

Introduction to Scientific Typesetting

Lesson 8: BibTeX

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BibTeX is an application that runs alongside \LaTeX to assist the user in compiling bibliographies. It especially shines if your bibliography is long.

What do you need to use BibTeX?

- A *bibliographic database file*—this will have a `.bib` extension. This is where the bibliographic entries are located. You need to create this file.
- A *bibliographic style file*—this will have a `.bst` extension. You do **not** need to create this; it will be provided.

Style Options

There are six options (for now) for `.bst` files with which to concern yourself. (Most journals provide their own `.bst` files to use.)

<code>plain.bst</code>	sorts according to name of author labels are numbers
<code>alpha.bst</code>	alphanumeric labels sorting by labels
<code>unsrt.bst</code>	references sorted by order of appearance numeric labels
<code>abbrv.bst</code>	much like <code>plain</code> ; abbreviates first names of authors, journals, months
<code>amsplain.bst</code>	AMS version of <code>plain</code>
<code>amsalpha.bst</code>	AMS version of <code>alpha</code>

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Suppose that you already have a `.bib` file. (That's the hardest part.) Let's say that it's called `works.bib`. If you want to use the `amsplain` style, these two lines go at the end of your document environment:

```
\bibliographystyle{amsplain}  
\bibliography{works}
```

Each item in the bibliography database has a *key*, just like with normal bibliographies. We use the `\cite{key}` command in the same way. BibTeX will automatically place all cited works into your list of References.

You can also place non-cited works into your References by using the `\nocite{key}` command in the document.

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Open the first example file (`.tex`). Make sure that the `math233.bib` file is in the same folder as your `.tex` file.

You need to proceed in this order:

1. Build (LaTeX);
2. BibTeX (under the Build menu, then Current File);
3. Build (LaTeX);
4. Build (LaTeX).
5. View.

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Play around with the bibliography style. I wrote the file to call the `amsplain` style, but change this around.

Change it to all three of these and see how each one affects the formatting.

1. `unsrt`
2. `alpha`
3. `abbrv`

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The `.bib` file that stores your bibliography entries is really a text file and is thus editable using TeXnicCenter. (This is what we'll use.) On my own computer, I use JabRef, which displays the database in an Excel-like way, and it makes things easy to add and view. (This is a free program and you may want to check it out on your own machine.)

Bibliography entries start with `@` and then the entry *type*—book, article, etc. Each entry includes information from a number of *fields*. The style you choose dictates which fields are printed (and how things are formatted.)

```
author    journal    publisher
pages     booktitle  chapter
series    title       number
volume    editor     year
```

(This is just a small sample of the available fields.)

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BibTeX takes care of all of the formatting, so you don't need to worry about the punctuation that will be in the bibliography itself.

General syntax:

```
field = {...},
```

Note that the braces and the comma are required.

Many bibliography styles convert titles to lowercase for all entry types. If you want a letter to appear in uppercase, put the word (or the whole title) in braces.

```
author={Mc{M}ahon}
```

or

```
author={{McMahon}}
```

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For the BOOK entry type,

required author (or editor), title, publisher,
year

optional edition, series, volume, number, address,
language

```
@BOOK{diaz,  
  author = {Junot D\'\{i\}az},  
  title = {{The Brief Wonderous Life of Oscar Wao}},  
  publisher = {Riverhead Books},  
  address = {New York},  
  year = {2008},  
}
```

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For the ARTICLE entry type,

required author, title, journal, year, pages

optional volume, number, language, note

```
@article{sharkey,  
  title={{The Ethical Frontiers of Robotics}},  
  author={Sharkey, N.},  
  journal={Science},  
  volume={322},  
  number={5909},  
  pages={1800-1801},  
  year={2008},  
}
```

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There isn't any `@website` entry option for BibTeX. So, we have to make use of another entry type—we'll use `@misc`. In order to do this, make sure that `\usepackage{url}` is in your preamble.

```
@misc{MLK,  
  title={{Martin Luther King, Jr.}},  
  howpublished={\url{http://en.wikipedia.org/  
    wiki/Martin_Luther_King_Jr}},  
  note={accessed on 01/16/2010},  
}
```

Do not wrap the url in your file—this is just a limitation of the slides!

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Add these three entries to the `math233.bib` file that we worked with earlier. Add this line before `\bibliographystyle` within the previous example file:

```
\nocite{diaz,sharkey,MLK}
```

Now go back through the four step process to build a PDF in TeXnicCenter. When you view it, make sure these entries show up properly in the bibliography.

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A few notes:

1. The command `\nocite{*}` within your document will include every entry from your `.bib` file in your bibliography.
2. One of the great advantages of BibTeX is the re-use of references. You can simply re-use your `.bib` file!
3. BibTeX has a learning curve. Be patient and work at it.
4. I have posted some documentation help on our web page. Look on the Reference page.

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Let's practice!

Open the second example file (.pdf) and reproduce it.

You can either add your Bibliography entries to the old .bib file or create a new one. If you create a new one, make sure that you tell TeXnicCenter to save it as the proper file type.

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The `biblatex` package uses BibTeX, but it changes the way the bibliographic entries and citations are processed.

One consequence is that there are a lot more of the widely-used citation/bibliography styles available for use with `biblatex` than previously covered.

Note: This package is relatively new (first written in 2010), so there will likely be a lot more development on it in the next few years. I foresee `biblatex` becoming the dominant way to do bibliographies in \LaTeX over the next 5–10 years, and I’m hoping this will open the door for more in the social sciences and humanities to use \LaTeX .

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To start, you'll need the following in your preamble:

```
\usepackage{biblatex}
```

Also in the preamble:

```
\bibliography{<file>}
```

(Actually, this just needs to be somewhere before where the bibliography itself shows up in your `.tex` file.)

Then, where you want your bibliography to appear, you type:

```
\printbibliography
```

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When loading the package in the preamble, you have several options that can be employed.

```
\usepackage [options] {biblatex}
```

Some of these options include:

<code>style=name</code>	loads bibliography and citation style
<code>bibstyle=name</code>	loads bibliography style
<code>citestyle=name</code>	loads citation style

I have posted a list of the bibliography and citation styles that are available. (I simply made excerpts of the biblatex user's manual.)

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All of the entry types that we learned with BibTeX will still work here. An added (and helpful) entry type is `@online`.

`@online`

Required fields: `author/editor`, `title`, `year/date`, `url`

Also, the `url` field is valid for all entry types now. So if you find a journal article online, you could use the `@article` type with the `url` field.

Any `date` field should be entered in `yyyy-mm-dd` format, and date ranges should be entered as `yyyy-mm-dd/yyyy-mm-dd`.

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I've posted the full list of these, but here are the basics.

Basic syntax of the commands:

```
\command [prenote] [postnote] {keys}
```

<code>\cite</code>	standard citation in square brackets
<code>\parencite</code>	enclose citation in parentheses
<code>\footcite</code>	put citation in footnote
<code>\textcite</code>	to be used in place of subject of sentence

See posted document for more.

Open the third example file (`.tex`), build and view.

Make sure that the `example3.bib` file is in the same folder.

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You'll need this in the preamble:

```
\usepackage[style=mla]{biblatex}
```

All of the standard biblatex citation commands are permissible, but the examples seem to use `\autocite` the most.

Open the fourth example file (`.tex`), build and view.

Make sure that the `samples.bib` file is in the same folder.