

UiO : **Department of Informatics**  
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# Local guide to Bib $\text{\LaTeX}$

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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 bibl<sub>A</sub>T<sub>E</sub>X 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 21) are sometimes required; this chapter shows how to achieve that.

**Running auxiliary programs** (p 29) describes the sorting and extraction program biber and some alternatives.

**Miscellaneous** (p 31) 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 1

## A tiny example

To demonstrate how easy it is to use Bib $\text{\LaTeX}$ , 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   journaltitle = {Software---Practice and Experience},
5   volume = 11,
6   year = 1981,
7   pages = {1119-1184}
8 }
9
10 @book{TeX-book,
11   author = {Donald E. Knuth},
12   title = {The {\TeX}book},
13   publisher = {Addison-Wesley},
14   year = 1984,
15   isbn = "0-201-03801-3"
16 }
17
18 @book{LaTeX2,
19   author = {Leslie Lamport},
20   title = {{\LaTeX}: A Document Preparation System: User's
21     Guide \& Reference Manual},
22   publisher = {Addison-Wesley},
23   year = 1994,
24   edition = 2,
25   isbn = "0-201-52983-1"
26 }
```

---

**Figure 1.1:** A tiny bibliography database

The database contains three records:

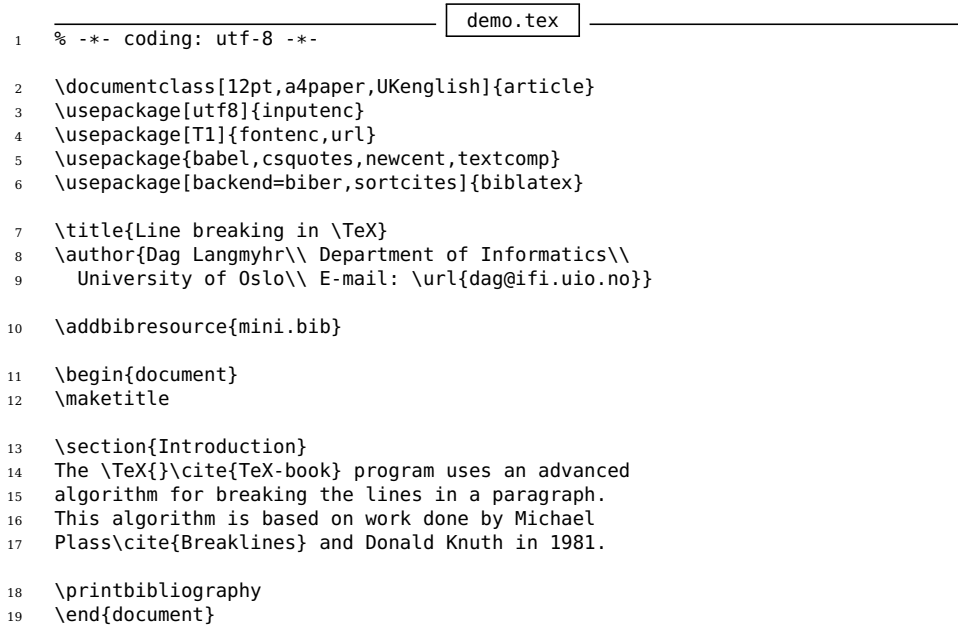
- The first document is an article by Donald Knuth and Michael Plass; it was published in a journal named *Software—Practice and Experience* in 1981. Additional information gives the journal volume and the page numbers.

- The second document is the pivotal book in the  $\text{T}_{\text{E}}\text{X}$  world: *The  $\text{T}_{\text{E}}\text{X}$ -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  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ .

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  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  code file `demo.tex` is shown in Figure 1.2.<sup>1</sup>



```
1 % -*- coding: utf-8 -*-
2 \documentclass[12pt,a4paper,UKenglish]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc,url}
5 \usepackage{babel,csquotes,newcent,textcomp}
6 \usepackage[backend=biber,sortcites]{biblatex}
7
8 \title{Line breaking in \TeX}
9 \author{Dag Langmyhr\ Department of Informatics\
10 University of Oslo\ E-mail: \url{dag@ifi.uio.no}}
11
12 \addbibresource{mini.bib}
13
14 \begin{document}
15 \maketitle
16
17 \section{Introduction}
18 The \TeX{} \cite{TeX-book} program uses an advanced
19 algorithm for breaking the lines in a paragraph.
20 This algorithm is based on work done by Michael
21 Plass \cite{Breaklines} and Donald Knuth in 1981.
22
23 \printbibliography
24 \end{document}
```

**Figure 1.2:** A tiny  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  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. Option `sortcites` will sort lists of citations; see hint on page 15.

---

<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  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ . 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 #18: `\printbibliography` indicates where in the document we want the reference list.

## 1.3 The processing

When we run<sup>2</sup> `LATEX` 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 `LATEX` 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 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.

---

<sup>2</sup> If you process your `LATEX` 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
```

## Line breaking in T<sub>E</sub>X

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6th May 2019

### 1 Introduction

The T<sub>E</sub>X[1] program uses an advanced algorithm for breaking the lines in a paragraph. This algorithm is based on work done by Michael Plass[2] and Donald Knuth in 1981.

### References

- [1] Donald E. Knuth. *The T<sub>E</sub>Xbook*. Addison-Wesley, 1984. ISBN: 0-201-03801-3.
- [2] Donald E. Knuth and Michael F. Plass. 'Breaking Paragraphs into Lines'. In: *Software—Practice and Experience* 11 (1981), pp. 1119–1184.

**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 $\text{\LaTeX}$  database of every document you want to reference or may want to reference in the future. In which folder you put this database file depends on your operating system and your  $\text{\LaTeX}$  distribution.<sup>1</sup> If you are uncertain about this, you can put the file in the same folder as your  $\text{\LaTeX}$  files; this will always work.

### 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](#).

---

<sup>1</sup> On Ifi's Linux computers you place the database file in `~/texmf/bibtex/bib/`.

**value** is the actual information provided. It is normally quoted in either braces or double quote signs:<sup>2</sup>

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

Single numbers (like a year) or abbreviations (see Section 2.5 on the next page) 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:

```
journaltitle = "{BYTE}"
publisher = {{0'R}eilly}
```

## 2.2 Document kinds

Table 2.1 shows the most common kinds of documents; for a complete list, see [5, 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>@misc</b>	Does not fit any other kind
<b>@online</b>	A web page or other online resource
<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; see Table 2.2 on page 10)
<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. (The “and” will automatically be substituted by a comma or the proper word in the document language.)

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

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 on the following page shows the most common kinds of information given; for a complete list, see [5, Section 2.2]. Supply as much information as possible for each publication; Bib<sup>L</sup>A<sup>T</sup>E<sup>X</sup> will only use what is relevant.

## 2.5 Abbreviations

As the database gets larger, you may find that some of the information is repeated. To save yourself typing and also ensure consistency, 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

<sup>3</sup> Bib<sup>L</sup>A<sup>T</sup>E<sup>X</sup> 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.

<b>author</b>	The author's name (see Section 2.3 on page 8)
<b>chapter</b>	The particular chapter
<b>date</b>	The date of publication (as yyyy-mm-dd)
<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>journaltitle</b>	The title of the journal
<b>keywords</b>	A comma-separated list of keywords for the entry (see Section 5.1 on page 21)
<b>location</b>	Where the publisher or institution resides
<b>month</b>	The month of publication (as a number or an abbreviation; see Section 2.5.1)
<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

### 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<sub>La</sub>T<sub>E</sub>X 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 29)
<b>backend=bibtex</b>	Use bibtex as backend for sorting (see Section 6.2 on page 29)
<b>backend=bibtex8</b>	Use bibtex8 as backend for sorting (see Section 6.3 on page 30)
<b>bibencoding=latin1</b>	Specify bib file encoding (see Section 7.1 on page 31)
<b>bibencoding=utf8</b>	Specify bib file encoding (see Section 7.1 on page 31)
<b>defernumbers</b>	Safe but slow assignment of reference numbers (see Section 5.1 on page 21)
<b>maxbibnames=<i>n</i></b>	Maximum number of authors listed in the bibliography (see Section 3.4.1 on page 14)
<b>minbibnames=<i>n</i></b>	Number of authors in abbreviated lists in the bibliography (see Section 3.4.1 on page 14)
<b>sortcites</b>	Sort citation sequences
<b>sortlocale=nb_NO</b>	Sort bibliography according to Norwegian rules. (The default is English.)
<b>style=xxx</b>	Specifies which bibliography style to use (see Section 4 on page 15)

Table 3.1: biblatex package options

#### 3.1.1 Typesetting URLs

Normally, Bib<sub>La</sub>T<sub>E</sub>X 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}`.

**Hint**

If you include the package `hyperref`, the URL will become a clickable link in the PDF file.

## 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 on the next page](#):

---

<sup>1</sup> The old `\bibliography` command from Bib<sub>T</sub><sub>E</sub>X 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.

<code>\cite{TeX-book}</code>	[4]
<code>\cite[44]{TeX-book}</code>	[4, p. 44]
<code>\cite[Ref][]{TeX-book}</code>	[Ref 4]
<code>\cite[See also][xiv]{TeX-book}</code>	[See also 4, p. xiv]

Table 3.2: Using the \cite command

### 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>

<code>\citeauthor{TeX-book}</code>	Knuth
<code>\citetitle{TeX-book}</code>	<i>The T<sub>E</sub>Xbook</i>
<code>\citeurl{biber}</code>	<a href="http://www.ctan.org/tex-archive/biblio/biber">http://www.ctan.org/tex-archive/biblio/biber</a>
<code>\citeyear{TeX-book}</code>	1984
<code>\footcite{TeX-book}</code>	As a footnote <sup>3</sup>
<code>\parencite{TeX-book}</code>	Adds parentheses: (Knuth 1984)
<code>\textcite{TeX-book}</code>	For flowing text: Knuth [4]

Table 3.3: \cite variants

Use the \citeauthor, \citetitle, \citeyear and \textcite 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.

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

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

## 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. The Bib<sub>La</sub>T<sub>E</sub>X guide [5, Section 3.6.2] contains a complete list.

<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 21).
<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 the 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 21).
<b>nottype=<i>entry type</i></b>	does the opposite of the type option.

<sup>†</sup> Heading names are defined with the `\defbibheading` command; see [5, Section 3.6.2]. A few names like `bibliography` and `subbibliography` are predefined; for an example, see Section 5.2 on page 24.

<sup>‡</sup> Pre- and postnotes are defined using the `\defbibnote` command; see [5, Section 3.6.8].

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

### 3.4.1 Number of authors listed

If a list of authors in the bibliography is very long, Bib<sub>La</sub>T<sub>E</sub>X will print only the first ones followed by “et al” (or something similar in the appropriate language), but exactly what is regarded as “very long”? This is controlled by the following two options to `biblatex` (see Table 3.1 on page 11):

**maxbibnames=*n*** specifies that the limit for number of authors is *n*. In other words, if there are more than *n* authors, the list will be abbreviated. The default value for *n* is 3.

**minbibnames=*n*** controls how many authors are listed in an abbreviated list; the default is 1.

As an example, if you want to keep all authors if there are five or fewer, but use just the first three authors and “et al” if there are more than five, you should use the options

```
\usepackage[maxbibnames=5,minbibnames=3,...]{biblatex}
```

# Chapter 4

## Various reference styles

### 4.1 The standard styles

Bib $\text{\LaTeX}$  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 $\text{\LaTeX}$  style.

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

The  $\text{\TeX}$ [1] program uses an advanced algorithm for breaking the lines in a paragraph. This algorithm is based on work done by Michael Plass[2] and Donald Knuth in 1981.

### References

[1] Donald E. Knuth. *The  $\text{\TeX}$ book*. Addison-Wesley, 1984. ISBN: 0-201-03801-3.

[2] Donald E. Knuth and Michael F. Plass. ‘Breaking Paragraphs into Lines’. In: *Software—Practice and Experience* 11 (1981), pp. 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.

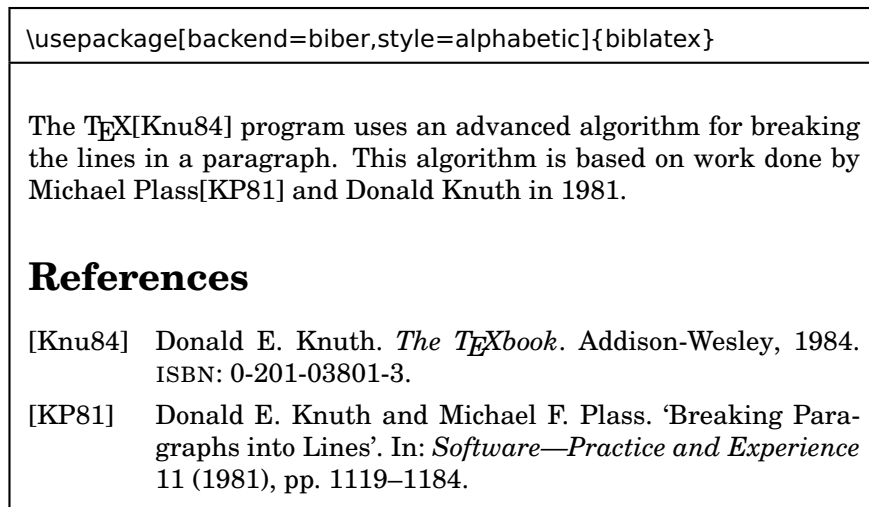


Figure 4.2: Standard style “alphabetic”

#### 4.1.3 Standard style “authoryear”

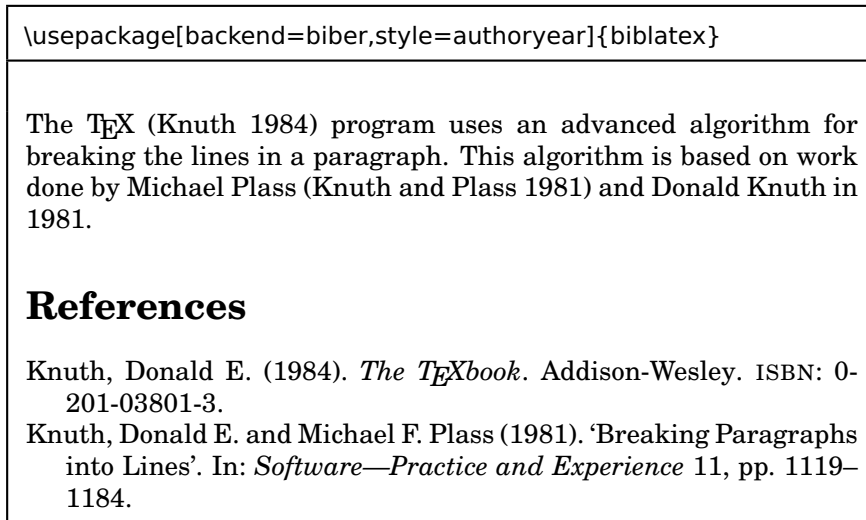
This style uses the author’s last name in combination with the publication year. You may want to use the `\parencite` command rather `\cite` to include a pair of parentheses; see Table 3.3 on page 13.

#### 4.1.4 Standard style “authortitle”

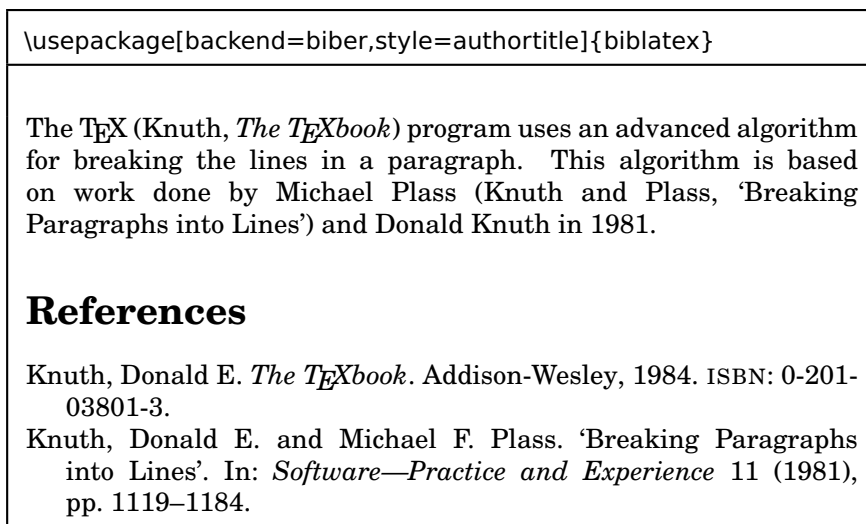
This style uses the author’s last name in combination with the title. You may want to use the `\parencite` command rather `\cite` to include a pair of parentheses; see Table 3.3 on page 13.

## 4.2 Contributed styles

Other people have contributed styles according to various specifications in use.



**Figure 4.3:** Standard style “authoryear”



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

### 4.2.1 The style “apa”

The APA style[6] is defined by the *American Psychological Association* and is widely used in social sciences. Philip Kime[2] has implemented it in Bib $\LaTeX$ , and it is included in most  $\LaTeX$  distributions.

#### Note

You may have to experiment using either `\cite`, `\parencite` or `\textcite` to get the appearance you want.

```
\usepackage[backend=biber,style=apa]{biblatex}
\DeclareLanguageMapping{british}{british-apa}
```

The  $\text{T}_{\text{E}}\text{X}$  program (Knuth, 1984) uses an advanced algorithm for breaking the lines in a paragraph. This algorithm is based on work done by Knuth and Plass (1981).

### References

Knuth, D. E. (1984). *The  $\text{T}_{\text{E}}\text{X}$ book*. Addison-Wesley.  
Knuth, D. E. & Plass, M. F. (1981). Breaking paragraphs into lines. *Software—Practice and Experience*, 11, 1119–1184.

**Figure 4.5:** The “apa” style

#### Note

When using the “apa” style, you *must* specify the bibliography language again using `\DeclareLanguageMapping`, as shown in the example.

Note also that this style will only recognize the languages american, austrian, brazilian, british, dutch, english, french, german, greek, italian, naustrian, ngerman, norsk, norwegian, nynorsk, slovene, spanish and swedish. In particular, it will not recognize UKenglish and USenglish.

If you use an unknown language, you will get an obscure error message about a missing declaration of `\mkbibdateapalongextra`.

### 4.2.2 The style “chicago”

The Chicago style<sup>[7]</sup> is defined by the *University of Chicago press* and is one of the most popular styles today, particularly in books and magazines in history and the social sciences. The Bib $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  implementation is by David Fussner<sup>[1]</sup>.

#### Note

You may have to experiment using either `\cite`, `\parencite` or `\textcite` to get the appearance you want.



```
\usepackage[backend=biber,authordate]{biblatex-chicago}
```

The  $\text{T}_{\text{E}}\text{X}$  program (Knuth 1984) uses an advanced algorithm for breaking the lines in a paragraph. This algorithm is based on work done by Michael Plass and Donald Knuth; see Knuth and Plass (1981).

### **References**

Knuth, Donald E. 1984. *The  $\text{T}_{\text{E}}\text{X}$ book*. Addison-Wesley. ISBN: 0-201-03801-3.

Knuth, Donald E., and Michael F. Plass. 1981. 'Breaking Paragraphs into Lines'. *Software—Practice and Experience* 11:1119–1184.

**Figure 4.6:** The “chicago” style



# 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 following page](#) shows an example which incorporates the following changes:

- Line #6: The option `defernumbers` 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.

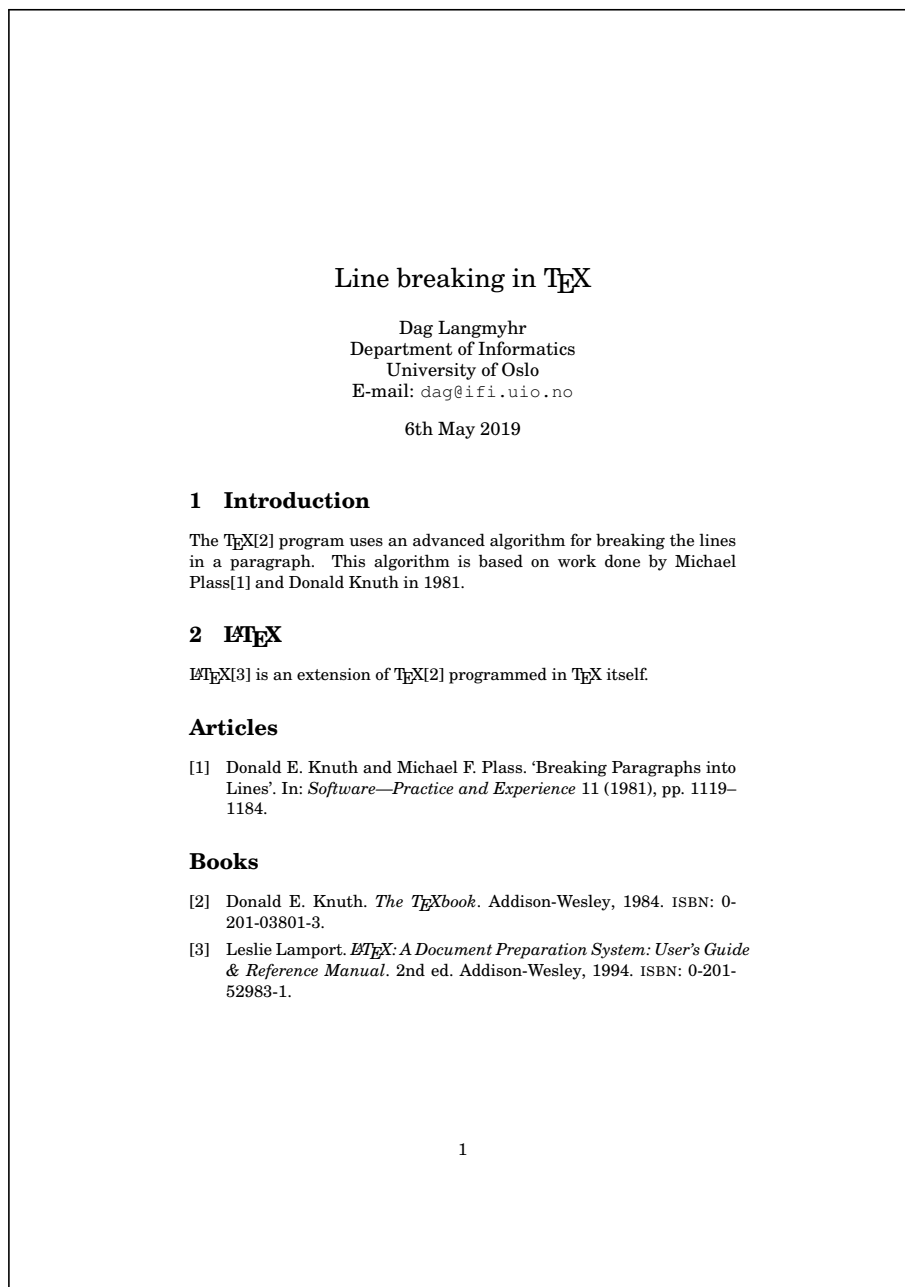
The result can be seen in Figure [5.2 on page 23](#).

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]
```

```
split-demo.tex
1 % -*- coding: utf-8 -*-
2 \documentclass[11pt,a4paper,UKenglish]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc,url}
5 \usepackage{babel,csquotes,newcent,textcomp}
6 \usepackage[backend=biber,sortcites,defernumbers]{biblatex}
7
8 \title{Line breaking in \TeX}
9 \author{Dag Langmyhr\ Department of Informatics\
10 University of Oslo\ E-mail: \url{dag@ifi.uio.no}}
11
12 \addbibresource{mini.bib}
13
14 \begin{document}
15 \maketitle
16
17 \section{Introduction}
18 The \TeX\cite{TeX-book} program uses an advanced
19 algorithm for breaking the lines in a paragraph.
20 This algorithm is based on work done by Michael
21 Plass\cite{Breaklines} and Donald Knuth in 1981.
22
23 \section{\LaTeX}
24 \LaTeX\cite{LaTeX2} is an extension of
25 \TeX\cite{TeX-book} programmed in \TeX{} itself.
26
27 \printbibliography[type=article,title=Articles]
28 \printbibliography[type=book,title=Books]
29 \end{document}
```

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



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

## 5.2 One bibliography per chapter

Bib $\LaTeX$  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.

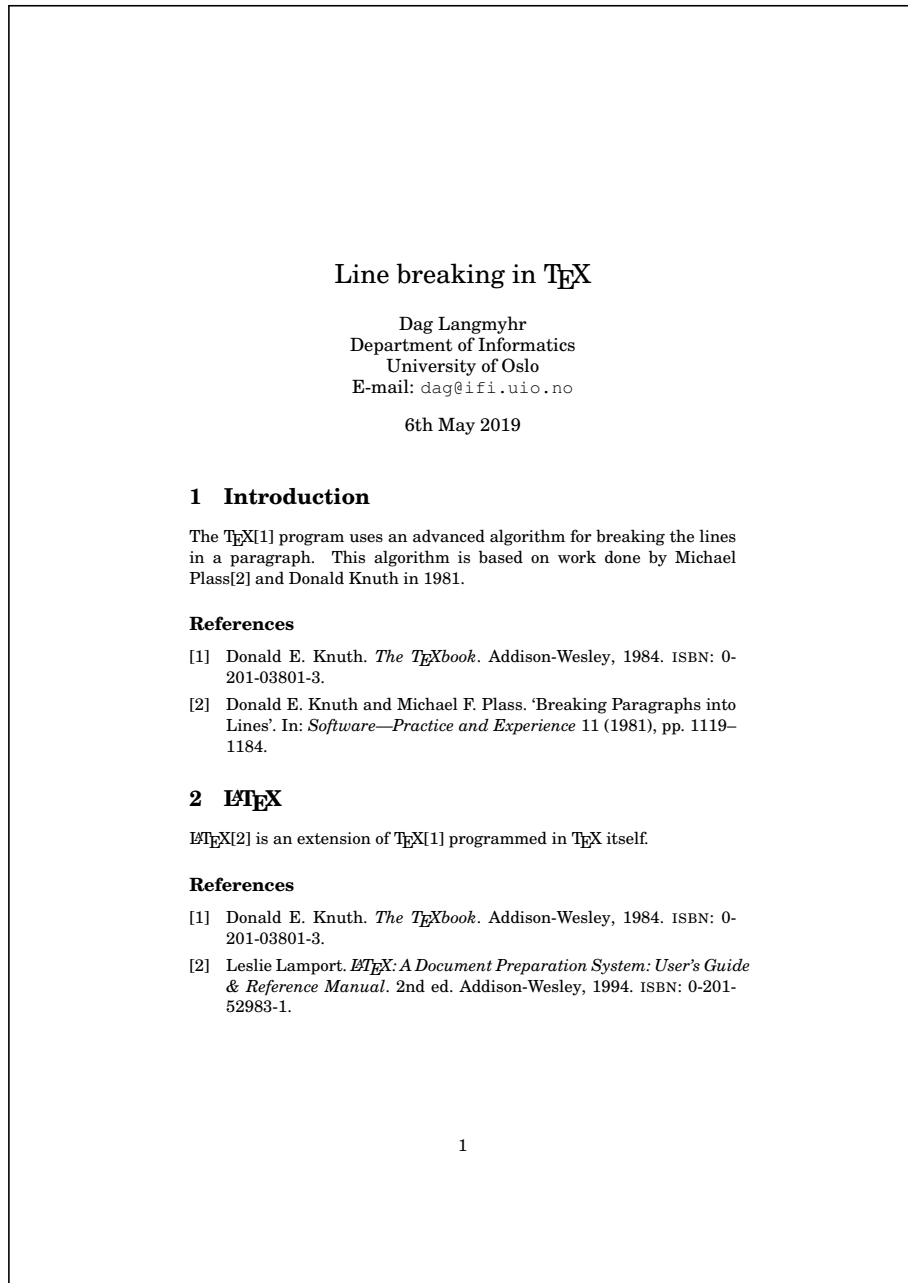
- Lines #19 and #25: Since the bibliography is now inside a section, we want a smaller heading.

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

```

1 % -*- coding: utf-8 -*-
2 \documentclass[11pt,a4paper,UKenglish]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc,url}
5 \usepackage{babel,csquotes,newcent,textcomp}
6 \usepackage[backend=biber,sortcites]{biblatex}
7 \title{Line breaking in \TeX}
8 \author{Dag Langmyhr\ Department of Informatics\
9   University of Oslo\ E-mail: \url{dag@ifi.uio.no}}
10 \addbibresource{mini.bib}
11 \begin{document}
12 \maketitle
13 \section{Introduction}
14 \begin{refsection}
15   The \TeX\cite{TeX-book} program uses an advanced
16   algorithm for breaking the lines in a paragraph.
17   This algorithm is based on work done by Michael
18   Plass\cite{Breaklines} and Donald Knuth in 1981.
19   \printbibliography[heading=subbibliography]
20 \end{refsection}
21 \section{\LaTeX}
22 \begin{refsection}
23   \LaTeX\cite{LaTeX2} is an extension of
24   \TeX\cite{TeX-book} programmed in \TeX{} itself.
25   \printbibliography[heading=subbibliography]
26 \end{refsection}
27 \end{document}
```

**Figure 5.3:** A  $\LaTeX$  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 L<sup>A</sup>T<sub>E</sub>X code in Figure 5.5.

- Lines #14 and #21: Place a `\begin{refsection}... \end{refsection}` around each chapter (or whichever part of the text that requires a separate bibliography).
- Lines #25 and #26: Each call on `\printbibliography` will print one bibliography. To specify a particular refsection, use “`section=n`”; the refsections are automatically numbered 1, 2, 3, ... Also note that the title should be modified.

Figure 5.6 on the next page shows the final document.

end-demo.tex

---

```

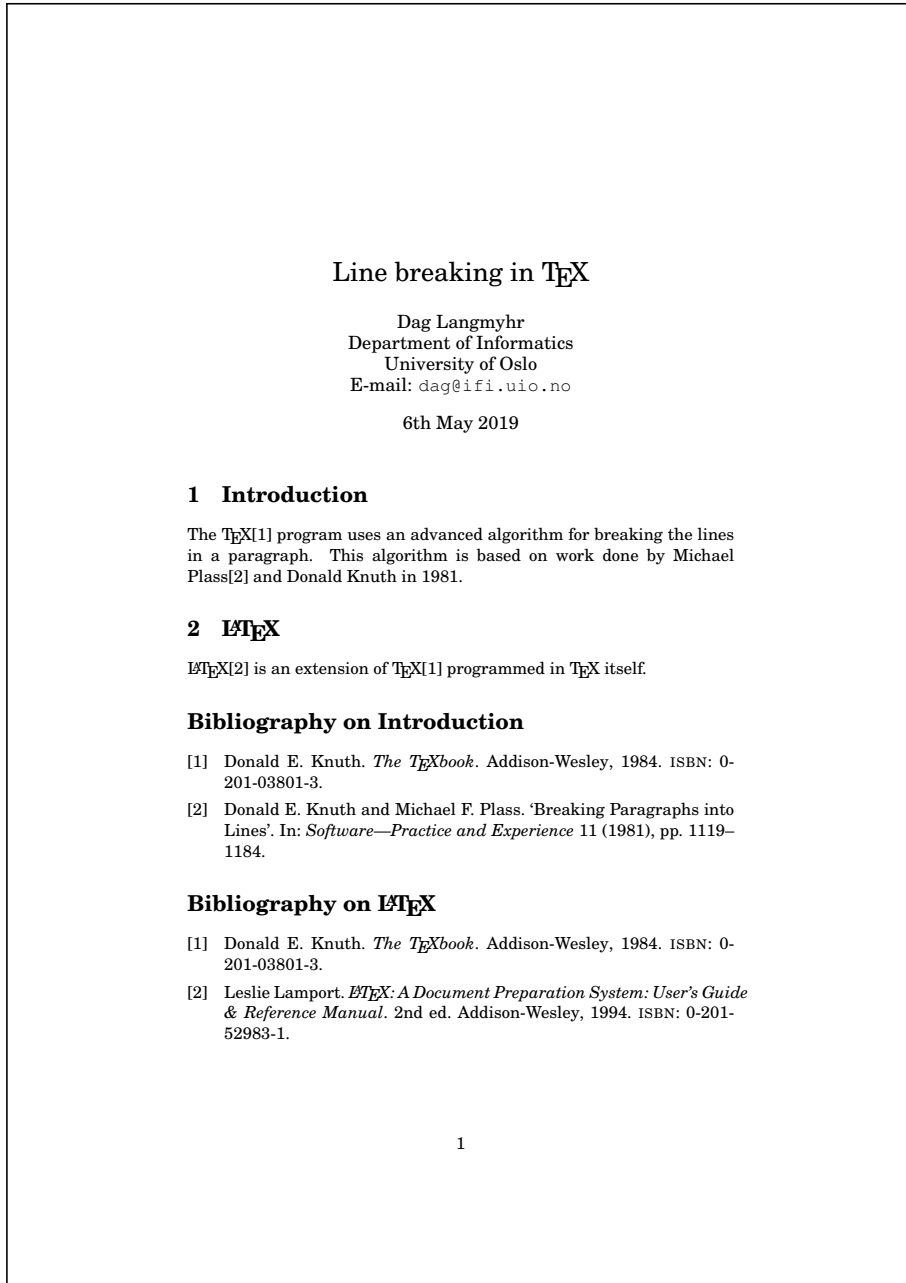
1 % -*- coding: utf-8 -*-
2 \documentclass[11pt,a4paper,UKenglish]{article}
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc,url}
5 \usepackage{babel,csquotes,newcent,textcomp}
6 \usepackage[backend=biber,sortcites]{biblatex}
7 \title{Line breaking in \TeX}
8 \author{Dag Langmyhr\ Department of Informatics\
9   University of Oslo\ E-mail: \url{dag@ifi.uio.no}}
10 \addbibresource{mini.bib}
11 \begin{document}
12 \maketitle
13 \section{Introduction}
14 \begin{refsection}
15   The \TeX{} \cite{TeX-book} program uses an advanced
16   algorithm for breaking the lines in a paragraph.
17   This algorithm is based on work done by Michael
18   Plass \cite{Breaklines} and Donald Knuth in 1981.
19 \end{refsection}
20 \section{\LaTeX}
21 \begin{refsection}
22   \LaTeX \cite{LaTeX2} is an extension of
23   \TeX \cite{TeX-book} programmed in \TeX{} itself.
24 \end{refsection}
25 \printbibliography[section=1,title=Bibliography on Introduction]
26 \printbibliography[section=2,title=Bibliography on \LaTeX]
27 \end{document}

```

---

**Figure 5.5:** A L<sup>A</sup>T<sub>E</sub>X 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

To run biber, just specify the L<sup>A</sup>T<sub>E</sub>X file name, but without the file name suffix:

```
$ biber demo
```

**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-*
```

### 6.2 bibtex

This program is the original BibT<sub>E</sub>X processor. It has the advantage of being part of every L<sup>A</sup>T<sub>E</sub>X installation, but it has the severe disadvantage that it is

---

<sup>1</sup> The T<sub>E</sub>X engine which is the core of a L<sup>A</sup>T<sub>E</sub>X implementation does provide a programming language, but this language is poorly suited for this kind of task. An implementation in T<sub>E</sub>X 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.

restricted to the ASCII character set. This means that it cannot read files in UTF-8 encoding, nor can it handle letters like  $\text{ÆØÅ}$  properly. Use this program only as a last resort.

To run `bibtex`, just specify the  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  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  $\text{ÆØÅ}$  properly.

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

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

(The CS (“code page and sort order”) file provides information on 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 $\LaTeX$  and biber can handle the two most common ones in the Western world: ISO LATIN-1 and UTF-8.

If the  $\LaTeX$  source file and the bib file use the same encoding, Bib $\LaTeX$  will have no problems. It will know the encoding of the  $\LaTeX$  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 $\LaTeX$  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 Figures [7.1](#) to [7.2](#) on pages [32–33](#) is the bibliography file used in this guide.

guide.bib

```
% -*- coding: utf-8 -*-

@manual{biblatex,
  author = {Philipp Lehman},
  title = {The {Bib\LaTeX} Package},
  subtitle = {Programmable Bibliographies and Citations},
  edition = {3.2},
  year = 2015,
  url = {http://mirrors.ctan.org/macros/latex/contrib/biblatex/doc/biblatex.pdf},
  urldate = {2016-02-09},
}

@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 = "2.3",
  year = 2015,
  url = "http://www.ctan.org/tex-archive/biblio/biber",
  urldate = {2016-02-09}}

@article{Breaklines,
  author = {Donald E. Knuth and Michael F. Plass},
  title = {Breaking Paragraphs into Lines},
  journaltitle = {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"
}

@reference{apa6,
  title = "Publication Manual of the
  {American Psychological Association}",
  publisher = "American Psychological Association",
  year = 2009,
  version = 6,
  isbn = "978-1433805592"
}

@online{biblatex-apa,
  title = "{APA Bib\LaTeX{} style}",
  author = "Philip Kime",
  version = "6.8",
  date = "2016-03-03",
  url = "http://mirrors.ctan.org/macros/latex/contrib/biblatex-contrib/biblatex-apa/biblatex-apa.pdf",
  urldate = "2016-03-06"
}
```

---

**Figure 7.1:** An example bibliography file (part 1)

---

...continued

---

```
@reference{chicago,
  title =      "The {C}hicago manual of style",
  publisher =   "The University of {C}hicago press",
  edition =    16,
  month =      aug,
  year =       2010,
  isbn =       "978-0226104201"
}

@online{biblatex-chicago,
  title =      "The biblatex-chicago package",
  author =     "David Fussner",
  version =    "0.9.9g (beta)",
  date =       "2014-08-21",
  url =        "http://ctan.mirrors.hoobly.com/macros/latex/contrib/biblatex-contrib/biblatex-chicago/doc/biblatex-
  urldate =    "2016-03-21"
}
```

---

**Figure 7.2:** An example bibliography file (part 2)





# Bibliography

- [1] David Fussner. *The biblatex-chicago package*. Version 0.9.9g (beta). 21st Aug. 2014. URL: <http://ctan.mirrors.hoobly.com/macros/latex/contrib/biblatex-contrib/biblatex-chicago/doc/biblatex-chicago.pdf> (visited on 21/03/2016).
- [2] Philip Kime. *APA BibL<sup>A</sup>T<sub>E</sub>X style*. Version 6.8. 3rd Mar. 2016. URL: <http://mirrors.ctan.org/macros/latex/contrib/biblatex-contrib/biblatex-apa/biblatex-apa.pdf> (visited on 06/03/2016).
- [3] Philip Kime and François Charette. *biber — A BibT<sub>E</sub>X replacement for users of biblatex*. Version 2.3. 2015. URL: <http://www.ctan.org/tex-archive/biblio/biber> (visited on 09/02/2016).
- [4] Donald E. Knuth. *The T<sub>E</sub>Xbook*. Addison-Wesley, 1984. ISBN: 0-201-03801-3.
- [5] Philipp Lehman. *The BibL<sup>A</sup>T<sub>E</sub>X Package. Programmable Bibliographies and Citations*. 3.2. 2015. URL: <http://mirrors.ctan.org/macros/latex/contrib/biblatex/doc/biblatex.pdf> (visited on 09/02/2016).
- [6] *Publication Manual of the American Psychological Association*. American Psychological Association, 2009. ISBN: 978-1433805592.
- [7] *The Chicago manual of style*. 16th ed. The University of Chicago press, Aug. 2010. ISBN: 978-0226104201.



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