

APPENDIX B

The Bibliography Database



As explained in Section 4.3.1, the `\bibliography` command specifies one or more `bib` files—bibliographic database files whose names have the extension `bib`. `BIBTEX` uses the `bib` file(s) to generate a `bb1` file that is read by `\bibliography` to make the bibliography. This appendix explains how to create `bib` files.

Once you learn to use `BIBTEX`, you will find it easier to let `BIBTEX` make your reference list than to do it yourself. Moreover, you will quickly compile a bibliographic database that eliminates almost all the work of making a bibliography. Other people may have `bib` files that you can copy, or there may be a common database that you can use. Ask your friends or check the *Local Guide* to find out what is available. However, remember that you are responsible for the accuracy of the references in your document. Even published references are notoriously unreliable; don't rely on any bibliography information that has not been carefully checked by someone you trust.

B.1 The Format of the `bib` File

B.1.1 The Entry Format

A `bib` file contains a series of entries like the following:

```
@BOOK{kn:gnus,
  AUTHOR = "Donald E. Knudson",
  TITLE  = "1966 World Gnus Almanac",
  PUBLISHER = {Permafrost Press},
  ADDRESS = {Novosibirsk} }
```

The `@BOOK` states that this is an entry of type *book*. Various entry types are described below. The `kn:gnus` is the *key*, as it appears in the argument of a `\cite` command referring to the entry.

This entry has four *fields*, named `AUTHOR`, `TITLE`, `PUBLISHER`, and `ADDRESS`. The meanings of these and other fields are described below. A field consists of the name, followed by an "=" character with optional space around it, followed by its text. The text of a field is a string of characters, with no unmatched braces, surrounded by either a pair of braces or a pair of " characters. (Unlike in `LATEX` input, `\{` and `\}` are considered to be braces with respect to brace matching.) Entry fields are separated from one another, and from the key, by commas. A comma may have optional space around it.

The outermost braces that surround the entire entry may be replaced by parentheses. As in `LATEX` input files, an end-of-line character counts as a space and one space is equivalent to one hundred. Unlike `LATEX`, `BIBTEX` ignores the case of letters in the entry type, key, and field names, so the entry above could have been typed as follows:

```
@Book(KN:Gnus, author={Donald E. Knudson} ,
      TITLE =      "1966 World
                   Gnus Almanac", ... )
```

However, the case of letters does matter to \LaTeX , so the key should appear exactly the same in all \cite commands in the \LaTeX input file.

The quotes or braces can be omitted around text consisting entirely of numerals. The following two fields are equivalent:

```
Volume = "27"           Volume = 27
```

B.1.2 The Text of a Field

The text of the field is enclosed in braces or double quote characters ("). A part of the text is said to be *enclosed in braces* if it lies inside a matching pair of braces other than the ones enclosing the entire field.

Names

The text of an author or editor field represents a list of names. The bibliography style determines the format in which a name is printed—whether the first name or last name appears first, if the full first name or just the first initial is used, etc. The bib file entry simply tells \BIBTeX what the name is. You should type an author's complete name, exactly as it appears in the cited work, and let the bibliography style decide what to abbreviate.

Most names can be entered in the obvious way, either with or without a comma, as in the following examples.

```
"John Paul Jones"           "Jones, John Paul"
"Ludwig van Beethoven"      "van Beethoven, Ludwig"
```

Only the second form, with a comma, should be used for people who have last names with multiple parts that are capitalized. For example, Per Brinch Hansen's last name is Brinch Hansen, so his name should be typed with a comma:

```
"Brinch Hansen, Per"
```

If you type "Per Brinch Hansen", \BIBTeX will think that "Brinch" is his middle name. "van Beethoven" or "de la Madrid" pose no problem because "van" and "de la" are not capitalized.

"Juniors" present a special problem. People with "Jr." in their name generally precede it with a comma. Such a name should be entered as follows:

```
"Ford, Jr., Henry"
```

BIB_T_E_X is sometimes confused by characters that are produced by L^AT_EX commands—for example, accented characters and characters produced by the commands of Section 3.2.2. It will do the right thing if you put curly braces immediately around a command that produces a character:

```
"Kurt G{\{"o}}del"    "V. S{\o}rensen"    "J. Mart{\'\{i}}"
```

If there are multiple authors or editors, their names are separated by the word **and**. A paper written by Alpher, Bethe, and Gamow has the following entry:

```
AUTHOR = "Ralph Alpher and Bethe, Hans and George Gamow"
```

An **and** separates authors' names only if it is not enclosed in braces. If an **author** or **editor** field has more names than you want to type, just end the list of names with **and others**; the standard styles convert this to the conventional "et al."

Titles

The bibliography style determines whether or not a title is capitalized; the titles of books usually are, the titles of articles usually are not. You type a title the way it should appear if it is capitalized.

```
TITLE = "The Agony and the Ecstasy"
```

You should capitalize the first word of the title, the first word after a colon, and all other words except articles and unstressed conjunctions and prepositions. BIB_T_E_X will change uppercase letters to lowercase if appropriate. Uppercase letters that should not be changed are enclosed in braces. The following two titles are equivalent; the *A* of *Africa* will not be made lowercase.

```
"The Gnats and Gnus of {Africa}"
"The Gnats and Gnus of {A}frica"
```

B.1.3 Abbreviations

Instead of an ordinary text string, the text of a field can be replaced by an *abbreviation* for it. An abbreviation is a string of characters that starts with a letter and does not contain a space or any of the following ten characters:

```
" # % ' ( ) , = { }
```

The abbreviation is typed in place of the text field, with no braces or quotation marks. If `jgg1` is an abbreviation for

```
Journal of Gnats and Gnus, Series~1
```

then the following are equivalent:

```
Journal = jgg1
Journal = "Journal of Gnats and Gnus, Series~1"
```

Some abbreviations are predefined by the bibliography style. These always include the usual three-letter abbreviations for the month: `jan`, `feb`, `mar`, etc. Bibliography styles may contain abbreviations for the names of commonly referenced journals. Consult your *Local Guide* for a list of the predefined abbreviations for the bibliography styles available on your computer.

You can define your own abbreviations by putting a `@string` command in the `bib` file. The command

```
@string{jgg1 = "Journal of Gnats and Gnus, Series~1"}
```

defines `jgg1` to be the abbreviation assumed in the previous example. Parentheses can be used in place of the outermost braces in the `@string` command, and braces can be used instead of the quotation marks. The text must have matching braces.

The case of letters is ignored in an abbreviation as well as in the command name `@string`, so the command above is equivalent to

```
@STRING{JgG1 = "Journal of Gnats and Gnus, Series~1"}
```

A `@string` command can appear anywhere before or between entries in a `bib` file. However, it must come before any use of the abbreviation, so a sensible place for `@string` commands is at the beginning of the file. You can also put your abbreviations in a separate `bib` file, say `abbrev.bib`, and use the command

```
\bibliography{abbrev,...}
```

in your document. A `@string` command in a `bib` file takes precedence over a definition made by the bibliography style, so it can be used to change the definition of an abbreviation such as `Feb`.

B.1.4 Cross-References

Several cited sources may be part of a larger work—for example, different papers in the same conference proceedings. You can make a single entry for the conference proceedings, and refer to that entry in the entries for the individual papers. Fields that appear in the proceedings' entry need not be duplicated in the papers' entries. However, every required field for a paper must be either in its entry or in the referenced entry.

```

@INPROCEEDINGS(beestly-gnats,
  AUTHOR   = "Will D. Beast",
  TITLE    = "Gnats in the Gnus",
  PAGES    = "47--59",
  CROSSREF = "ope:6cpb")
...
@PROCEEDINGS(ope:6cpb,
  TITLE     = "Sixth Conference on Parasites in Bovidae",
  BOOKTITLE = "Sixth Conference on Parasites in Bovidae",
  EDITOR    = "Ann T. L. Ope",
  YEAR      = 1975)

```

The apparently redundant BOOKTITLE field in the proceedings entry is needed to provide the field of that name for the entry of each paper that cross-references it. As explained below, the TITLE field is required to produce a reference-list entry for the proceedings; $\text{BIB}_{\text{T}}\text{E}_{\text{X}}$ ignores the BOOKTITLE field when producing such an entry. The reference list made by $\text{BIB}_{\text{T}}\text{E}_{\text{X}}$ may have an entry for the proceedings that is cited by the entries for the individual papers, even if the proceedings are not explicitly cited in the original document.

A cross-referenced entry like ope:6cpb in the example must come after any entries that refer to it.

B.2 The Entries

B.2.1 Entry Types

When entering a reference in the database, the first thing to decide is what type of entry it is. No fixed classification scheme can be complete, but $\text{BIB}_{\text{T}}\text{E}_{\text{X}}$ provides enough entry types to handle almost any reference reasonably well.

References to different types of publications contain different information; a reference to a journal article might include the volume and number of the journal, which is usually not meaningful for a book. Therefore, database entries of different types have different fields. For each entry type, the fields are divided into three classes:

required Omitting the field will produce an error message and will occasionally result in a badly formatted bibliography entry. If the required information is not meaningful, you are using the wrong entry type. If the required information is meaningful but not needed—for example, because it is included in some other field—simply ignore the warning that $\text{BIB}_{\text{T}}\text{E}_{\text{X}}$ generates.

optional The field's information will be used if present, but can be omitted without causing any formatting problems. A reference should contain any information that might help the reader, so you should include the optional

field if it is applicable. (A nonstandard bibliography style might ignore an optional field when creating the reference-list entry.)

ignored The field is ignored. `BIBTEX` ignores a field that is not required or optional, so you can include any fields you want in a `bib` file entry. It's a good idea to put all relevant information about a reference in its `bib` file entry—even information that may never appear in the bibliography. For example, if you want to keep an abstract of a paper in a computer file, put it in an `abstract` field in the paper's `bib` file entry. The `bib` file is likely to be as good a place as any for the abstract, and it is possible to design a bibliography style for printing selected abstracts.

Misspelling its name will cause a field to be ignored, so check the database entry if relevant information that you think is there does not appear in the reference-list entry.

The following are all the entry types, along with their required and optional fields, that are used by the standard bibliography styles. The meanings of the individual fields are explained in the next section. A particular bibliography style may ignore some optional fields in creating the reference. Remember that, when used in the `bib` file, the entry-type name is preceded by an `@` character.

article An article from a journal or magazine. Required fields: `author`, `title`, `journal`, `year`. Optional fields: `volume`, `number`, `pages`, `month`, `note`.

book A book with an explicit publisher. Required fields: `author` or `editor`, `title`, `publisher`, `year`. Optional fields: `volume` or `number`, `series`, `address`, `edition`, `month`, `note`.

booklet A work that is printed and bound, but without a named publisher or sponsoring institution. Required field: `title`. Optional fields: `author`, `howpublished`, `address`, `month`, `year`, `note`.

conference The same as **inproceedings**, included for compatibility with older versions.

inbook A part of a book, usually untitled; it may be a chapter (or other sectional unit) and/or a range of pages. Required fields: `author` or `editor`, `title`, `chapter` and/or `pages`, `publisher`, `year`. Optional fields: `volume` or `number`, `series`, `type`, `address`, `edition`, `month`, `note`.

incollection A part of a book with its own title. Required fields: `author`, `title`, `booktitle`, `publisher`, `year`. Optional fields: `editor`, `volume` or `number`, `series`, `type`, `chapter`, `pages`, `address`, `edition`, `month`, `note`.

inproceedings An article in a conference proceedings. Required fields: `author`, `title`, `booktitle`, `year`. Optional fields: `editor`, `volume` or `number`, `series`, `pages`, `address`, `month`, `organization`, `publisher`, `note`.

manual Technical documentation. Required field: `title`. Optional fields: `author`, `organization`, `address`, `edition`, `month`, `year`, `note`.

mastersthesis A master's thesis. Required fields: `author`, `title`, `school`, `year`. Optional fields: `type`, `address`, `month`, `note`.

misc Use this type when nothing else fits. Required fields: none. Optional fields: `author`, `title`, `howpublished`, `month`, `year`, `note`.

phdthesis A Ph.D. thesis. Required fields: `author`, `title`, `school`, `year`. Optional fields: `type`, `address`, `month`, `note`.

proceedings The proceedings of a conference. Required fields: `title`, `year`. Optional fields: `editor`, `volume` or `number`, `series`, `address`, `month`, `organization`, `publisher`, `note`.

techreport A report published by a school or other institution, usually numbered within a series. Required fields: `author`, `title`, `institution`, `year`. Optional fields: `type`, `number`, `address`, `month`, `note`.

unpublished A document with an author and title, but not formally published. Required fields: `author`, `title`, `note`. Optional fields: `month`, `year`.

In addition to the fields listed above, each entry type also has an optional `key` field, used in some styles for alphabetizing and forming a `\bibitem` label. You should include a `key` field for any entry with no `author` or `author substitute`. (Depending on the entry type, an `editor` or an `organization` can substitute for an `author`.) Do not confuse the `key` field with the `key` that appears in the `\cite` command and at the beginning of the whole entry, after the entry type.

B.2.2 Fields

Below is a description of all the fields recognized by the standard bibliography styles. An entry can also contain other fields that are ignored by those styles.

address Usually the address of the `publisher` or `institution`. For major publishing houses, omit it entirely or just give the city. For small publishers, you can help the reader by giving the complete address.

annote An annotation. It is not used by the standard bibliography styles, but may be used by other styles that produce an annotated bibliography.

author The name(s) of the author(s), in the format described above.

booktitle The title of a book, a titled part of which is being cited. It is used only for the `incollection` and `inproceedings` entry types; use the `title` field for `book` entries. How to type titles is explained above.

- chapter** A chapter (or other sectional unit) number.
- crossref** The database key of the entry being cross-referenced.
- edition** The edition of a book—for example, “Second”. (The style will convert this to “second” if appropriate.)
- editor** The name(s) of editor(s), typed as indicated above. If there is also an **author** field, then the **editor** field gives the editor of the book or collection in which the reference appears.
- howpublished** How something strange was published.
- institution** The sponsoring institution of a technical report.
- journal** A journal name. Abbreviations may exist; see the *Local Guide*.
- key** Used for alphabetizing and creating a label when the **author** and **editor** fields are missing. This field should not be confused with the key that appears in the `\cite` command and at the beginning of the entry.
- month** The month in which the work was published or, for an unpublished work, in which it was written. Use the standard three-letter abbreviations described above.
- note** Any additional information that can help the reader. The first word should be capitalized.
- number** The number of a journal, magazine, technical report, or work in a series. An issue of a journal or magazine is usually identified by its volume and number; the organization that issues a technical report usually gives it a number; books in a named series are sometimes numbered.
- organization** The organization that sponsors a conference or that publishes a manual.
- pages** One or more page numbers or ranges of numbers, such as 42--111 or 7,41,73--97.
- publisher** The publisher’s name.
- school** The name of the school where a thesis was written.
- series** The name of a series or set of books. When citing an entire book, the **title** field gives its title and the optional **series** field gives the name of a series or multivolume set in which the book was published.
- title** The work’s title, typed as explained above.

type The type of a technical report—for example, “Research Note”. It is also used to specify a type of sectional unit in an **inbook** or **incollection** entry and a different type of thesis in a **mastersthesis** or **phdthesis** entry.

volume The volume of a journal or multivolume book.

year The year of publication or, for an unpublished work, the year it was written. It usually consists only of numerals, such as 1984, but it could also be something like *circa* 1066.