

# How to make your bibliography with BibTeX

David J. C. MacKay  
AIMS

<http://www.aims.ac.za/~mackay/tex/>

October 9, 2006 – Version 2.1

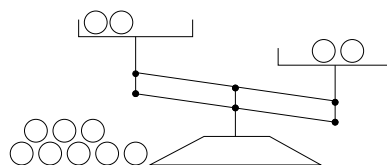
You can read the source of this document in `/home/mackay/tex/citedemo.tex`. My `.bib` file is `/home/mackay/bibs.bib`. Feel free to use these files as templates.

## 1 Overview

BibTeX creates your bibliography from information in a `.bib` file, which describes articles and books in a general format (see figure 1a). You can write the entries in your `.bib` file yourself, or copy them from other people. (BibTeX is widely used, and the internet contains `.bib` entries for most articles and books.) If you edit your `.bib` file using `emacs`, you will find the `emacs` toolbar offers lots of helpful operations for adding and manipulating entries. BibTeX reads your `.bib` file and makes a bibliography entry for each article you cite in your `.tex` file. BibTeX puts these bibliography entries in a `.bbl` file, which L<sup>A</sup>T<sub>E</sub>X then includes in your document. BibTeX automatically produces a bibliography with a consistent style. If you want to change the style of the bibliography, you need only change one line in your `.tex` file. The next time you run BibTeX, it will reread the `.bib` file and reformat the bibliography accordingly.

```
@article{Shannon48,  
  author = {Shannon, C. E.},  
  title = {A Mathematical Theory of Communication},  
  journal="Bell Sys. Tech. J.",  
  volume = 27,  
  pages ="379-423, 623-656",  
  year = 1948  
}
```

(a)



(b)

Figure 1: (a) An example `.bib` entry. Each field (author, title, journal, ...) is surrounded either by braces `{...}` or by quotes `"..."`. (b) The 12-ball weighing problem, illustrating the use of `epsfig`.

### 1.1 Citation styles

Citations in articles and books come in several forms. Some journals require you to use *numerical* citations:

Good error-correcting codes exist [13].

Shannon [13] proved that reliable communication is possible.

Others prefer an *author-year* style:

Good error-correcting codes exist (Shannon, 1948).

Shannon (1948) proved that reliable communication is possible.

We recommend using an author–year style wherever possible because it is more reader-friendly.

We recommend using the `natbib` package because it is compatible with both citation styles. If you write a paper and decide to change your citation style from author–year to numerical, you need to change only one line in your `.tex` file; all the citations will be changed automatically.

## 2 Using natbib in your .tex file

### 2.1 Starting and finishing

Your `.tex` file should have the lines `\usepackage{natbib}` and `\bibliographystyle{abbrvnat}` before `\begin{document}`.

At the end, put the command `\bibliography{your_bib_file}` where you want the bibliography to appear. In my file, for example, I use the command `\bibliography{/home/mackay/bibs.bib}`.

### 2.2 How to cite

There are two types of citation command: `\citet` for *textual* and `\citep` for *parenthetical* citations. The two sentences

Good error-correcting codes exist [Shannon, 1948].

Shannon [1948] proved that reliable communication is possible.

are produced by the following  $\text{\LaTeX}$ :

Good error-correcting codes exist `\citep{Shannon48}`.

`\citet{Shannon48}` proved that reliable communication is possible.

The string `Shannon48` is the *key* used to identify the corresponding `.bib` entry in my `bibs.bib` file, which was shown in figure 1a. This key works in the same way as the *labels* that you use to refer to equations and figures.

Textual citation is sometimes called ‘citing as a noun’. Other citation commands, citation styles, and package options are described in the `natbib` documentation, which you can find by typing `locate natbib` in an xterm, or by searching on Google. You can read the `natbib` manual with this command:

```
xdvi /usr/share/doc/texmf/latex/natbib/natbib.dvi.gz
```

## 3 How to run BibTeX in kile

If you use `kile` as your editing environment for  $\text{\LaTeX}$ , it is very simple: just press the ‘quick build’ button, and `kile` will run the necessary commands for you, giving error messages if it can’t complete the job. (Just so you know what to expect when you press the magic button: It will run  $\text{\LaTeX}$ , then BibTeX, then  $\text{\LaTeX}$  once or twice more.)

## 4 How to run BibTeX by hand

Normally when you use  $\text{\LaTeX}$ , you have to run

```
latex file
```

a couple of times, where `file.tex` is your `.tex` file. Now, you need to run `bibtex` too. The normal sequence is:

```
latex file
bibtex file      - give the name of your .tex file here.
latex file
latex file
```

I use a makefile (`/home/mackay/tex/Makefile`) to run BibTeX and L<sup>A</sup>T<sub>E</sub>X at the appropriate times. After `bibtex` runs, and after `latex` runs for the third time, see if there are any error messages. The most common causes of errors are: incorrectly formatted `.bib` entries in the `.bib` file, and incorrect `\cite` commands in the `.tex` file. Sometimes when you fix an error, L<sup>A</sup>T<sub>E</sub>X remains confused. If so, give L<sup>A</sup>T<sub>E</sub>X a fresh start by removing the `.bbl` and `.aux` files created by BibTeX and L<sup>A</sup>T<sub>E</sub>X.

## References

C. E. Shannon. A mathematical theory of communication. *Bell Sys. Tech. J.*, 27:379–423, 623–656, 1948.