. You don't have to worry about manually formatting your citations because BibTeX, usually with the aid of other packages, will do it for you.

An author can maintain one master database of references or individual databases for individual documents. Database entries are independent of bibliographic style. Any TeX distribution that includes LaTeX should contain BibTeX as well. There are Graphical User Interfaces (GUI) software options available to maintain BibTeX databases, but they is not required. Many other bibliographic managers (e.g Refworks, Mendeley, Endnote, etc.) will import and export references in the BibTeX format.

2 Bibliographies without BibTeX

Bibliographies can be generated within LaTeX alone by using the environment *thebibliography*. When using *thebibliography*, numerical citations are default. An optional label can be used with the *bibitem* command. The optional label is not an author-date type of citation. Author-date style of citations can be attained using packages like *natbib* in conjunction with BibTeX. A code example using *thebibliography* is

begin{thebibliography}{99}
bibitem{guide} Kopka, H., \& Daly, P. W. (2004). **textit**{Guide to **LaTeX**} (Fourth ed.). Boston: Addison−Wesley. Available at \url{http://proquest.safaribooksonline.com/9780321617736}
bibitem{companion} Mittelbach, F., Goossens, M., Braams, J., Carlisle, D., \& Rowley C. (2004). **textit**{The {**LaTeX**} companion} (Second ed.). Boston: Addison−Wesley. Available at \url{http://proquest.safaribooksonline.com /0201362996}
{**textbackslash**}end\{thebibliography\}

The formatting of the reference list is the sole responsibility of the author when using *thebibliography*. Authors must know the order of the parts of the citation, such as author, year, and title. They have to know what punctuation to use. When should a period and when should a comma be used? They have to know the format of the author names and the font-weight of the elements, such as when to use bold or italics. These are just to name a few. Authors must know much more about the citation style.

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This environment, *thebibliography*, makes reusing references very difficult. Let's say an article was submitted to a publisher. Unfortunately, the article was not a good fit the selected journal and it was rejected. Another journal is selected for the article, but the bibliographic style is completely different. Using *thebibliography* would require the author to re-format the citations in the proper style. Regarding the order of the bibliography, it would easy to make an error particularly for styles that list entries in the order that they are cited in the text of the document.

In addition, often authors use the same references in multiple documents. Using *thebibliography* would require explicitly typing the bibliography for each document. BibTeX eliminates these issues.

3   The .bib File

The .bib file is called a BibTeX database. Essentially, it is a text file containing data in a structured format.

3.1   The BibTeX Format

The generic form of a BibTeX entry is

```
@type{key,
  field1 = " " or {} or none,
  field2 = " " or {} or none,
  ...
  fieldn = " " or {} or none
  }
```

The beginning of the entry is marked by a @ character followed by the type of entry. Each type of entry has required and optional fields. All other fields within the entry would be ignored. Table 1 contains a few examples of entry type, as well as required and optional fields. Additional fields and their meanings can be found in Kopka and Daly (2004, p. 231) and Mittelbach, Goossens, Braams, Carlisle, and Rowley (2004, pp. 763, 765).

Table 1: Examples of Entry Type for BibTeX

type	required	optional
article	author, title, journal, year	volume, number, pages, month, note
inbook	author or editor, title, chapter and/or pages, publisher, year	volume or number, series, type, address, edition, month, note
book	author or editor, title, publisher, year	volume or number, series, address, edition, month, note
inproceedings	author, title, booktitle, year	editor, volume or number, series, pages, address, month, organization, publisher, note

The key must be unique, so BibTeX can fetch the correct citation information. As with nearly everything in the world of LaTeX, the key is case sensitive. Each field is separated by a comma. Field values that are text can be contained in quotation marks or curly brackets. To keep acronyms and proper nouns uppercase regardless of the citation style rules, the word or phrase itself must be enclosed in curly brackets too. If a LaTeX command is contained in the text field, the command must be enclosed in curly brackets as well. Field values that are numeric need no quotes or curly brackets. Other field values that don't need quotes or curly brackets can be found in Mittelbach et al. (2004, p. 771).

Often, the author field is required. It can consist of one or more names of people, corporations, etc. When an author is a person's name, the form can be "*Given name Surname*" or "*Surname, Given name*." Often either form can be used; however, there are cases when it is better to use a particular form.

Sometimes, an author's surname consists of multiple words. If only the last word of the surname is capitalized, either form can be used.

- von Meerwall, Ernst or

- Ernst von Meerwall

If additional words are capitalized in the surname, it is easiest to use the form, *Surname, Given name*. In order to use the alternate form, the surname must enclosed in curly brackets so the entire surname is treated as one item.

- De Abreu-Garcia, Alex or

- Alex {De Abreu-Garcia}

An optional suffix can be added to the name in the form of *Surname, Suffix, Given name* or *Given name {Surname Suffix}* to eliminate the comma after the surname.

- Visco, Jr, Donald P.

If only initials are given, there should be a space between them.

- Hartley, T. T.

Multiple authors are separated by the word "and."

- Stitz, Tammy and Laster, Shari and Bove, Frank J. and Wise, Casey

It is important to enclose an author phrase in curly brackets. For example, the American Society for Testing and Materials would be considered as two authors due to the "and."

- {American Society for Testing and Materials}

When the references are sorted alphabetically, it is normally alphabetical with respect to author then chronological. Sometimes it necessary to provide additional information in the BibTEX entry for proper sorting. If there is not an author or editor, there is a "key" field that can be used for sorting. This field should not be confused with the" key" that is the unique identifier for the reference. Sort adjustments might not work with certain styles. The *crossref* field will pull in data from another BibTEX entry. This is particularly helpful for book chapters.

4   How BibTEX and LATEX Work Together

When the LATEX document is generated, several files are created. The .aux file is important because it contains the cross references in the document. BibTEX reads the .aux file to determine want citation information needs retrieved from the BibTEX database. Next, it writes the bibliography to the .bbl file using the citation style that was specified in the LATEX document. When the document is typeset again, the .aux and the.bbl files are read to fix the cross-references in the document. Often, the document needs typeset one more time. If it needs typeset again, there will be a warning, "LaTeX Warning: There were undefined references," or there will be question marks for the in-paper citations. If the cited reference is not found in the BibTEX database, the warning will remain after it is typeset a second time.
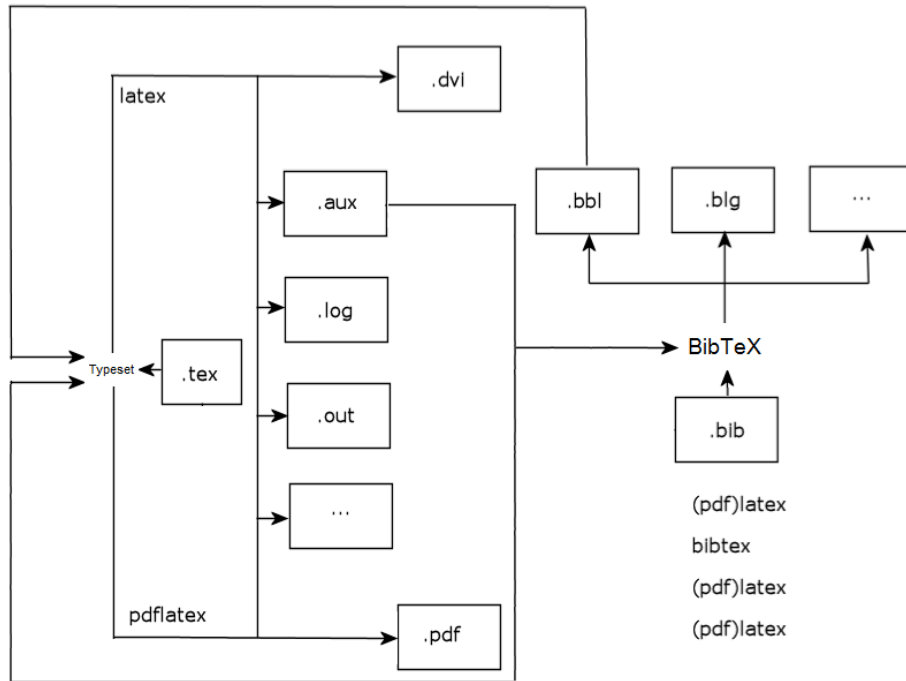
Figure 1: Diagram of LaTeX and BibTeXFiles

4.1 Using BibTeX in your LaTeXDocument

To use BibTeX, the LaTeX document contains the commands:

bibliographystyle{style}
bibliography{bibfile}

These commands specify which bibliographic style (.bst) and bibliographic database (.bib) file to use. If there is a "can't open file" message when using BibTeX, install the style file (.bst) and refresh the filename database if necessary. Often, the .bib file is in the same directory with the .tex file, which is preferable when you need to send the files to someone else. However, you could use a general database. There are two options when using a centralized bibliographic database.

1. Specify a path as part of the argument for *bibliography* command. Use forward slashes in the path (even for Windows) and use folders with no spaces in the name.

2. Place the .bib file in the {TeXDistribution}/bibtex/bib directory and refresh the filename database.

If you are using a centralized database and collaborating with others, it might be preferable to use the second method; otherwise, they would need the same directory structure as you to generate the document.

In-paper citations are created using *\cite[text]{key}*. Remember, the key is case sensitive, so the case must be the same in the LaTeX document; otherwise, the entry will not be found. The *text* option is used to display extra text with the citation, such as a page number range. The command *nocite* can be used to include references in the reference section of the document without an in-paper citation.

There are several packages that extend the functionality of BibTeX or use BibTeX in some manner to provide the bibliography. The *natbib* package is used often because it is highly configurable. There are packages for standard citation styles too, such as American Psychological Association (APA), Chicago, and Modern Language Association (MLA).

4

5   Exporting from Publisher Web Sites and Library Resources

BibTEX entries can be downloaded from many resources. These entries can be downloaded in individual files or could be a list of several (depending on the source of the entries). These individual files can be combined or imported into a BibTEX bibliographic manager, such JabRef (cross-platform) and BibDesk (Mac OS). The interface for these bibliographic managers can make management tasks, such as adding entries from a downloaded file, adding references manually, or deleting entries easier.

BibTEX references can be downloaded from many publisher Web sites and databases. The library subscribes to many databases and electronic journals that can be used off-campus through the UA Libraries Catalog or University Libraries Web site. It is necessary to use a proxy server off-campus. If you use the UA Libraries Catalog or the University Libraries Web site, you will use our proxy server.

Due to the frequency of interface changes, details about downloading references in the BibTEX format is maintained on a library guide.

References

Kopka, H., & Daly, P. W. (2004). *Guide to LATEX* (4th ed ed.). Boston: Addison-Wesley. Retrieved from http://proquest.safaribooksonline.com/9780321617736

Mittelbach, F., Goossens, M., Braams, J., Carlisle, D., & Rowley, C. (2004). *The LATEX companion* (2nd ed ed.). Boston: Addison-Wesley. Retrieved from http://proquest.safaribooksonline.com/0201362996