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# Local guide to BibLATEX

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# Introduction

**A**LMOST EVERY SCIENTIFIC DOCUMENT contains a reference list or bibliography.<sup>1</sup> Creating such a reference list or bibliography can be a lot of work, but fortunately the L<sup>A</sup>T<sub>E</sub>X document system provides good tools: the `biblatex` package and the `biber` sorting program. Using these, it is relatively simple to

- create a database of all your references,
- automatically select the references cited in a particular document and
- adapt the bibliography to the layout prescribed by the publisher.

This guide will teach you how to use BibL<sup>A</sup>T<sub>E</sub>X.

**A tiny example** (p 3) will provide a minimal demonstration of how to use BibL<sup>A</sup>T<sub>E</sub>X.

**The bibliography database** (p 7) describes how you may construct your own database.

**Using citations** (p 11) explains how to use BibL<sup>A</sup>T<sub>E</sub>X and citations in your documents.

**Various reference styles** (p 15) demonstrates several different bibliography styles.

**Multiple bibliographies** (p 19) are sometimes required; this chapter shows how to achieve that.

**Running auxiliary programs** (p 27) describes the sorting and extraction program `biber` and some alternatives.

**Miscellaneous** (p 29) mentions other information that might be of interest.

---

<sup>1</sup> To be precise, a *reference list* is a list of publications cited in the document, while a *bibliography* is a list of publications relevant to the topic discussed. In this guide, however, we will not distinguish between the two.



# Chapter I

## A tiny example

To demonstrate how easy it is to use Bib<sup>IT</sup>E<sub>X</sub>, we will give an example.

### 1.1 The bibliography database

The first step is to create a bibliography database; Emacs or any similar text editor may be used. In this example, the file is named `mini.bib` and is shown in Figure 1.1.

```
----- [ mini.bib ] -----  
1 @article{Breaklines,  
2     author = {Donald E. Knuth and Michael F. Plass},  
3     title = {Breaking Paragraphs into Lines},  
4     journal = {Software---Practice and Experience},  
5     volume = 11,  
6     year = 1981,  
7     pages = {1119-1184}  
8 }  
  
9 @book{TeX-book,  
10    author = {Donald E. Knuth},  
11    title = {The \TeX{}book},  
12    publisher = {Addison-Wesley},  
13    year = 1984,  
14    isbn = "0-201-03801-3"  
15 }  
  
16 @book{LaTeX2,  
17    author = {Leslie Lamport},  
18    title = {{\LaTeX}: A Document Preparation System:  
19        User's Guide \& Reference Manual},  
20    publisher = {Addison-Wesley},  
21    year = 1994,  
22    edition = 2,  
23    isbn = "0-201-52983-1"  
24 }
```

Figure 1.1: A tiny bibliography database

The database contains three records:

- The first document is an article by Donald Knuth and Michael Plass; it was published in a journal named *Software—Practice and Experience* in 1981. Additional information gives the journal volume and the page numbers.

- The second document is the pivotal book in the  $\text{\TeX}$  world: *The  $\text{\TeX}$ -book* by Donald Knuth. It was published by Addison-Wesley in 1984.
- The final document is the second edition of Leslie Lamport's book about  $\text{\LaTeX}$ .

Each entry starts with a specification of what kind of document we have (“@article” or “@book”). Then comes a unique key that you can choose yourself (“Breaklines”, “TeX-book” and “LaTeX2”); this key is used when you want to refer to the document. After that comes all the information you have on the document.

## 1.2 The article

We can now write our article; the  $\text{\LaTeX}$  code file `demo.tex` is shown in Figure 1.2.<sup>1</sup>

```
1 % --- coding: utf-8 ---
2 \documentclass[12pt,a4paper,norsk]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc, url}
5 \usepackage[babel, csquotes, newcent, textcomp]{}
6 \usepackage[backend=biber, sortlocale=nb_NO, sortcites]{biblatex}

7 \title{Linjebryting i \TeX}
8 \author{Dag Langmyhr\\ Institutt for informatikk\\
9 Universitetet i Oslo\\ E-post: \url{dag@ifi.uio.no}}
10 \addbibresource{mini.bib}

11 \begin{document}
12 \maketitle

13 \section{Grunnlaget}
14 Programmet \TeX{} cite{TeX-book} benytter en
15 avansert algoritme for å dele linjene i et avsnitt.
16 Denne algoritmen er basert på et arbeid som
17 Michael Plass\cite{Breaklines} gjorde
18 sammen med Donald Knuth i 1981.

19 \printbibliography
20 \end{document}
```

---

**Figure 1.2:** A tiny  $\text{\LaTeX}$  document

The following commands are relevant to the bibliography:

- Line #5: The package `csquotes` provides international handling of quote marks and should always be included when you use the `biblatex` package.
- Line #6: We load the package `biblatex` and specify that we will use `biber` for sorting according to Norwegian rules.

---

<sup>1</sup> The specification “% -\*- coding: utf-8 -\*-” in the first line tells the Emacs editor that the file uses the UTF-8 encoding; it is regarded as a comment by  $\text{\LaTeX}$ . You may omit this line if you use a different editor.

- Line #10: The `\addbibresource` command is required to provide the bibliography database file name.
- Lines #14 and #17: We reference documents in the bibliography database with the `\cite` command.
- Line #19: `\printbibliography` indicates where in the document we want the reference list.

## 1.3 The processing

When we run<sup>2</sup> L<sup>A</sup>T<sub>E</sub>X on our document the first time:

```
$ pdflatex demo.tex
```

we are notified that our references (using the `\cite` command) are unknown:

```
LaTeX Warning: Citation 'TeX-book' on page 1
                 undefined on input line 14.
LaTeX Warning: Citation 'Breaklines' on page 1
                 undefined on input line 17.
```

To remedy this, we must run a program called biber:

```
$ biber demo
```

A second L<sup>A</sup>T<sub>E</sub>X run produces a correct document:

```
$ pdflatex demo.tex
```

## 1.4 The final document

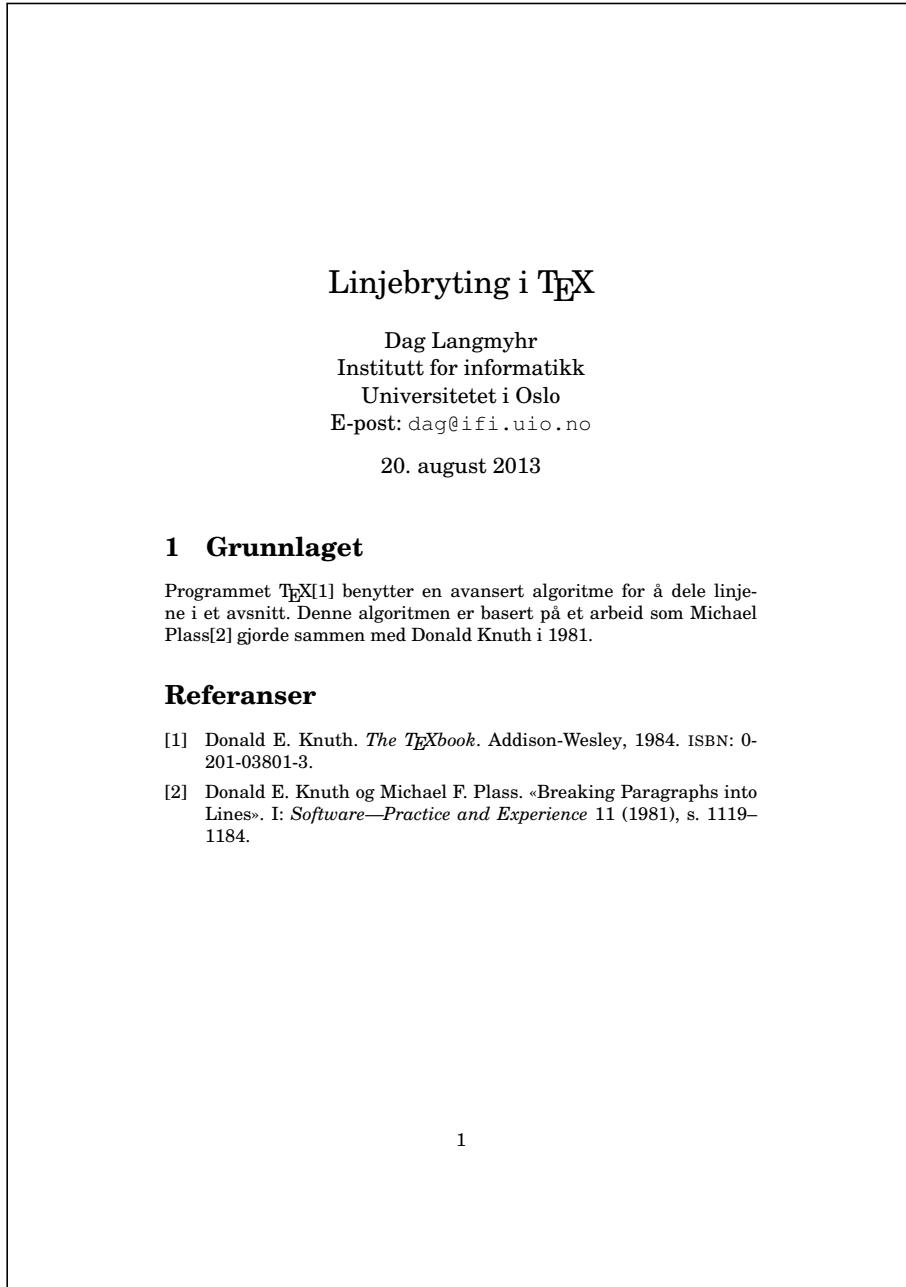
The final document is shown in Figure 1.3 on the following page. We notice in particularly that

- the commands `\cite{key}` have been replaced by the references [1] and [2].
- the command `\printbibliography` has produced the list of references; it contains the two cited works (and only those).
- the entries in the list of references have been alphabetically sorted.
- since the article is in Norwegian, the bibliography has been adapted to this language; for instance, the words "og" and "I".

---

<sup>2</sup> If you process your L<sup>A</sup>T<sub>E</sub>X document on an Ifi computer, we recommend using the ltx program developed locally. It will run pdflatex several times (if required) and also run auxiliary programs like biber automatically. Thus, you just need

```
$ ltx demo
```



**Figure 1.3:** The document generated from Figure 1.2

## Chapter 2

# The bibliography database

As mentioned, a bibliography database is a file containing information on articles, books and other documents. The main principle of this database is that it should contain facts about these documents but nothing about the visual presentation.

Every user should create his or her own Bib<sup>L</sup>A<sub>T</sub>E<sub>X</sub> database of every document you want to reference or may want to reference in the future.

### 2.1 Database structure

A bibliography database is a collection of records, each providing information about one publication. Each record looks like this:

```
@kind {key,  
       info = value,  
       info = value,  
       :  
     }
```

**@kind** specifies what kind of document it is, i.e., whether it is a book, an article, a thesis or whatever. A list of different document kinds can be found in Section 2.2 on the next page.

**key** is the document's key which you use to refer to the document. You choose the key yourself.

**info** indicates an aspect of information regarding this document, like author, title, publisher or something else; for more information, see Section 2.4 on page 9.

**value** is the actual information provided. It is normally quoted in either braces or double quote signs:<sup>1</sup>

```
title = {Breaking Paragraphs into Lines}  
title = "Breaking Paragraphs into Lines"
```

---

<sup>1</sup> To Bib<sup>L</sup>A<sub>T</sub>E<sub>X</sub>, the two forms of quoting are equivalent; you can choose the one you prefer.

Single numbers (like a year) or abbreviations (see Section 2.5 on page 10) should not be quoted.

If the value contains text that *must not be changed* (i.e., L<sup>A</sup>T<sub>E</sub>X commands, capitals, acronyms or similar), you may protect it by an extra set of braces:

```
journal = {{BYTE}}
publisher = {{O'R}eilly}
```

## 2.2 Document kinds

Table 2.1 shows the most common kinds of documents; for a complete list, see [4, Section 2.1].

|                       |   |
|-----------------------|---|
| <b>@article</b>       | A journal article                                     |
| <b>@book</b>          | A published book                                      |
| <b>@booklet</b>       | Like a book, but no publisher                         |
| <b>@inproceedings</b> | Article in conference proceedings                     |
| <b>@manual</b>        | Technical documentation                               |
| <b>@mastersthesis</b> | A master's thesis                                     |
| <b>@misc</b>          | Does not fit any other kind                           |
| <b>@online</b>        | A web page or other online resource                   |
| <b>@phdthesis</b>     | A PhD thesis  |
| <b>@reference</b>     | A dictionary or similar                               |
| <b>@report</b>        | Research report or similar                            |
| <b>@thesis</b>        | Any kind of thesis (use <b>type</b> entry to specify) |
| <b>@unpublished</b>   | Not yet published                                     |

**Table 2.1:** Kinds of documents

## 2.3 Author names

The name of the author or authors is perhaps the most important item of information in a bibliography. Normally, you just list their names with “**and**” between.<sup>2</sup> (The “**and**” will automatically be substituted by a comma or the proper word in the document language; see the example in Figure 1.3 on page 6.)

```
author = {name1 and name2 and name3}
```

If a publication has additional authors whose name you do not know, end the list with “**others**”:

```
author = {name1 and name2 and others}
```

---

<sup>2</sup> If the name contains the word “**and**”, as in *Barnes and Noble*, enclose the “**and**” in extra braces:

```
author = {Barnes {and} Noble}
```

Each name is given in either of these two forms:

- ***First\_name Family\_name***
- ***Family\_name, First\_name***

The two forms are equivalent, but you should use the latter form when the name is more complex, as in<sup>3</sup>

```
author = {Brinch Hansen, Per}
author = {Morgenstierne, Vilhelm Ludvig Herman von Munthe af}
author = {Vallee Poussin, Charles Louis Xavier Joseph de la}
```

You should also use this form if the author's name has a "Jr" part:

```
author = {Ford, Jr., Henry}
```

## 2.4 Additional information

Table 2.2 shows the most common kinds of information given; for a complete list, see [4, Section 2.2]. Supply as much information as possible for each publication; Bib<sup>L</sup>T<sub>E</sub>X will only use what is relevant.

|                    |   |
|--------------------|---|
| <b>author</b>      | The author's name (see Section 2.3 on the preceding page) |
| <b>chapter</b>     | The particular chapter                                    |
| <b>edition</b>     | The edition (as a number)                                 |
| <b>institution</b> | Business or academic institution                          |
| <b>isbn</b>        | International standard book number                        |
| <b>issn</b>        | International standard serial number                      |
| <b>journal</b>     | The title of the journal                                  |
| <b>keyword</b>     | A keyword for the entry (see Section 5.1 on page 19)      |
| <b>location</b>    | Where the publisher or institution resides                |
| <b>month</b>       | The month of publication (as a number or an abbreviation) |
| <b>note</b>        | Additional data   |
| <b>pages</b>       | Which pages   |
| <b>publisher</b>   | The publishing company                                    |
| <b>subtitle</b>    | The document subtitle                                     |
| <b>title</b>       | The document title  |
| <b>type</b>        | The specific type (e.g., of a @thesis)                    |
| <b>url</b>         | A web address   |
| <b>urldate</b>     | When the document was accessed (as yyyy-mm-dd)            |
| <b>version</b>     | A version number (as a number)                            |
| <b>year</b>        | The year of publication                                   |

**Table 2.2:** Kinds of database information

---

<sup>3</sup> Bib<sup>L</sup>T<sub>E</sub>X can handle some complex names, like *Ludwig van Beethoven*, but not all, so it is safest to use the comma form for all such names.

## 2.5 Abbreviations

As the database gets larger, you may find that some of the information is repeated. To save yourself some typing, you can create abbreviations for this information:

```
@string{name = {long name}}
```

When *name* is used in a record, *long name* will be substituted, as you can see demonstrated in Figure 2.1. As shown there, @string definitions should always be placed first in the bib file.

---

**mini2.bib**

```
@string{DEK = {Donald E. Knuth}}
@string{AW = {Addison-Wesley}}

@book{TeX-book,
    author = DEK,
    title = {The {\TeX}book},
    publisher = AW,
    year = 1984,
    isbn = "0-201-03801-3"
}
```

---

**Figure 2.1:** A bibliography with abbreviations

**Note**

Do not quote abbreviations as this will prevent the expansion; in other words,

```
author = DEK    ⇒ Donald E. Knuth
author = {DEK}  ⇒ DEK
```

### 2.5.1 The names of the months

There exist twelve predefined macros for the names of the months:

jan, feb, mar, apr, may, jun, jul, aug, sep, oct, nov, dec

These expand to the name of the month in the proper language.

# Chapter 3

# Using citations

## 3.1 The biblatex package

To utilise Bib<sup>L</sup>TeX you need to import the `biblatex` package:

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

The most common package options are listed in Table 3.1.

|                           |  |
|---------------------------|--|
| <b>backend=biber</b>      | Use biber as backend for sorting (recommended, see Section 6.1 on page 27) |
| <b>backend=bibtex</b>     | Use bibtex as backend for sorting (see Section 6.2 on page 28)             |
| <b>backend=bibtex8</b>    | Use bibtex8 as backend for sorting (see Section 6.3 on page 28)            |
| <b>bibencoding=latin1</b> | Specify bib file encoding (see Section 7.1 on page 29)                     |
| <b>bibencoding=utf8</b>   | Specify bib file encoding (see Section 7.1 on page 29)                     |
| <b>defernumbers</b>       | Safe but slow assignment of reference numbers (see Section 5.1 on page 19) |
| <b>sortcites</b>          | Sort citation sequences  |
| <b>sortlocale=nb_NO</b>   | Sort bibliography according to Norwegian rules. (The default is English.)  |

Table 3.1: `biblatex` package options

### 3.1.1 Typesetting URLs

Normally, Bib<sup>L</sup>TeX uses a `teletype` font when typesetting URLs. We suggest you use a `sans serif` font instead for improved line breaking.

#### Hint

Always add the specification `\urlstyle{sf}` just after the specification `\usepackage[...]{biblatex}`.

## 3.2 The `\addbibresource` command

This command lists all your bibliography files:<sup>1</sup>

```
\addbibresource{mini.bib}  
\addbibresource{education.bib}
```

It must be placed in the preamble, i.e., before `\begin{document}`. Each call contains only one file name, but it may be used repeatedly to name more files. Note that the `.bib` suffix *must be included*.

## 3.3 The `\cite` command

This command is used whenever you want to reference a document:

```
... created by Leslie Lamport.\cite{LaTeX2}
```

You may reference several documents in the same call:

```
... documents on \TeX.\cite{TeX-book,Breaklines}
```

Note that this produces far better output than using the command twice as in “`\cite{TeX-book}\cite{Breaklines}`”.

### Hint

Avoid putting a `\cite` just before a full stop; it looks better if you put it *after* the full stop.

### 3.3.1 Providing additional citation information

It is possible to add information to a citation, both before and after. The full syntax is

```
\cite[prefix info][postfix info]{key}
```

Note that if either the prefix or postfix info looks like a number or a number range (using either standard Hindu-Arabic numbers or Roman numerals), it will be treated as a page number, as shown in table 3.2:

|   |                      |
|---|----------------------|
| <code>\cite{TeX-book}</code>                | [3]                  |
| <code>\cite[44]{TeX-book}</code>            | [3, p. 44]           |
| <code>\cite[Ref]{TeX-book}</code>           | [Ref 3]              |
| <code>\cite[See also][xiv]{TeX-book}</code> | [See also 3, p. xiv] |

**Table 3.2:** Using the `\cite` command

---

<sup>1</sup> The old `\bibliography` command from BibTeX still works, however, in case you prefer to use that. This command (which must also be used in the preamble) may only be called once, but it accepts a comma-separated list of file names.

### 3.3.2 Variant \cite commands

You may use variants of the \cite command to produce particular information in a reference, as shown in Table 3.3.<sup>2</sup>

|                       |   |
|-----------------------|---|
| \citeauthor{TeX-book} | Knuth   |
| \citetitle{TeX-book}  | <i>The T<sub>E</sub>Xbook</i>   |
| \citeyear{TeX-book}   | 1984  |
| \citeurl{biber}       | <a href="http://www.ctan.org/tex-archive/biblio/biber">http://www.ctan.org/tex-archive/biblio/biber</a> |
| \parencite{TeX-book}  | Adds parentheses: (Knuth 1984)  |
| \footcite{TeX-book}   | As a footnote <sup>3</sup>  |

**Table 3.3:** \cite variants

Use the \citeauthor, \citetitle and \citeyear commands to ensure a consistent appearance of your document. This is particularly important when using alphabetic citation styles to achieve a flowing readable text.

The \parencite should be used when the citation style does not provide parenthesis automatically (e.g., alphabetic styles).

The \footcite will put the citation in a footnote in the citation style selected, as shown in footnote no 3.

### 3.3.3 The \nocite command

The \nocite command is used when you want to include an entry in the list of references without actually \cite-ing it in the text.

```
\nocite{biber}
\nocite{*}
```

The \* version will include *all* entries in the bibliography files.

## 3.4 The \printbibliography command

This command is placed wherever you want the bibliography to appear:

```
\printbibliography[options]
```

You may provide options to control the appearance of the bibliography; the most common ones are listed in Table 3.4 on the next page. The Bib<sup>I</sup>T<sub>E</sub>X guide[4, Section 3.6.2] contains a complete list.

---

<sup>2</sup> Note that the \cite variants in Table 3.3 will not generate links when using the hyperref package.

<sup>3</sup> Knuth, *The T<sub>E</sub>Xbook*

|                                  |  |
|----------------------------------|--|
| <b>heading=<i>name</i></b>       | replaces the default header <sup>†</sup>   |
| <b>keyword=<i>keyword</i></b>    | prints only entries with the given keyword (see Section 5.1 on page 19).   |
| <b>notkeyword=<i>keyword</i></b> | does the opposite of the keyword option.   |
| <b>prenote=<i>name</i></b>       | prints a note <sup>‡</sup> before the list of references.  |
| <b>postnote=<i>name</i></b>      | prints a note <sup>‡</sup> after the list of references.   |
| <b>title=<i>text</i></b>         | replaces default header (“References” or “Bibliography”) with the text given.  |
| <b>type=<i>entry type</i></b>    | limits the reference list to entries of the given entry type (book, article, online, ...; see Section 5.1 on page 19). |
| <b>notype=<i>entry type</i></b>  | does the opposite of the type option.  |

<sup>†</sup> Heading names are defined with the `\defbibheading` command; see [4, Section 3.6.2]. A few names like `bibliography` and `subbibliography` are predefined; for an example, see Section 5.2 on page 22.

<sup>‡</sup> Pre- and postnotes are defined using the `\defbibnote` command; see [4, Section 3.6.8].

**Table 3.4:** `\printbibliography` options

## Chapter 4

# Various reference styles

### 4.1 The standard styles

Bib<sup>L</sup>A<sub>T</sub>E<sub>X</sub> comes with a set of standard styles that should cater for most needs.

#### 4.1.1 Standard style “numeric”

The standard style “numeric” uses numeric references. It is the default Bib<sup>L</sup>A<sub>T</sub>E<sub>X</sub> style.

```
\usepackage[backend=biber,style=numeric,sortcites]{biblatex}
```

Programmet T<sub>E</sub>X[1] benytter en avansert algoritme for å dele linjene i et avsnitt. Denne algoritmen er basert på et arbeid som Michael Plass[2] gjorde sammen med Donald Knuth i 1981.

#### Referanser

- [1] Donald E. Knuth. *The T<sub>E</sub>Xbook*. Addison-Wesley, 1984. ISBN: 0-201-03801-3.
- [2] Donald E. Knuth og Michael F. Plass. «Breaking Paragraphs into Lines». I: *Software—Practice and Experience* 11 (1981), s. 1119–1184.

Figure 4.1: Standard style “numeric”

#### Hint

You should always employ the option **sortcites** when you use a numeric style like the standard one – it will sort a sequence like “[9,11,8,3,9]” into “[3,8,9,11]”.

##### 4.1.1.1 Standard style “numeric-comp”

This “compressed numeric” style is similar to the “numeric” style just described, but it will compress successive indices into ranges; for instance,

$$[10,7,12,7,5,2,3,11,4] \Rightarrow [2-5,7,10-12]$$

#### 4.1.2 Standard style “alphabetic”

This style uses references composed of letters from the author's name and the year of publication.

```
\usepackage[backend=biber,style=alphabetic]{biblatex}
```

Programmet TeX[Knu84] benytter en avansert algoritme for å dele linjene i et avsnitt. Denne algoritmen er basert på et arbeid som Michael Plass[KP81] gjorde sammen med Donald Knuth i 1981.

### Referanser

- [Knu84] Donald E. Knuth. *The TeXbook*. Addison-Wesley, 1984. ISBN: 0-201-03801-3.
- [KP81] Donald E. Knuth og Michael F. Plass. «Breaking Paragraphs into Lines». I: *Software—Practice and Experience* 11 (1981), s. 1119–1184.

Figure 4.2: Standard style “alphabetic”

#### 4.1.3 Standard style “authoryear”

This style uses the author's last name in combination with the publication year. You may want to use the \parencite command rather \cite to include a pair of parentheses; see Table 3.3 on page 13.

```
\usepackage[backend=biber,style=authoryear]{biblatex}
```

Programmet TeX (Knuth 1984) benytter en avansert algoritme for å dele linjene i et avsnitt. Denne algoritmen er basert på et arbeid som Michael Plass (Knuth og Plass 1981) gjorde sammen med Donald Knuth i 1981.

### Referanser

- Knuth, Donald E. (1984). *The TeXbook*. Addison-Wesley. ISBN: 0-201-03801-3.
- Knuth, Donald E. og Michael F. Plass (1981). «Breaking Paragraphs into Lines». I: *Software—Practice and Experience* 11, s. 1119–1184.

Figure 4.3: Standard style “authoryear”

#### 4.1.4 Standard style “authortitle”

This style uses the author's last name in combination with the title. You may want to use the \parencite command rather \cite to include a pair of parentheses; see Table 3.3 on page 13.

```
\usepackage[backend=biber,style=authortitle]{biblatex}
```

Programmet  $\text{\TeX}$  (Knuth, *The \TeXbook*) benytter en avansert algoritme for å dele linjene i et avsnitt. Denne algoritmen er basert på et arbeid som Michael Plass (Knuth og Plass, «Breaking Paragraphs into Lines») gjorde sammen med Donald Knuth i 1981.

## Referanser

Knuth, Donald E. *The \TeXbook*. Addison-Wesley, 1984. ISBN: 0-201-03801-3.

Knuth, Donald E. og Michael F. Plass. «Breaking Paragraphs into Lines». I: *Software—Practice and Experience* 11 (1981), s. 1119–1184.

**Figure 4.4:** Standard style “authortitle”



## Chapter 5

# Multiple bibliographies

Most documents have just one bibliography, but sometimes several are required.

### 5.1 Splitting the bibliography

It is easy to split the bibliography and get one for articles, one for books etc. Figure 5.1 on the next page shows an example which incorporates the following changes:

- Line #6: The option `deffernumbers` is needed, as it is more difficult to assign reference numbers when there are several bibliographies.
- Line #21: The `\printbibliography` option `type` specifies that only articles should be included. The title is also changed.
- Line #22: Similarly, the books are listed in the second bibliography.

The result can be seen in Figure 5.2 on page 21.

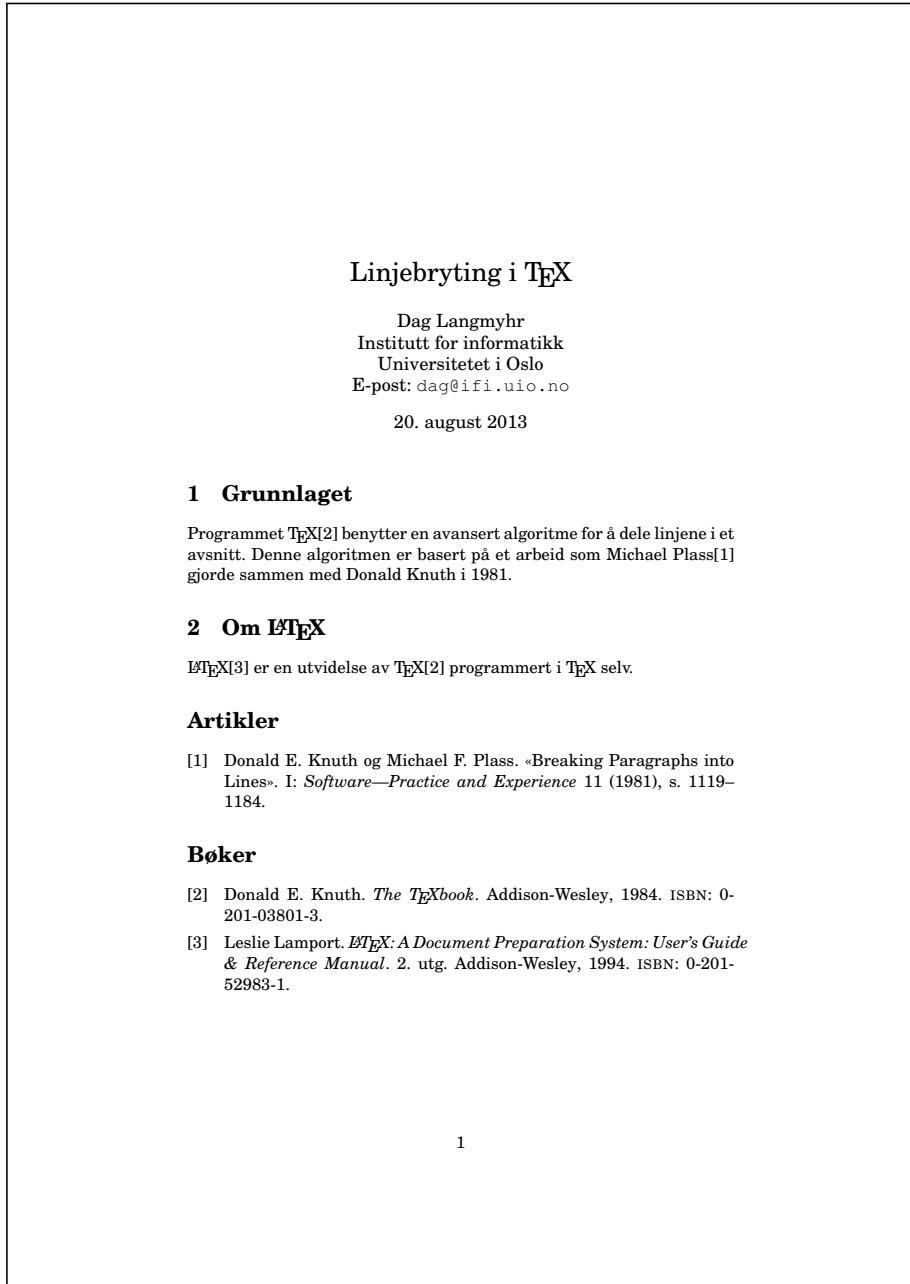
Alternatively, you may split the bibliography according to your own choice. If you add a **keyword** item to your database entries, you can use this as a selection criteria:

```
\printbibliography[keyword=xxx,title=Yyy]
```

```
1 % -*- coding: utf-8 -*-
2 \documentclass[11pt,a4paper,norsk]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc,ur1}
5 \usepackage[babel,csquotes,newcent,textcomp]{}
6 \usepackage[backend=biber,sortlocale=nb_NO,sortcites,defernumbers]{biblatex}
7 \title{Linjebryting i \TeX}
8 \author{Dag Langmyhr\\ Institutt for informatikk\\
9 Universitetet i Oslo\\ E-post: \url{dag@ifi.uio.no}}
10 \addbibresource{mini.bib}
11 \begin{document}
12 \maketitle
13 \section{Grunnlaget}
14 Programmet \TeX{} \cite{TeX-book} benytter en avansert algoritme for å
15 dele linjene i et avsnitt. Denne algoritmen er basert på et arbeid
16 som Michael Plass\cite{Breaklines} gjorde sammen med Donald Knuth i
17 1981.
18 \section{Om \LaTeX}
19 \LaTeX\cite{LaTeX2} er en utvidelse av
20 \TeX\cite{TeX-book} programmert i \TeX{} selv.
21 \printbibliography[type=article,title=Artikler]
22 \printbibliography[type=book,title=Bøker]
23 \end{document}
```

---

**Figure 5.1:** A  $\text{\LaTeX}$  document specifying a split bibliography



**Figure 5.2:** The document generated from Figure 5.1

## 5.2 One bibliography per chapter

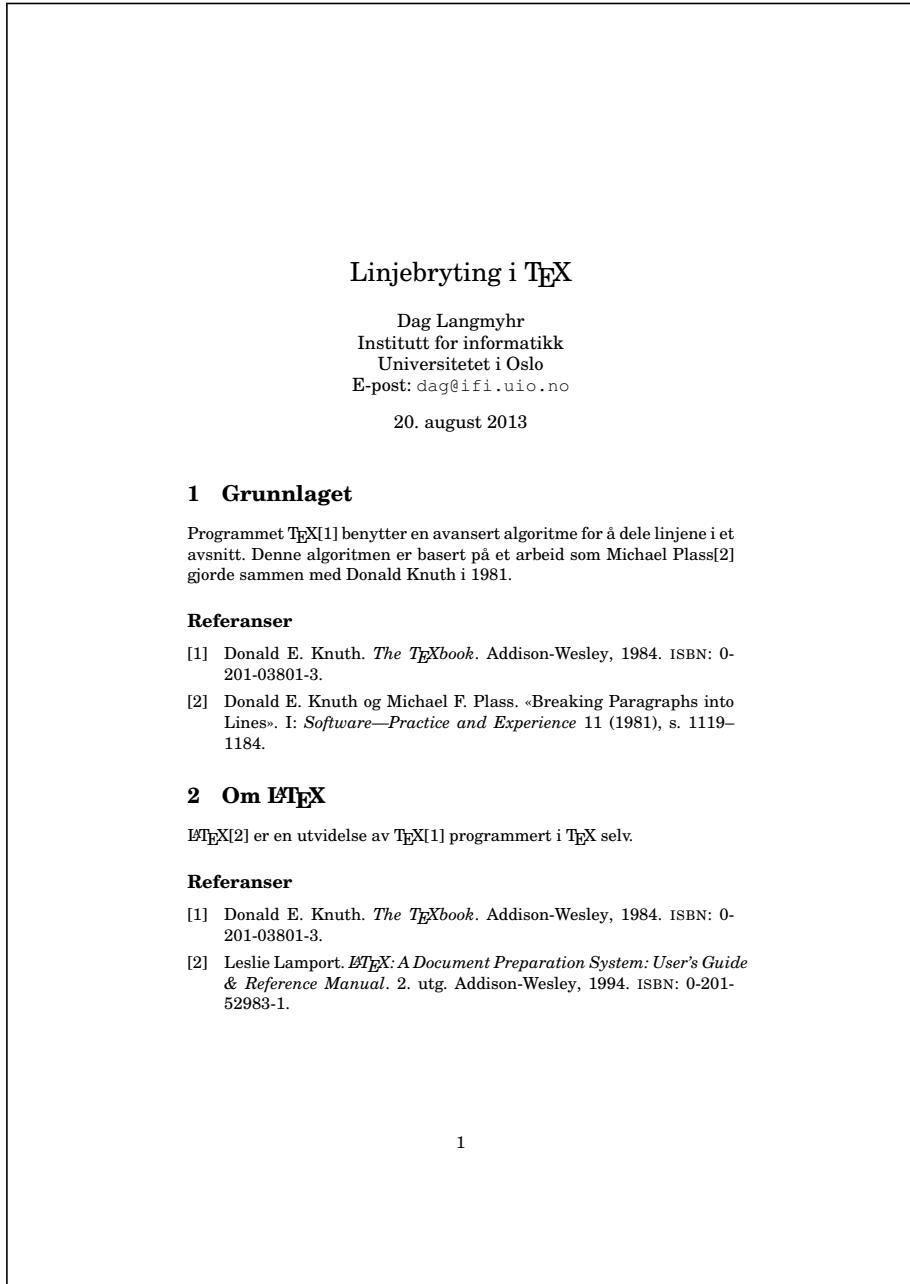
Bib<sup>L</sup>TeX supports having a separate bibliography for each chapter (or any part of the document). Just add a `\begin{refsection}... \end{refsection}` environment around any piece of text, and use a `\printbibliography` in that environment, as shown in Figure 5.3.

- Lines #20 and #27: Since the bibliography is now inside a section, we want a smaller heading.

The result can be seen in Figure 5.4 on the facing page.

```
1 % -*- coding: utf-8 -*-
2 \documentclass[11pt,a4paper,norsk]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc,url}
5 \usepackage[babel,csquotes,newcent,textcomp]{}
6 \usepackage[backend=biber,sortlocale=nb_NO,sortcites]{biblatex}
7 \title{Linjebryting i \TeX{}}
8 \author{Dag Langmyhr\\ Institutt for informatikk\\
9 Universitetet i Oslo\\ E-post: \url{dag@ifi.uio.no}}
10 \addbibresource{mini.bib}
11 \begin{document}
12 \maketitle
13 \section{Grunnlaget}
14 \begin{refsection}
15 Programmet \TeX{} \cite{TeX-book} benytter en
16 avansert algoritme for å dele linjene i et avsnitt.
17 Denne algoritmen er basert på et arbeid som
18 Michael Plass\cite{Breaklines} gjorde
19 sammen med Donald Knuth i 1981.
20 \printbibliography[heading=subbibliography]
21 \end{refsection}
22 \section{Om \LaTeX{}}
23 \begin{refsection}
24 \LaTeX{}\cite{LaTeX2} er en utvidelse av
25 \TeX{}\cite{TeX-book} programmert
26 i \TeX{} selv.
27 \printbibliography[heading=subbibliography]
28 \end{refsection}
29 \end{document}
```

**Figure 5.3:** A <sup>L</sup>TeX document with a bibliography in every chapter



**Figure 5.4:** The document generated from Figure 5.3

### 5.3 Having all bibliographies at the end

A variant of the previous example is to have separate bibliographies for the chapters, but collect them all at the end of the document. This can be achieved by the  $\text{\LaTeX}$  code in Figure 5.5.

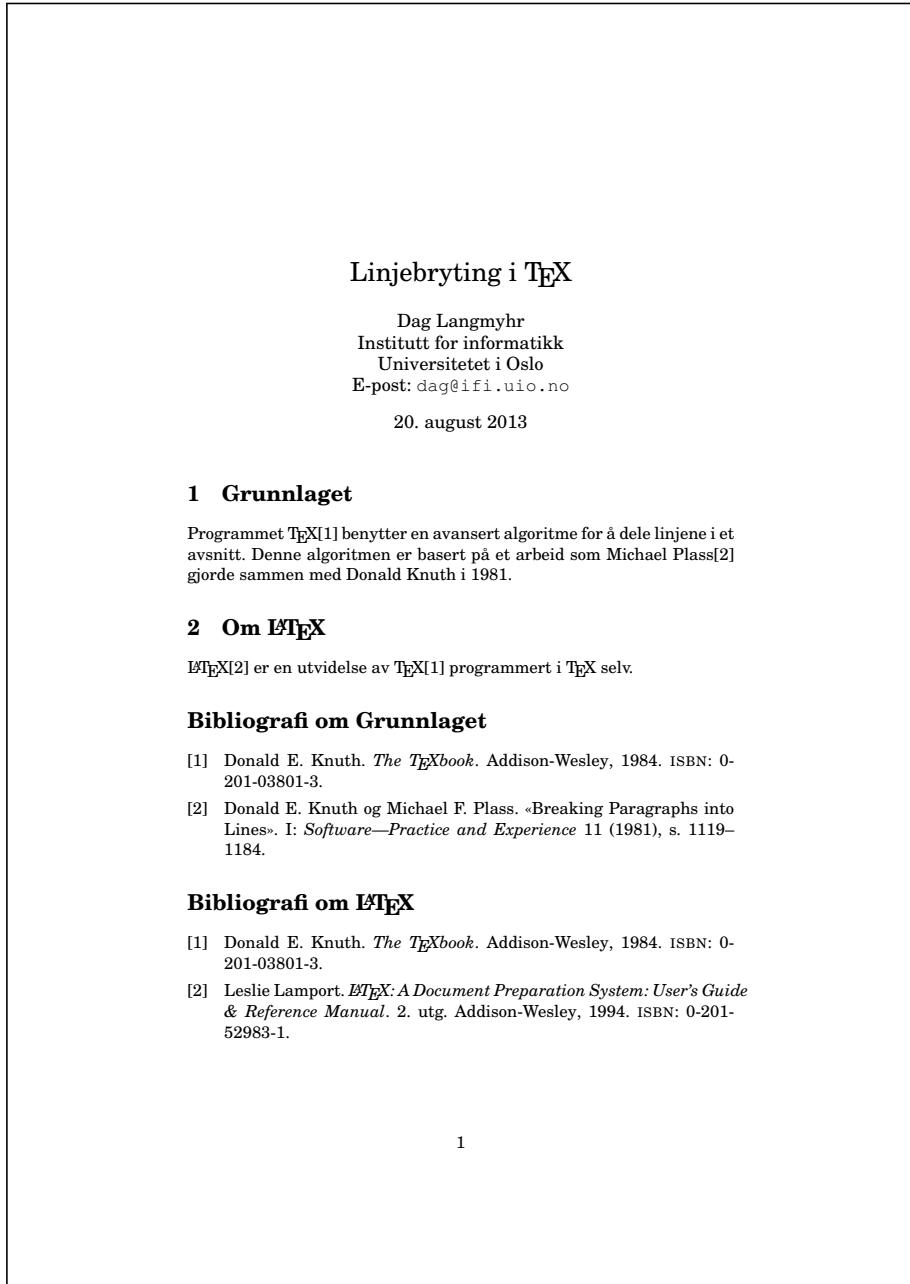
- Lines #14 and #22: Place a  $\backslash\begin{refsection}\dots\backslash\end{refsection}$  around each chapter (or whichever part of the text that requires a separate bibliography).
- Lines #27 and #28: Each call on  $\backslash\printbibliography$  will print one bibliography. To specify a particular refsection, use “ $\text{section}=n$ ”; the refsections are automatically numbered 1, 2, 3, ... Also note that the title should be modified.

Figure 5.6 on the facing page shows the final document.

```
1 % -*- coding: utf-8 -*-
2 \documentclass[11pt,a4paper,norsk]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc, url}
5 \usepackage[babel, csquotes, newcent, textcomp]{}
6 \usepackage[backend=biber, sortlocale=nb_NO, sortcites]{biblatex}
7 \title{Linjebryting i \TeX}
8 \author{Dag Langmyhr\\ Institutt for informatikk\\
9 Universitetet i Oslo\\ E-post: \url{dag@ifi.uio.no}}
10 \addbibresource{mini.bib}
11 \begin{document}
12 \maketitle
13 \section{Grunnlaget}
14 \begin{refsection}
15   Programmet \TeX{} \cite{TeX-book} benytter en
16   avansert algoritme for å dele linjene i et avsnitt.
17   Denne algoritmen er basert på et arbeid som
18   Michael Plass\cite{Breaklines} gjorde
19   sammen med Donald Knuth i 1981.
20 \end{refsection}
21 \section{Om \LaTeX}
22 \begin{refsection}
23   \LaTeX\cite{LaTeX2} er en utvidelse av
24   \TeX\cite{TeX-book} programmert
25   i \TeX{} selv.
26 \end{refsection}
27 \printbibliography[section=1, title=Bibliografi om Grunnlaget]
28 \printbibliography[section=2, title=Bibliografi om \LaTeX]
29 \end{document}
```

---

**Figure 5.5:** A  $\text{\LaTeX}$  document with all chapter bibliographies at the end



**Figure 5.6:** The document generated from Figure 5.5



# Chapter 6

# Running auxiliary programs

The `biblatex` package needs an auxiliary program to extract the cited references and sort the bibliography.<sup>1</sup> There are three such programs available today: `biber`, `bibtex8` and `bibtex`. We strongly recommend using `biber`.

## 6.1 biber

Since `biber` seldom is included in  $\text{\LaTeX}$  distributions (yet!), you will have to install it yourself if you want to run it on your home computer. For more information, see [2].

To run `biber`, just specify the  $\text{\LaTeX}$  file name, but without the file name suffix:

```
$ biber demo
```

### 6.1.1 Strange error messages

When you run `biber`, you may from time to time get a strange error message looking somewhat like this:<sup>2</sup>

```
data source /tmp/par-646167/cache-82c7f501665b9f7e6920cd874f05fd560290894b/
/inc/lib/Biber/LaTeX/recode_data.xml not found in .
```

If that happens, just delete the folder:<sup>3</sup>

```
$ rm -rf /tmp/par-*
```

---

<sup>1</sup> The  $\text{\TeX}$  engine which is the core of a  $\text{\LaTeX}$  implementation does provide a programming language, but this language is poorly suited for this kind of task. An implementation in  $\text{\TeX}$  would have been slow and also have capacity problems with large bibliographies.

<sup>2</sup> The reason you get this error message is that `biber` is written in Perl and it installs its own Perl interpreter in `/tmp`; that is why it takes a tad longer to run `biber` the first time.

<sup>3</sup> The folder `/tmp/par-...` may be called something else on other systems than Linux; delete the folder named in the error message.

## 6.2 bibtex

This program is the original Bib $\text{\TeX}$  processor. It has the advantage of being part of every  $\text{\TeX}$  installation, but it has the severe disadvantage that it is restricted to the ASCII character set. This means that it cannot read files in UTF-8 encoding, nor can it handle letters like  $\text{\AA}$  properly. Use this program only as a last resort.

To run `bibtex`, just specify the  $\text{\TeX}$  file name without the file name suffix:

```
$ bibtex demo
```

## 6.3 bibtex8

This program was implemented to remedy the worst defects of `bibtex`; thus, it can read LATIN-1 files (but not UTF-8 files) and it handles letters like  $\text{\AA}$  properly. It is seldom included in  $\text{\TeX}$  distributions, so you may have to install it yourself; see [1].

To run `bibtex8`, you must specify the CS file, memory size (always use `--wolfgang`<sup>4</sup> which is the maximum) and the  $\text{\TeX}$  file name (without the suffix):

```
$ bibtex8 --csfile CSfile --wolfgang demo
```

(The CS (“code page and sort order”) file provides information on the all the letters in the chosen language and how text is sorted. If you implement `bibtex8` on your home computer, and you want to sort Norwegian names, you have to specify a suitable CS file, or you may e-mail the authors for a copy.)

### Note

The `bibtex8` program is very fussy about line separators and will give strange error messages about

I was expecting an “=”

if you have Windows separators (CR+LF) in a Linux file.

---

<sup>4</sup> We don’t know who this *Wolfgang* is, but the documentation says that the option was “required for Wolfgang’s PhD thesis”.

# Chapter 7

# Miscellaneous

## 7.1 Character encodings

There are still several character encodings being used, and mixing them frequently causes problems. Fortunately, the combination of Bib<sup>L</sup>A<sub>T</sub>E<sub>X</sub> and biber can handle the two most common ones in the Western world: ISO LATIN-1 and UTF-8.

If the L<sup>A</sup>T<sub>E</sub>X source file and the bib file use the same encoding, Bib<sup>L</sup>A<sub>T</sub>E<sub>X</sub> will have no problems. It will know the encoding of the L<sup>A</sup>T<sub>E</sub>X file because of the \usepackage[utf8]{inputenc} specification and will assume that the bib file uses the same.

When the character encodings differ, however, Bib<sup>L</sup>A<sub>T</sub>E<sub>X</sub> will need to be informed of the alternate encoding of the bib file:

```
\usepackage[backend=biber,bibencoding=utf8,...]{biblatex}  
\usepackage[backend=biber,bibencoding=latin1,...]{biblatex}
```

## 7.2 Another bibliography example

In case you are interested, here in Figure 7.1 on the next page is the bibliography file used in this guide.

```
% -*- coding: utf-8 -*-
guide.bib
@manual{biblatex,
    title = "The biblatex package",
    author = "Philipp Lehman and Audrey Boruvka and Philip Kime and Joseph Wright",
    year = 2012,
    version = "2.5",
    url = "http://ctan.org/tex-archive/macros/latex/exptl/biblatex/doc/biblatex.pdf",
    urldate = {2013-02-04} }

@online{bibtex8,
    title = {bibtex8bit --- A fully 8-bit adaptation of BibTeX 0.99},
    author = {Niel Kempson},
    url = {http://www.ctan.org/tex-archive/biblio/bibtex/8-bit},
    urldate = {2012-12-21} }

@online{biber,
    title = {biber --- A BibTeX replacement for users of biblatex},
    author = {Philip Kime and François Charette},
    version = "1.5",
    url = "http://www.ctan.org/tex-archive/biblio/biber",
    urldate = {2013-02-04} }

@article{Breaklines,
    author = {Donald E. Knuth and Michael F. Plass},
    title = {Breaking Paragraphs into Lines},
    journal = {Software---Practice and Experience},
    volume = 11,
    year = 1981,
    pages = {1119-1184}
}

@book{TeX-book,
    author = {Donald E. Knuth},
    title = {The {\TeX}book},
    publisher = {Addison-Wesley},
    year = 1984,
    isbn = "0-201-03801-3"
}

@book{LaTeX2,
    author = {Leslie Lamport},
    title = {{\LaTeX}: A Document Preparation System:
        User's Guide & Reference Manual},
    publisher = {Addison-Wesley},
    year = 1994,
    edition = 2,
    isbn = "0-201-52983-1"
}
```

---

**Figure 7.1:** An example bibliography file

# Bibliography

- [1] Niel Kempson. *bibtex8bit — A fully 8-bit adaptation of BibTeX 0.99*. URL: <http://www.ctan.org/tex-archive/biblio/bibtex/8-bit> (visited on 21/12/2012).
- [2] Philip Kime and François Charette. *biber — A BibTeX replacement for users of biblatex*. Version 1.5. URL: <http://www.ctan.org/tex-archive/biblio/biber> (visited on 04/02/2013).
- [3] Donald E. Knuth. *The TeXbook*. Addison-Wesley, 1984. ISBN: 0-201-03801-3.
- [4] Philipp Lehman et al. *The biblatex package*. Version 2.5. 2012. URL: <http://ctan.org/tex-archive/macros/latex/exptl/biblatex/doc/biblatex.pdf> (visited on 04/02/2013).

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