Hour 14

Bibliography with LaTeX

The provision for labeling and referring various numbered materials, like sectional units, environments, foot notes, enumerated items, page numbers, etc., is discussed in the previous relevant Hours. Apart from that, LaTeX can generate very elegant bibliographic references on its own. A list of bibliographic references is generated either directly entering the detail of the references (i.e., the publications or documents to be cited) in the LaTeX input file, or combining LaTeX with its companion program BibTeX. The former provision is discussed in this Hour (the latter is discussed in Hour 15 on page 141).

14.1 Preparation of Bibliographic Reference Database

The bibliographic reference list with LaTeX is generated through the **thebibliography** environment (generally at the end, just before **\end{document}**). The entry of a reference under the **thebibliography** environment consists of two mandatory parts – (1) a user-defined unique citation key, which can be used for citing the reference, and (2) detail of the reference like author, title, journal, volume, pages, etc.

As shown in Table 14.1 on the next page, the citation key of a reference, along with an optional identifier, is inserted through the **\bibitem[]{}** command as **\bibitem[**`ident`**]{**`ckey`**}**, where `ident` is the identifier and `ckey` is the citation key of the reference (without the optional argument of **\bibitem[]{}**, i.e., in the **\bibitem{}** form, references are listed by their serial numbers in Arabic numerals in square brackets). The detail of the reference may be inserted as plain texts or each piece of information through a separate **\newblock** command. Since the **thebibliography** environment processes the details of a reference in simple text-mode without any formatting provision, it is to be instructed explicitly by a user, e.g., '**\newblock {\em** `Introduction to Optimum Design`**}**' for producing '*Introduction to Optimum Design*', or '**\newblock** `The` **ϵ**`-constraint approach`' for producing 'The ϵ-constraint approach'.

D. Datta, *LaTeX in 24 Hours: A Practical Guide for Scientific Writing*,
DOI 10.1007/978-3-319-47831-9_14

The **thebibliography** environment takes a mandatory argument to specify the number of starting spaces (columns) to be reserved for printing the serial numbers or identifiers of the references. For example, 4 number of 0's are used in **\begin{thebibliography}{**0000**}** in Table 14.1 for reserving the first four columns for

Table 14.1 Bibliographic references through the **thebibliography** environment

```
\documentclass{article}
.
.
.
\begin{document}
.
.
.
\begin{thebibliography}{0000}
\bibitem[1989]{Arora-1989}
Arora J. S. {\em Introduction to Optimum Design}. McGraw-Hill, 1989.
%
\bibitem[2001]{Deb-2001}
\newblock Deb K.
\newblock {\em Multi-Objective Optimization using Evolutionary Algorithms}.
\newblock John Wiley \& Sons, 2001.
\end{thebibliography}
%
\end{document}
```

that purpose (other digits or letters can also be used for reserving columns). In the case of identifiers, the longest identifier of all the references is usually used as the argument of **\begin{thebibliography}{}**. Similarly, the serial number of the last reference may be used as the argument of **\begin{thebibliography}{}** in the numbering system.

If the same references are to be included in different documents, those can be stored in a separate file as the database, instead of coding them in every document. In that case, just the name of the reference database file is to be included in a document, using the **\input{}** command, for reading the references stored in it. Such a sample reference database file prepared in the **thebibliography** environment, named as `mybib.bib` (a reference database file is written with `bib` extension), is shown in the left column of Table 14.2 on the following page and its inclusion in a LaTeX input file is shown in the right column. Note that the entry under a **\newblock** command can be split into multiple lines (all texts prior to a **\newblock** command are considered under the previous **\newblock** command).

14.2 Citing Bibliographic References

In the contents of a LaTeX input file, a reference is cited through the **\cite{**`ckey`**}** command, where `ckey` is the unique citation key of the reference (the **\bibitem[]{}** and **\cite{}** commands work much like the **\label{}** and **\ref{}** commands discussed in earlier Hours).

Table 14.2 Bibliographic reference database compatible to the **thebibliography** environment

`.bib` **database file**	**Inclusion of** `.bib` **database file**

`% mybib.bib`
`\begin{thebibliography}{00}`
`\bibitem{Beven-2000}`
`\newblock Beven, K.`
`\newblock {\em Rainfall-Runoff Modelling,`
`The Primer.}`
`\newblock John Wiley \& Sons, Chichester; 2000.`
`%`
`\bibitem{Black-2004}`
`\newblock Black, P. E.`
`\newblock {\em Hamming Distance.}`
`\newblock www.nist.gov/dads/HTML/hammingdist.html;`
`December, 2004.`
`%`
`\bibitem{Schaerf-1999}`
`\newblock Schaerf, A.`
`\newblock A survey of automated timetabling.`
`\newblock {\em Artificial Intelligence Review},`
`1999, 13:87-127.`
`\end{thebibliography}`
	`\documentclass{article}`
	⋮
	`\begin{document}`
	⋮
	`\input{mybib.bib}`
	`\end{document}`

As shown in Table 14.3, references are listed in the output under the heading '`References`' (the heading in the document-class of **article** is '`References`', while it is '`Bibliography`' in the document-class of **book** and **report**). Each reference is marked either by a serial number in Arabic numeral or by its optional identifier, if any, e.g., `[1]` and `[2001]` in Table 14.3. Accordingly, the references are cited in the output either by their serial numbers or identifiers (both the options are shown in the same document of Table 14.3 for illustrative purpose only).

Table 14.3 Citing bibliographic references of the **thebibliography** environment

LaTeX input	**Output**

`Arora~\cite{Arora-1989} may be referred for classical optimization, and Deb~\cite{Deb-2001} for multi-objective evolutionary algorithms.`
`%`
`\begin{thebibliography}{0000}`
`\bibitem{Arora-1989}`
`Arora J. S.`
`{\em Introduction to Optimum Design.}`
`McGraw-Hill, 1989.`
`%`
`\bibitem[2001]{Deb-2001}`
`\newblock Deb K.`
`\newblock Multi-Objective Optimization using Evolutionary Algorithms.`
`\newblock John Wiley \& Sons, 2001.`
`\end{thebibliography}`
	Arora [1] may be referred for classical optimization, and Deb [2001] for multi-objective evolutionary algorithms.
	
	References
	[1] Arora J. S. *Introduction to Optimum Design*. McGraw-Hill, 1989.
	[2001] Deb K. Multi-Objective Optimization using Evolutionary Algorithms. John Wiley & Sons, 2001.

A reference can be cited with an optional note also, for which the **\cite[]{}** command is to be used as **\cite[**`anote`**]{**`ckey`**}**, where `anote` is the optional note and `ckey` is the mandatory citation key. For example, **\cite[**`pages 43--47`**]{**`Datta15`**}** will produce, say `[25, pages 43–47]`.

In many applications, citation markings may need to be superscribed (i.e., to be put as superscripts), instead of putting in the same line with texts. For this, simply the **overcite** package may be loaded in the preamble, which will automatically produce superscribed citations without requiring any more change[1]. However, no note can be put with a superscribed citation, i.e., **\cite[]{}** command will not work properly in the presence of the **overcite** package.

14.3 Compiling thebibliography Based LaTeX Input File

If the bibliography is generated through the **thebibliography** environment, the compilation of the LaTeX input file is to be changed from that addressed in §1.4 on page 4. In this case, it is to be compiled twice using the following two lines of commands:

```
$ latex myarticle
$ latex myarticle
```

where '`myarticle`' is the name of the LaTeX input file with '`tex`' extension. The second '**latex**' command links the generated bibliographic references with LaTeX. The above two lines of commands will produce three files, namely `myarticle.aux`, `myarticle.log` and `myarticle.dvi` (§20.4.1 on page 199 discusses in further detail). As mentioned in §1.4, the '`myarticle.dvi`' file can be viewed in a document viewer or can be used to produce a '`.ps`' or a '`.pdf`' file.

[1] If the bibliographic reference list is produced through the **thebibliography** environment, superscribed citations of the references can be obtained just upon loading the **overcite** package.