The footbib package*

Eric Domenjoud
Eric.Domenjoud@loria.fr

2007/02/20

Contents

1 General overview 1

2 User interface 2
  2.1 Package options . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
  2.2 Commands to generate the foot bibliography . . . . . . . . . . . . 4
  2.3 Customisation . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 5

3 Known and potential problems 7

4 Implementation 8
  4.1 Identification . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 8
  4.2 Initial setup . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 8
  4.3 Test of the output routine . . . . . . . . . . . . . . . . . . . . . . . 8
  4.4 Package Options . . . . . . . . . . . . . . . . . . . . . . . . . . . . 10
  4.5 Customisation . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 12
  4.6 Some useful definitions . . . . . . . . . . . . . . . . . . . . . . . . . 13
  4.7 Units handling . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 14
  4.8 Commands to handle the references . . . . . . . . . . . . . . . . . . 16
  4.9 Commands to handle the foot bibliography . . . . . . . . . . . . . 18
  4.10 AtBeginDocument, AtEndDocument . . . . . . . . . . . . . . . . . 22
  4.11 Output routine . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 28

1 General overview

This package makes bibliographic references appear as footnotes. It defines a command \footcite which is similar to the \cite command of \LaTeX but the references cited in this way are inserted at the bottom of the pages. This foot

*This file has version number 2.0.7, last revised 2007/02/20.
bibliography does not conflict with the standard one and both may exist simultaneously in a document. The command \cite may still be used to produce the standard bibliography.

The foot bibliography uses its own style and bibliographic database which are specified independently of the standard ones. Any standard bibliography style may be used. If the style does not provide explicit labels (e.g. plain), the references are numbered. The default is to number the references in the order in which they appear in the thebibliography environment. This may be overridden through options which allow the user to define a numbering unit. Then the references will be numbered in the order in which they are cited in the unit and the numbering restarts from 1 in each unit. The numbering unit may be a page, a double page, a chapter, a part or the whole document. Chapter and part may be used only if they are defined by the document class.

The user may also define a citation unit which may be a page, a double page, a chapter, a part or the whole document. The text of a reference will be inserted only once in each citation unit, on the page where the first citation occurs in the unit.

The mechanism used to put a reference only once in each citation unit may require several runs of \LaTeX (usually at least two) before the references find their exact place. If necessary, \LaTeX will issue, near the end of the document, a warning saying

Package footbib Warning: Bibliography not yet stable. Rerun LaTeX.

Using footbib in a document \langle doc\rangle.tex produces a file \langle doc\rangle.fb.aux. One must pass the argument \langle doc\rangle.fb to Bib\LaTeX to produce the bibliography which will be put in the file \langle doc\rangle.fb.bbl. The exact sequence of commands is

\begin{verbatim}
latex \langle doc\rangle
bibtex \langle doc\rangle.fb
latex \langle doc\rangle
latex \langle doc\rangle...
\end{verbatim}

Note: The name \langle doc\rangle.fb.aux might cause some problem on systems which do not allow a double extension in a file name or put a limit on the length of file names. A user command is provided to change it (see section 2.3).

At the beginning of the document, footbib inputs the bibliography from the file \langle doc\rangle.fb.bbl (or the name given by the user). If one wants to include the thebibliography environment in the main document, this may be done with a filecontents environment before the \documentclass command. See the \LaTeX 2ε documentation for more details about this environment.
2 User interface

2.1 Package options

2.1.1 oneside/twoside

The oneside and twoside options affect the behaviour of footbib when either unit (citation or numbering) is the page. In oneside mode, the actual unit is a single page while in twoside mode, the unit is a double page. These options may be used to override a global oneside or twoside option.

2.1.2 citeonce[*]

The citeonce option overrides the default citation unit. footbib puts the text of a reference only once in each citation unit which may be a (double) page, a chapter, a part or the whole document. The default citation unit is the page in oneside mode and the double page in twoside mode. The new citation unit (chapter, part or document) is given as an optional argument between parentheses (citeonce(chapter), citeonce(part) or citeonce(document)). If no argument is supplied, document is assumed. The argument chapter (resp. part) may be used only if the document class defines \chapter (resp. \part). The argument page may also be used but has a somehow special meaning. It defines a citation unit which is not overridden by another citeonce option but instead has a cumulative effect. For instance if one says

\usepackage[twoside,citeonce(page),citeonce(chapter)]{footbib}

then each double page and also each \chapter command starts a new citation unit. This may be useful if one wants a chapter to start a new unit even if it starts on a right page. It is only meaningful in twoside mode in conjunction with another citeonce option. In all other cases, it has no effect.

The citeonce option has a star form citeonce* with the same optional argument. When the star form is used, for each subsequent citation of a reference in the same citation unit but on another (double) page, the text of the reference is not omitted but replaced with a cross reference to the first citation in the same citation unit. The page argument is not available since it would have no effect.

2.1.3 firstcite

The firstcite option affects the way the references are labelled. When the bibliography style does not provide explicit labels, the references are numbered. The default is to assign to each reference a static label which is its order in the thebibliography environment. The label is then the same for all citations of a given reference. The firstcite option causes the references to be numbered dynamically according to the order of their first citations. firstcite takes an optional argument between parentheses firstcite\((unit)\) which defines the numbering unit. The numbering restarts then from 1 in each numbering unit. The argument \(unit\) may take the value page, chapter, part or document. If page is
used, then the numbering unit is a page in _oneside_ mode and a double page in _twoside_ mode. If no argument is supplied, _document_ is assumed.

The effect of several _firstcite_ options is cumulative in the sense that if one says for instance

\usepackage{twoside,firstcite(page),firstcite(chapter)}{footbib}

then each double page _and_ each _chapter_ command starts a new numbering unit. This means that a _chapter_ command starts a new numbering unit even if it is on a right page.

If the bibliography style provides explicit labels, the _firstcite_ option has no effect.

### 2.1.4 crossrefs and nocrossrefs

- **crossrefs**: When an entry in the bibliographic database contains a CROSSREF field, _BibTeX_ includes the cross-referenced entry in the bibliography and puts a _\cite_ command in the entry where the CROSSREF field occurs. If no standard bibliography is produced, _BibTeX_ will complain about an undefined reference. One may generally inhibit this behaviour of _BibTeX_ by invoking it with the _-min-crossrefs=⟨number⟩_ option which tells how many times an entry must be cross-referenced before it is included in the bibliography and replaced with a _\cite_ command. Setting ⟨number⟩ to a large value will generally inhibit the cross-referencing mechanism. However, this option has no effect if the cross-referenced entry is explicitly cited in the document.

The _crossrefs_ option of _footbib_ solves this problem by replacing each _\cite_ command in a foot reference with _\footcite_ (see the description of this command below). The star form _crossrefs*_ replaces the _\cite_ command with a _\footcite*_ which means that the text of the reference is not inserted. It is then the responsibility of the user to insert the text in the right place with a _\footnocite_ command. Of course, standard citation through _\cite_ is not possible anymore in a foot reference when either form of this option is used.

- **nocrossrefs**: A _nocrossrefs_ option is also provided to inhibit this behaviour in case it is not wanted but _crossrefs_ occurs in the global options.

### 2.1.5 split and nosplit

- **split**: The _nosplit_ option tells _footbib_ not to split the references across pages. The _split_ option allows references to be split. _split_ is the default and exists only to allow the user to override a global _nosplit_ option.

### 2.2 Commands to generate the foot bibliography

\footbibliography{⟨file⟩,...}

Defines the list of bibliographic databases for the foot bibliography. This command has the same syntax as the _\bibliography_ command of _LaTeX_.

4
\footbibliographystyle{\{style\}}

Defines the style of the foot bibliography. This command has the same syntax as the \bibliographystyle command of \LaTeX.

\footcite{\{key\},\{key\},...}

Puts the list of labels in the text and the text of the references at the bottom of the page. The text of each reference is inserted at most once in a citation unit, even if it is cited several times.

\footcite*{\{key\},\{key\},...}

Puts the list of labels in the text but does not put the reference at the bottom of the page.

\footnocite{\{key\},\{key\},...}

Puts the reference at the bottom of the page but puts nothing in the text.

Note: The main purpose of the commands \footcite* and \footnocite is to solve the problem of a \footcite occurring inside an environment where the reference will be lost (for instance in a minipage or tabular environment, in a \textbf{\texttt{\textbox{}}}, etc.). In this case, if the reference is not cited otherwise on the same page, it won’t show up at the bottom of the page. It suffices to add a \footnocite command just before or after this environment. The command \footcite{\{key\}} is more or less (but not completely) equivalent to \footcite*{\{key\}}\footnocite{\{key\}}.

2.3 Customisation

\footbibliographyname

The basename of the .aux and .bbl files used for the foot bibliography may be redefined by

\footbibliographyname{\{name\}}

The default value is \jobname.fb\footnote{1} which causes footbib to read the bibliography from \jobname.fb.bbl and to use \jobname.fb.aux as an auxiliary file. This command may be used only in the preamble. The name supplied to \footbibliographyname must be different from the name of the main document.

\footcitelabel
\putfootcitelabel
\footcitelistformat

The list of citations in the text may not be typeset in one step as done by the \cite command of \LaTeX. The reason is that the command which creates the text of the reference must be inserted after each citation. The way (B)\LaTeX handles insertions makes them vanish if they occur in a box. Hence if the command which formats the list of citations puts them in a box, the text is lost and the references do not show up at the bottom of the page. All references could be inserted at once, either before or after the list of citations but if this list gets split across pages, the text of some references could show up on the wrong page. Hence the list is created one piece at a time and the text of the corresponding reference is inserted after each citation. The list of citation is created as follows:

\footnote{1} 1\jobname is a primitive \TeX command which holds the name of the main document.
1) start of list
2) for each citation:
   a) if it is not the first one, separator of citations
   b) label of the reference, to which \texttt{\footcitelabel} is applied
   c) insertion of the text of the reference
3) end of list

The separator of citations is made of two parts: \texttt{⟨sep₁⟩} and \texttt{⟨sep₂⟩}. The command \texttt{\putfootcitelabel} is applied to each component of the list, excepted \texttt{⟨sep₂⟩} which is put as such. Typically, \texttt{⟨sep₂⟩} is a separator which may disappear at a line break, like a penalty or some spacing. That’s why \texttt{\putfootcitelabel} is not applied to it so that it won’t be put in a box. The effect is as follows:

\begin{verbatim}
\putfootcitelabel{⟨start of list⟩}
\putfootcitelabel{\footcitelabel{⟨label 1⟩}}
⟨insertion of the text of reference 1⟩
\putfootcitelabel{⟨sep₁⟩}
⟨sep₂⟩
\putfootcitelabel{\footcitelabel{⟨label 2⟩}}
⟨insertion of the text of reference 2⟩
\putfootcitelabel{⟨sep₁⟩}
⟨sep₂⟩
  :
\putfootcitelabel{\footcitelabel{⟨label n⟩}}
⟨insertion of the text of reference n⟩
\putfootcitelabel{⟨end of list⟩}
\end{verbatim}

Each component of the list may be redefined as follows:

\begin{verbatim}
\renewcommand*{\footcitelabel}[1]{{#1}}
\renewcommand*{\putfootcitelabel}[1]{{#1}}
\footcitelistformat{⟨start of list⟩⟨sep₁⟩⟨sep₂⟩⟨end of list⟩}
\end{verbatim}

Here are some examples of the variations allowed by this mechanism.

\textbf{example 1:} list of citations \textit{a la }\LaTeX{}: [label 1, label 2, …]

\begin{verbatim}
\renewcommand*{\footcitelabel}[1]{{#1}}
\renewcommand*{\putfootcitelabel}[1]{{#1}}
\footcitelistformat{⟨start of list⟩⟨sep₁⟩⟨sep₂⟩⟨end of list⟩}
\end{verbatim}

\textbf{example 2:} ditto but the list may not be cut

\begin{verbatim}
  :
\footcitelistformat{⟨\nobreak⟩}
\end{verbatim}
example 3: the list is raised and the labels are separated only by commas, without any space: [label 1,label 2,...]
\renewcommand*\footcitelabel[1]{#1}
\renewcommand*\putfootcitelabel[1]{\textsuperscript{\normalfont#1}}
\footcitelistformat[,{\penalty1000\relax}]

example 4: ditto, but no brackets around the list of labels: label 1,label 2,...

\footcitelistformat[,{\penalty1000\relax}]

example 5: [label 1], [label 2], ...
\renewcommand*\footcitelabel[1]{[#1]}
\renewcommand*\putfootcitelabel[1]{#1}
\footcitelistformat[,{\penalty1000\relax}]

The default definitions are the ones of example 3 above.

\footbibskip The foot bibliography is separated from the rest of the page by a vertical skip of length \footbibskip in which a horizontal line is drawn by the command \footbibrule. The height of the skip and the horizontal line may be redefined in the preamble by
\setlength{\footbibskip}{...}
\renewcommand{\footbibrule}{...}
CAUTION \footbibrule must take zero vertical space.

\footreflabel The label of the reference is formatted by the macro \footreflabel which takes the label as argument. It may be redefined by \renewcommand*\footreflabel[1]{...}.

\footrefstyle The label and the text of the reference at the bottom of the page are typeset in the style defined by the command \footrefstyle which may be redefined in the preamble by \renewcommand*\footrefstyle{...}. The default definition is \normalfont{\footnotesize}.

\footxref The options citeonce*(⟨unit⟩) tells footbib to replace the text of each reference but the first in each citation unit with a cross-reference to the last place where the full text of the reference appeared. The text of the cross-reference is generated by the command \footxref which takes two arguments: (1) the label and (2) the page of the last full citation. \footxref may be redefined in the preamble by \renewcommand*\footxref[2]{...}.

3 Known and potential problems

• At present, the convergence is not proved. There is no guarantee that the references eventually find their place. However, footbib was used in large documents (several hundreds pages) and such a problem never occurred.
• The foot bibliography is not sorted. The references appear at the bottom of the page in the order in which they are cited on the page.

• A \footcite command may not appear in a floating environment like figure or table.

• If a float is inserted at the bottom of the page, the foot bibliography is put above it, like footnotes.

• The result is not very nice in twocolumn mode. The references should be balanced between the two columns of the page (if there are two) or put in the right column like the package ftnright of Frank Mittelbach does for footnotes.

footbib does not work with most packages which modify the output routine of \LaTeX: multicol, ftnright, floatflt, wrapfig, etc.

• The references must not contain any verbatim environment. But \verb is allowed since it is sometime used to typeset filenames, URL’s, etc.

• The braces must be balanced in the references, excepted the ones that might occur inside the argument of a \verb command. This implies that a reference may not contain say \hbox{. . .} which is otherwise correct in \LaTeX.

• When references are numbered, the space between the label and the reference itself may be too large because the longest label is determined from the argument of \begin{thebibliography}{⟨longest label⟩} and its length is used for all references. If all references on a page have small numbers and the bibliography contains many references (say more than 100), this length is not reliable. The longest label should be deduced from the maximal number of references on a page, but this may not be known at the beginning of the document, at least at the first run. At the second run, the information could be deduces from what was written into the .aux file, provided the \nofiles command was not used (otherwise, the .aux file was not written). When per page numbering is used (option firstcite(page)), the longest label could also be simply initialised to 99 which is not too large and should be enough.

4 Implementation

4.1 Identification

\begin{verbatim}
1 (+package)
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{footbib}[^\filedate\space v\fileversion\space(E.Domenjoud)]
\end{verbatim}

4.2 Initial setup

Some badly behaved packages (written for \LaTeX 2.09) change the catcodes before the beginning of the document and make some commands like \@for unusable.
The catcodes needed in the definitions are set here and restored at the end of the package.

\edef\@tempa{\catcode\string'\string'=\the\catcode\string'\relax}
\def\@tempb#1{\catcode'#1=\the\catcode'#1\relax}
\edef\@tempa{\@tempa \@tempb:\@tempb\?\@tempb=\@tempb\<\@tempb\>\@tempb\+\@tempb\-%}
\expandafter\AtEndOfPackage\expandafter{\@tempa}
\@makeother: \@makeother? \@makeother= \@makeother< \@makeother>
\@makeother+ \@makeother- \@makeother. \@makeother'
\catcode'~\active

4.3 Test of the output routine

If the \LaTeX{} 2\epsilon format is more recent than the package, we test whether the output routine changed. If so, a warning is issued because the user might get unexpected results. The package should work with all previous versions of \LaTeX{} 2\epsilon.

When \texttt{docstrip} is used to extract the package, this code is included only if the `checkoutput' flag is used in addition to `package'.

\begin{verbatim}
\@ifpackagelater{footbib}\fmtversion\@tempswafalse\@tempswatrue
\if@tempswa
\def\@tempa#1#2{\ifx#1#2\else\@tempswatrue\fi}
\@tempswafalse
\@tempa\@specialoutput{\ifnum\outputpenalty>\@Mii\@doclearpage\else
\ifnum\outputpenalty<\@Miii\ifnum\outputpenalty<\@MM\deadcycles\z@
\fi\global\setbox\@holdpg\vbox{\unvbox\@cclv}\else\global\setbox\@holdpg\vbox{\unvbox\@holdpg\unvbox\@cclv\setbox\@tempboxa\lastbox\unskip}\@pagedp\dp\@holdpg\@pageht\ht\@holdpg\unvbox\@holdpg\@next
\@currbox\@currlist{\ifnum\count\@currbox>\z@\advance\@pageht\@pagedp\fi\ifvoid\footins\else\advance\@pageht\ht\footins\advance\@pageht\dp\footins\fi\ifvbox\@kludgeins\ifdim\wd\@kludgeins=\z@\advance\@pageht\ht\@kludgeins\fi\fi\@reinserts\@addtocurcol\else\@reinserts\fi}
\@latexbug\ifnum\outputpenalty<\z@\if@nobreak\nobreak\else\addpenalty\interlinepenalty\fi\fi\fi\fi}
\@tempa\@doclearpage{\ifvoid\footins\ifvbox\@kludgeins{\setbox\@tempboxa\box\@kludgeins}\fi\setbox\@tempboxa\vsplit\@cclv to\z@\unvbox\@tempboxa\setbox\@tempboxa\box\@cclv\@defdeflist{\@botlist}{\@toplist}{\@deferlist}{\@fcolmade}\@addtocurcol\else\@addmarginpar\fi\latexbug\ifnum\outputpenalty<\z@\if@nobreak\nobreak\else\addpenalty\interlinepenalty\fi\fi\fi\fi}
\@doclearpage{\ifvoid\footins\ifvbox\@kludgeins{\setbox\@tempboxa\box\@kludgeins}\fi\setbox\@tempboxa\vsplit\@cclv to\z@
\unvbox\@tempboxa\setbox\@tempboxa\box\@cclv\@defdeflist{\@toplist}{\@botlist}{\@deferlist}{\@fcolmade}\global\let\@otoplist\empty\global\let\@obotlist\empty\global\let\@otbotlist\empty\ifFloat{s\ lost}\ehb\global\let\@oclcolht\empty\@oclcolht\fi\ifDfcol\@oclcolht\@dftcol\@cftcol\@fcolcol\@dftcol\@cftcol\@addtocurcol\fi}
\ifdftcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\@addtocurcol\fi\ifDfcol\@dftcol\@cftcol\@addtocurcol\@dftcol\@cftcol\@addtocurcol\fi\global\let\@oclcolht\empty\@oclcolht\fi\iftxtheheight\begingroup\@dbleftplacement\@makefcolumn\@dblefdeferlist\@whilesw\if@fcolmade\fi\@dblefdeferlist\@whilesw\if@fcolmade\fi\@dbleftplacement\@makefcolumn\@dblefdeferlist\@whilesw\if@fcolmade\fi\@dbleftplacement\@makefcolumn\@dblefdeferlist\@whilesw
\endgroup}\else
\endverbatim

4.4 Package Options

4.4.1 Initial code

First we define some switches which record the user options. The switch `\iffb@twoside` is initialised from the current value of `\if@twoside` because default global options are not passed to packages. If one says `\documentclass{book}` then the document is in `twoside` mode but the packages `don’t know it.

The macro `\fb@checksec` checks whether its first argument (a sectioning command) is defined. If so, the second argument (a list of command) is executed. Otherwise an error is raised and the second argument is discarded. It is called
while processing the options which must patch a sectioning command.

78 \newcommand\fb@checksec[2]{%
79 \ifx#1\@undefined
80 \PackageError{footbib}{Bad option `\CurrentOption'}%  
81 {\footbib}: The current document class does not define `\string#1'}%  
82 \else  
83 \#2%  
84 \fi}

4.4.2 Declaration and processing of options

\begin{verbatim}
oneside
\DeclareOption{oneside}{\fb@twosidefalse}
\DeclareOption{twoside}{\fb@twosidetrue}
fmcite
\DeclareOption{firstcite}{\fb@firstcitetrue}
\DeclareOption{firstcite(page)}{\fb@firstcitetrue\fb@pagenumtrue}
\DeclareOption{firstcite(chapter)}{\fb@firstcitetrue
\fb@checksec\chapter{\def\fb@chapternum{\fb@newnumunit}}}
\DeclareOption{firstcite(part)}{\fb@firstcitetrue
\fb@checksec\part{\def\fb@partnum{\fb@newnumunit}}}
\DeclareOption{firstcite(document)}{\fb@firstcitetrue}
citeonce
\DeclareOption{citeonce}{\fb@citeoncetrue}
\DeclareOption{citeonce(page)}{\fb@pagecitetrue}
\DeclareOption{citeonce(chapter)}{\fb@citeoncetrue
\fb@checksec\chapter{\def\fb@chaptercite{\fb@newciteunit}}}
\DeclareOption{citeonce(part)}{\fb@citeoncetrue
\fb@checksec\part{\def\fb@partcite{\fb@newciteunit}}}
\DeclareOption{citeonce(document)}{\fb@citeoncetrue}
crossrefs
\DeclareOption{crossrefs}{\fb@crossrefstrue\fb@xcrossrefstrue}
\DeclareOption{crossrefs*}{\fb@crossrefstrue\fb@xcrossrefsfalse}
nocrossrefs
\DeclareOption{nocrossrefs}{\fb@crossrefsfalse\fb@xcrossrefsfalse}
split
\DeclareOption{split}{\fb@nosplitfalse}
nosplit
\DeclareOption{nosplit}{\fb@nosplittrue}
\ProcessOptions*
\iffb@pagecite  
\fb@citeoncetruefalse  
\fb@xreffalse  
\fi  
\let\fb@firstcitetrue\@undefined \let\fb@firstcitefalse\@undefined  
\let\fb@citeoncetrue\@undefined \let\fb@citeoncefalse\@undefined
\end{verbatim}

11
At the beginning of the document, the commands `\chapter` and `\part` are patched if necessary so that they start a new citation or numbering unit. This is achieved by adding in front of them the commands `\fb@chaptercite`, `\fb@chapternum`, `\fb@partcite` and `\fb@partnum` defined while processing the options. When a command is patched, a `\clearpage` is added so that a new unit always starts at the top of a page.

```latex
\AtBeginDocument{%
\begingroup
\def\@tempb#1{%\ifx\@tempa\@empty\else\edef\@tempa{%\noexpand\clearpage\@tempa}\fi}%
\let\fb@newnumunit\relax
\let\fb@newciteunit\relax
\edef\@tempa{%\fb@partcite\fb@partnum}%
\@tempb\part
\edef\@tempa{%\fb@chaptercite\fb@chapternum}%
\@tempb\chapter
\endgroup}
```

4.5 Customisation

4.5.1 Basename of the files used for the foot bibliography

The basename of the `.aux` and `.bbl` files is produced by the command `\fb@bibname` which is redefined by a call to `\footbibliographyname` in the preamble.

`\footbibliographyname` first checks that its argument is different from `\jobname`. Since the characters in `\jobname` have catcode 12 (other), the first two commands below yield the argument of `\footbibliographyname` also with catcodes 12 so that it may be compared to `\jobname`.

```latex
\newcommand*{\footbibliographyname}[1]{%\edef\@tempa{#1}\edef\@tempa{\expandafter\strip@prefix\meaning\@tempa}%\edef\@tempb{\jobname}\ifx\@tempa\@tempb\PackageError{footbib}{Bad argument '#1'\on@line}{The name supplied to \string\footbibliographyname' must be different from the name\messagebreak of the current document to avoid conflicts with the standard\par}
```

12
4.5.2 Layout of the list of citations in the text

Here we define the layout parameters for the list of citations in the text. We define an additional macro \fb@putfootcitelabel which is essentially \putfootcitelabel. Only \scriptspace and \mathsurround are set to 0 pt in case \putfootcitelabel involves some math. The modified version is applied to all components of the citation list but \fb@citeend to which the standard version is applied. This avoids unwanted spacing inside the list while allowing some additional spacing after it. The macro \footcitelistformat defines the macros \fb@citestart, \fb@citesep and \fb@citeend used by \fb@cite to build the list of citations in the text.

4.5.3 Style of the foot bibliography

Here are defined all the layout parameters for the foot bibliography. \fb@ins is the insertion number for the foot bibliography. It is not really the right place for its declaration but it is needed to define the user definable parameter \footbibskip.

By the way we set all the parameters for these insertions: 1 to 1 magnification and no limit on the height of the foot bibliography.
4.6 Some useful definitions

\texttt{\textbackslash fb@vedef \textbackslash fb@doactive}  

The keys of the references must be read and written more or less verbatim. Since some packages make some characters permanently active, the catcodes should be changed before reading or writing a key or a list of keys and reset afterward. Unfortunately, in some situations this is not possible because the catcodes have already been attached to the characters. One solution is to scan the key and replace each active character with its non-active equivalent but this is fairly costly and does not work if some active character have been let equal to a non-active one or is hidden in a command occurring in the (list of) key(s). Another solution is to use \texttt{\textbackslash meaning} to get a verbatim copy of the keys but this does not allow them to contain commands like in \texttt{\textbackslash foocite\{mylistofcitations\}}. The method used here consists in redefining the active characters so that their expansion produces the same character with a catcode 12 (other). Then an expansion of the key yields an almost verbatim copy of it. Only then, \texttt{\textbackslash meaning} is used to remove the category code of any special character which might remain in the key like $ or _. This mechanism allows the list of keys to contain itself commands which expand in the normal way. All characters which may both be active in the document and appear in the key of a reference must be treated in this way. Since \TeX allows almost any character in a key, it is safer to consider all characters which may be active in a document. No matter that they indeed are. The command \texttt{\dospecials} usually contains, among other, all such characters, each one escaped and preceded by \texttt{\do}. The \TeX kernel defines \texttt{\dospecials} as

\begin{verbatim}
def\dospecials{\do\␣\do\\do\{\do\#\do\$\do\&\do\%\do\~}
\end{verbatim}

Any package which define new special characters should add them to this list.

An active character is needed to start with. Since ~ was made active at the beginning of the package, it may be safely used for this purpose.

\begin{verbatim}
175 \newcommand*{\fb@doactive[1]}{\lccode'~='#1\lowercase{\def{\string~}}}
176 \newcommand*{\fb@vedef[2]}{%
177 \begin{group}
178 \let\do\fb@doactive \dospecials
179 \edef@tempa{\endgroup\def{\noexpand#1}{#2}}%
180 @tempa
181 \edef#1{\expandafter\strip@prefix\meaning#1}}
\end{verbatim}

\texttt{\fb@namexdef} is similar to the \texttt{@namedef} command of \LaTeX but uses \texttt{xdef} instead of \texttt{def}

\begin{verbatim}
182 \newcommand*{\fb@namexdef[1]}{\expandafter\xdef{\expandafter\csname#1\endcsname}}
\end{verbatim}

\texttt{\fb@auxout} is the auxiliary file used to record information about citations and as input to \TeX. The commands \texttt{\footbibliographystyle} and \texttt{\footbibliography} do an immediate \texttt{\write} to this file. However, since these commands may be used in the preamble, this file might not yet be open for writing at the time they are used. We must wait until the end of the preamble before opening the auxiliary file to give the user a chance to define its name with \texttt{\footbibliographypname}. 

14
Therefore, we define the macro \texttt{\fb@writeaux} which postpones the write until the
beginning of the document. It is somehow a \emph{delayed immediate write} which means
that the write will be performed as soon as possible, i.e. as soon as the auxiliary
file is open for writing. This definition is temporary and will be changed to a \texttt{true}
immediate write by \texttt{\AtBeginDocument}.

\begin{verbatim}
\newwrite\fb@auxout
\newcommand*{\fb@writeaux}[2]{%
  \AtBeginDocument{%
    \if@filesw
      \immediate\write\fb@auxout{\string#1{#2}}%
    \fi}}
\end{verbatim}

4.7 Units handling

We handle 3 counters: the \emph{numbering unit} counter (\texttt{\fb@numunit}), the
\emph{citation unit} counter (\texttt{\fb@citeunit}) and the \emph{cross-referencing unit} counter
(\texttt{\fb@xrefunit}). This last counter is meaningful only if a \texttt{citeonce*} option was
used. It essentially counts pages in \texttt{oneside} mode and double pages in \texttt{twoside}
mode. However, if the citation unit is a chapter (resp. a part), each \texttt{chapter}
(resp. \texttt{part}) command also increments this counter.

\begin{verbatim}
\newcount\fb@numunit \fb@numunit\@ne
\newcount\fb@citeunit \fb@citeunit\@ne
\newcount\fb@xrefunit \fb@xrefunit\@ne
\fb@newcunit
\fb@newnumunit
\end{verbatim}

The macros \texttt{\fb@ref...unit} and \texttt{\fb@refpage} hold the units and the page of the
current citation.

\begin{verbatim}
\fb@refcunit
\fb@refxrefunit
\fb@refpage
\fb@theunits
\fb@getunits
\end{verbatim}

The macros \texttt{\fb@newcunit} and \texttt{\fb@newnumunit} are called by the patched
versions of \texttt{\part} or \texttt{\chapter} to start a new citation or numbering unit. The
patched sectioning unit also forces a page break so that a unit always starts at the
top of a page.

\begin{verbatim}
\fb@newcunit
\fb@newnumunit
\end{verbatim}
Each time the page counter is incremented, i.e. at the top of a new page, the macro \texttt{\@checkpage} updates the units counters if necessary. We first check whether the current page is a right page. In \texttt{oneside} mode, it is never the case. In \texttt{twoside} mode, it is the case if its number is \texttt{\@prevpage + 1} and is odd, where \texttt{\@prevpage} is a counter which holds the number of the last shipped out page. If the number of the current page is not \texttt{\@prevpage + 1}, it means that either the user has manually changed the page counter or the page numbering has changed. In both cases, we consider the current page as a left page. If the current page is a right page, we do nothing. Otherwise, it may start a new unit\footnote{A right page may actually also start a new unit if for instance the \texttt{firstcite(chapter)} option is in effect and the current page starts a new chapter. But in this case, the units are updated by the \texttt{chapter} command.} and we update the unit counters.

\begin{verbatim}
\newcount\@prevpage
\newcommand*{\@checkpage}{%
\@tempswatrue
\iffb@twoside
\global\advance\@prevpage\@ne
\ifnum\@prevpage=\c@page
\ifodd\c@page
\@tempswafalse
\fi
\fi
\fi\if@tempswa
\fi
\fi
\global\@prevpage\c@page}
\end{verbatim}

The counter \texttt{\@numunit} is incremented if the switch \texttt{iffb@pagenum} is true, i.e. the option \texttt{firstcite(page)} was used.

\begin{verbatim}
\iffb@pagenum
\global\advance\@numunit\@ne
\fi
\end{verbatim}

The switch \texttt{iffb@citeonce} is true iff a \texttt{citeonce} or \texttt{citeonce*} option was used. In this case, the \texttt{\@citeunit} counter is incremented by the \texttt{chapter} or \texttt{part} command. We just increment \texttt{\@xrefunit} in case \texttt{citeonce*} was used. If \texttt{iffb@citeonce} is false, the citation unit is the (double) page and we increment \texttt{\@citeunit}. Since no \texttt{citeonce*} option was used, we do not need to handle \texttt{\@xrefunit}.

\begin{verbatim}
\iffb@citeonce
\global\advance\@xrefunit\@ne
\else
\global\advance\@citeunit\@ne
\fi
\fi
\global\@prevpage\c@page}
\end{verbatim}
counter page is incremented. We define a macro \c@xxx which looks like a counter and we say \@addtoreset{xxx}{page}. To be sure that the user will never define a counter named xxx, we name our macro \c@fb%checkpage. The name of the associated pseudo counter is fb%checkpage that the user may normally not type. Each time the page counter is incremented, \global\c@fb%checkpage\z@ is executed. The macro \c@fb%checkpage starts with an assignment (\count@\z@) which uses the \global and ends with a counter (\count@) which gobbles the following \z@. Since we change the catcode of %, it may not be used for comments below.

\catcode'%=11
\newcommand\c@fb%checkpage{\count@\z@
  \fb@checkpage\count@}
\@addtoreset{fb%checkpage}{page}
\catcode'%=14

4.8 Commands to handle the references

\fb@refcount The counter \fb@refcount holds the number of the last numbered reference. It is reset to 0 at the beginning of each numbering unit.

\newcount\fb@refcount

\fb@lbl The token registers \fb@lbl and \fb@txt always holds the label and the text of the current reference.

\newtoks\fb@lbl
\newtoks\fb@txt

\fb@setref \fb@getref \fb@r. \langle key \rangle \fb@setref stores the current value of the token registers \fb@lbl and \fb@txt in the macro \fb@r.(key) where (key) is the key of the current reference. This key is always stored in the macro \fb@key. \fb@setref is called each time a component of a reference changes: when it is first read at the beginning of the document, and when the dynamic label or the text of the reference has been updated. \fb@getref does the converse: given a key, it updates \fb@lbl and \fb@txt from \fb@r.(\langle key \rangle).

\newcommand\fb@setref{\newname{\fb@r.\fb@key}{\the\fb@lbl}{\the\fb@txt}}
\newcommand\fb@getref{\afterassignment\fb@txt\fb@lbl}

\fb@setlbl \fb@getlbl \fb@setlbl updates the dynamic label of a reference. \fb@getlbl gets the label after calling \fb@setlbl if necessary to update it.

\newcommand\fb@setlbl{\newname\fb@r{\fb@key}{\the\fb@lbl}{\the\fb@txt}}
\newcommand\fb@getlbl{\afterassignment\fb@txt\fb@lbl}

17
4.9 Commands to handle the foot bibliography

\texttt{\footbibliography\footbibliographystyle} are the commands which define the bibliography file and the bibliography style. They just write their argument to the auxiliary file. If they are used in the preamble, the \texttt{\fb@writeaux} macro in use is the delayed one. The write will actually take place at the beginning of the document.

4.9.1 Creation of the foot references

All 3 citation commands \texttt{\footcite}, \texttt{\footcite*} and \texttt{\footnocite} actually call the same macro \texttt{\fb@cite}. Before this call, they just set the flags \texttt{\iffb@lbl} and \texttt{\iffb@txt} according to whether the label and the text of the reference are requested. The settings are as follows:

\begin{verbatim}
\iffb@lbl \iffb@txt
\end{verbatim}
In addition, \footcite calls \fb@xcite to get the optional argument which is put in \fb@optlbl.

\newif\iffb@lbl
\newif\iffb@txt
\DeclareRobustCommand\footcite{
  \fb@lbltrue\@ifstar{\fb@txtfalse\fb@@cite}{\fb@txttrue\fb@@cite}}
\newcommand\footnocite{\fb@lblfalse\fb@txttrue\fb@cite}
\newcommand*\fb@@cite[1][\@nil]{
  \def\fb@optlbl{#1}
  \ifx\fb@optlbl\@nnil
    \let\fb@optlbl\relax
  \else
    \def\fb@optlbl{\fb@putfootcitelabel{, #1}}
  \fi
  \fb@cite}

\fb@cite \fb@cite is the macro which handles the list of citations. It calls \fb@xcite to produce the actual label and insert the text of each individual reference.

\newcommand*\fb@cite[1][\@nil]{
  \fb@vedef\fb@keys{#1}
  \iffb@lbl
    \fb@citestart
    \def\fb@citea{\let\fb@citea\fb@citesep}
  \fi
  \@for\fb@key:=\fb@keys\do{\iffb@lbl\fb@citea\fi\fb@xcite\ifx\fb@deferredcite\@empty\else\begingroup\fb@lblfalse\expandafter\fb@xnocite\fb@deferredcite\@nil\endgroup\fi}\
  \iffb@lbl\fb@optlbl\fb@citeend\fi}

\fb@xfootcite \fb@deferredcite The macro \fb@xfootcite is a replacement for the \cite command of \LaTeX inside a foot reference if the crossrefs or crossrefs* option was used. In both cases, \fb@xfootcite performs a \footcite*. If the crossrefs option was used, in addition, \fb@xfootcite adds globally the list of citation keys to
the list \texttt{\fb@deferredcite}. After the insertion of the current reference has been completed, a \texttt{\footnotecite} will be performed for each key in the list. The format of this list is \texttt{(key),...,(key)}, (the trailing comma makes it easier to handle than \texttt{(key),...,(key)} and allows to distinguish between an empty list and a list containing only an empty element). This list is initially empty.

\begin{verbatim}
299  \newcommand\fb@xfootcite[2][\@nil]{%
300    \footcite*[\#1]{\#2}%
301    \iffb@xcrossrefs
302      \fb@vedef\fb@keys{\#2}%
303      \xdef\fb@deferredcite{\fb@deferredcite\fb@keys,}%
304    \fi}
305  \let\fb@deferredcite\@empty

\fb@xnocite After the insertion of the current reference has been completed, if some deferred cross-references are present, the macro \texttt{\fb@xnocite} is called. It calls \texttt{\fb@xcite} with \texttt{\iffb@lbl=false} to insert the text of the cross-references if necessary. This might produce more deferred cross-references which will be added to \texttt{\fb@deferredcite}.

\begin{verbatim}
306  \def\fb@xnocite#1,#2\@nil{%
307    \gdef\fb@deferredcite{#2}%
308    \def\fb@key{#1}%
309    \fb@xcite
310    \ifx\fb@deferredcite\@empty
311      \let@tempa@gobble
312    \else
313      \let@tempa@\fb@xnocite
314    \fi
315    \expandafter@\let@tempa\fb@deferredcite\@nil}
\end{verbatim}

\texttt{\fb@xcite} The macro \texttt{\fb@xcite} is called both by \texttt{\fb@cite} and \texttt{\fb@xnocite} to handle each individual citation. It writes to the auxiliary file the information about the citation, puts the label in the text if requested and put the text of the reference on the page if necessary. If the reference is not found, it issues a warning.

The first command in \texttt{\fb@xcite} removes any space in front of the key. \texttt{\@empty} is inserted after the key to prevent an error in case it is empty.

If the key is empty or the reference is undefined, the \LaTeX{} command \texttt{\G@refundefinedtrue} is used to set the switch \texttt{\if@refundefined} which indicates that some reference was undefined.

\begin{verbatim}
316  \newcommand\fb@xcite{%
317    \def\fb@key{\expandafter@\firstofone{\fb@key}\@empty}%
318    \ifx\fb@key\@empty
319      \PackageWarning{footbib}{Empty citation on page \thepage}%
320      \G@refundefinedtrue
321    \else
322      \@ifdefundefined{fb@r.\fb@key}{}{\G@refundefinedtrue}
323      \PackageWarning{footbib}{Citation ‘\fb@key’ on page \thepage \space undefined}%
324  \end{verbatim}

20
The text of the reference is inserted if requested (\iffb@txt=true) and either it has not yet been inserted in the current citation unit, or a citeonce* option was used and the last citation was on another (double) page.

The command \fb@bibcite writes to the auxiliary file all the informations about the current citation: the key, the units, and the page. It also resets to 0 the counter \fb@refcount if the numbering unit changed between the last reference and the current one. This counter is used to number the references. The counter \fb@lastrefnumunit holds the numbering unit of the last reference. The counter \fb@citecount holds the number of the current citation.
\fb@citefn \fb@citefn inserts the text of the reference. It is called only if the reference was not already cited in the same citation unit or a citeonce* option was used. The code is mainly borrowed from the footnotes handling in L\TeX.

\newcommand\fb@citefn{\insert\fb@ins{\reset@font\footrefstyle\interlinepenalty\iffb@nosplit\@M\else\interfootnotelinepenalty\fi\splittopskip 1.2\ht\strutbox\splitmaxdepth \dp\strutbox\floatingpenalty \@MM\hsize\columnwidth\@parboxrestore\ifx\newblock\@undefined\let\newblock\relax\fi\iffb@crossrefs\let\cite\fb@xfootcite\fi\@tempdima\fb@lblwidth\advance\@tempdima\labelsep\leftskip\@tempdima\color@begingroup\setbox\@tempboxa\hbox{\footreflabel{\the\fb@lbl}}\hskip-\@tempdima\ifdim\wd\@tempboxa<\fb@lblwidth\hb@xt@\fb@lblwidth{\unhbox\@tempboxa\hfil}\else\box\@tempboxa\hskip\labelsep\rule\z@{1.2\ht\strutbox}\ignorespaces\the\fb@txt\@finalstrut\strutbox\color@endgroup}}

4.10 AtBeginDocument, AtEndDocument

At the beginning of the document, we read the bibliography file and record all the references. This is memory consuming but the only alternative is to read again the bibliography file for each \footcite command which would be much slower. We must wait until the beginning of the document to give the user a chance to redefine \fb@bibname through \footbibliographyname. The preamble of the bibliography is executed once for all when the bibliography is read. After recording the bibliography, we read the .aux file (if it exists) and record the parameters (citation and numbering unit, page, etc.) of all citations as determined during the previous run. The parameters of the $n^{th}$ citation are recorded in the macro \fb@C.$\langle n\rangle$.

\AtBeginDocument{%
Save the current value of \thebibliography and redefine it
\let\fb@save@bib\thebibliography
\let\thebibliography\fb@thebibliography
\let\fb@thebibliography\undefined
Read the bbl file. This executes the preamble, and if a \texttt{thebibliography} environment is found, sets \texttt{\@fb@lblwidth} to the length of the longest label and records all references. \texttt{\@fb@lblwidth} is initialised with a negative value which allows us to detect afterward whether a \texttt{thebibliography} environment was present.

\begin{verbatim}
 392 \global\fb@lblwidth=-\maxdimen
 393 \fb@refcount\z@
 394 \@input{\fb@bibname.bbl}\
 395 \let\thebibliography\fb@savethebibliography
 396 \let\fb@savethebibliography\@undefined
 397 \ifdim\fb@lblwidth<\z@
 398 \settowidth\fb@lblwidth
 399 {\footrefstyle\footreflabel{\expandafter\@firstoftwo\fb@refnotfound{?}}}\fi
 400 \fbcite{\num}
 401 \fb@citecount\z@
 402 \begingroup
 403 \let\citation\@gobble \let\bibstyle\@gobble \let\bibdata\@gobble
 404 \def\bibcite#1#2#3#4#5{\
 405 \advance\fb@citecount\@ne
 406 \fb@vedef\fb@key{#1}
 407 \fb@namexdef{\fb@c.\the\fb@citecount}{\fb@key}{#2}{#3}{#4}{#5}}%
 408 \@input{\fb@bibname.aux}%
 409 \endgroup
 410 \fb@auxout
 411 \if@filesw
 412 \immediate\openout\fb@auxout=\fb@bibname.aux
 413 \immediate\write\fb@auxout{\relax}\
 414 \fi
 415 \fb@writeaux
 416 \renewcommand*{\fb@writeaux}[2]{\fi}
 417 \fi
 418 }
\end{verbatim}

\begin{verbatim}
\fb@thebibliography
\fb@lblwidth
\end{verbatim}

The macro \texttt{\fb@thebibliography} records the length of the longest label in the \texttt{\texttt{\langle}dimen\texttt{\rangle}} register \texttt{\@fb@lblwidth} and then scans the bibliography and stores each reference in a global macro \texttt{\fb@r.(\texttt{\langle}key\texttt{\rangle})} where \texttt{\langle}key\texttt{\rangle} is the key of the reference. The references are read one token at a time so that we may detect \texttt{\verb} commands even if they are hidden in groups.

\begin{verbatim}
419 \newdimen\fb@lblwidth
\end{verbatim}
We open still a new group to prevent our definitions to conflict with macros that might be used by \end{thebibliography}. We let \endthebibliography equal to \endgroup so that it closes this group.

Record the size of the longest label

Some definitions necessary to read the bibliography entries. All these definitions are local since the command \begin{thebibliography} opened a new group. They will be cancelled when \end{thebibliography} is executed. The names of global definitions have the form \fb@... while the names of local definitions simply start with @... We reuse as much as possible existing global names so that we do not use memory unnecessarily. the \@bracelevel counter keeps track of groups nesting while reading the bibliography. The \@bgrouplineno counter holds the number of the input line where the current group started. It is used for error messages. \@on@line is similar to the \on@line command of the \LaTeX 2ε kernel but also shows the name of the current file.

\@bracelevel \@bgrouplineno \@on@line \@eat
\bgroup and \egroup are redefined so that we may distinguish between explicit \bgroup and \egroup and implicit begin or end group characters.
\bgroup \let\@bgroup\relax
\egroup
\let\@egroup\relax
\let\@eat\relax
\let\@actlet\actlet
\actlet{\langle char\rangle\langle cmd\rangle} makes \langle char\rangle active and lets it equal to \langle cmd\rangle.
\noitemerror is called to raise an error if anything is seen between \begin{thebibliography} and the first \bibitem. If the user types \langle return\rangle at the prompt, the next token is swallowed and the processing goes on.
\errifbraces{\langle cmp\rangle} compares \@bracelevel with 0 using \langle cmp\rangle (= or >) and raises an error if the test succeeds.
Now come all the commands which read and handle the tokens.

The macro \texttt{\bibitem} is called if the next token is \texttt{\bibitem}. It calls \texttt{\@lbibitem} or \texttt{\@bibitem} depending on whether a label is provided or not. If no label is provided, \texttt{\@bibitem} provides one. The definition of this macro depends on the switch \texttt{\iffb@firstcite} which is true iff a \texttt{firstcite} option was used. If so, a \texttt{dynamic} label is provided. Otherwise, a \texttt{static} label is provided which is the current value of the counter \texttt{\fb@refcount}.

\begin{verbatim}
def\bibitem{% 
def\errifbraces##1{% \ifnum\bracelevel##1=1\z@ 
 ⎨/\ifx##1>\let\inputlineno\@bgrouplineno\fi
  \PackageError{footbib}{% 
    \ifx##1>Unmatched begin\else Extra end\fi-group 
    character\@on@line}\@empty}% 
  \fi}%
def\@readbib{% 
def\@xreadbib{\futurelet\@tok\@xreadbib}% 
def\@xreadbib{% 
  \ifx\@tok\@sptoken\let\@tempa\@readsp % 
  \else\ifx\@tok\par\let\@tempa\@readpar % 
  \else\ifx\@tok\bibitem\let\@tempa\@endbibitem % 
  \else\ifx\@tok\end\let\@tempa\@checkendbib % 
  \else\if@newlist\let\@tempa\@noitemerr % 
  \else\ifx\@tok\@bgroup\let\@tempa\@eat\afterassignment\@begingroup % 
  \else\ifx\@tok\@egroup\let\@tempa\@eat\afterassignment\@endgroup % 
  \else\ifx\@tok\verb\let\@tempa\relax % 
  \else\let\@tempa\@addtotxt % 
  \fi\fi\fi\fi\fi\fi\fi\fi\@tempa}%
\bibitem{\@errifbraces>%
  \@newlistfalse 
  \@ifnextchar[\@lbibitem\@bibitem}%
  \iffb@firstcite
  \def\@bibitem{\@lbibitem[\fb@setlbl]}% 
  \else
  \def\@bibitem{% 
    \advance\fb@refcount\@ne 
    \expandafter\@lbibitem\expandafter[\the\fb@refcount]% 
  }% 
  \fi
  \def\@lbibitem[##1]##2{% 
    \fb@lbl{{##1}}% 
    \fb@vedef\fb@key{##2}% 
    \fb@txt{}% 
    \let\@lastsptok\@empty 
    \@inlabeltrue 
    \@readbib% 
  }% 
\end{verbatim}

25
\checkendbib The macro \checkendbib is called when the next token is \end. It reads the argument of \end and checks whether it is thebibliography. If so it calls \endbibitem to terminate the current reference (if any) and reinserts \end{thebibliography} which will terminate the bibliography.

\endbibitem The macro \endbibitem terminates the current reference (if any) and calls \@setref which stores it in a macro. If the switch \iffb@xref is true, i.e a citeonce* option was used, \endbibitem adds to the text of the reference the command \@settxt which will modify it dynamically.

\addtotxt The macro \addtotxt adds to the text of the reference so far, first the last space token (\space or \par) and then its argument.

\bibtok The space tokens (\space) and \par are handled in a delayed way. They are first recorded in a single place (\bibtok), so that each one overrides the previous one. The most recent one is added to the text of the reference each time \addtotxt is called. This mechanism discards any space preceding a \par token and also the \par which occurs generally at the end of each reference.
The macros \begingroup and \endgroup are called when a begin- or end-group character is seen. \begingroup opens a new group and increments the counter \@bracelevel. It also records the number of the input line which may be used later for error reporting. \endgroup closes the group, which restores the previous value of \@bracelevel, and calls \addtotxt to add the group to the text of the reference so far.

\begin{verbatim}
\@begingroup{\@bgroup\advance\@bracelevel\@one\@bgrouplineno=\inputlineno\fb@txt{}\let\@lastsptok\@empty\@readbib}\
\@endgroup{\@errifbraces=\edef\@tempa{\@egroup\noexpand\addtotxt{{\the\fb@txt\@lastsptok}}}\@tempa}\
\verb
\@sverb
We provide special support for the \verb command. The following code is essentially borrowed from the \L\TeX x2\TeX{} kernel. Just we let the active characters equal to \relax so that they are not expanded.

\begin{verbatim}
\def\verb{\begingroup\let\do\@makeother \dospecials\Avoid ligatures\def\do####1{\@actlet####1\relax}\verbatim@nolig@list\An end of line character in the argument of \verb is an error.\def\@actlet\^^M\verb@eol@error\@ifstar{\@sverb*}{\@actlet\ \relax\@sverb\@empty}}\def\@sverb##1##2{\@actlet##2\verb@egroup\Read the argument of \verb.\edef\@tempa{\noexpand\verb##1\noexpand~\iffalse}\fi}\
\def\verb@egroup{\noexpand~\iffalse{\fi}\expandafter\endgroup\expandafter\@addtotxt\expandafter{\@tempa}}\def\verb@eol@error\The macro \verb@eol@error is called if an end of line character occurs before the normal termination of \verb. Unlike it is done in the \L\TeX x2\TeX{} kernel, we do not terminate the \verb because the most frequent case is when \Bib\TeX{} breaks the argument of \verb because the line is too long. The closing delimiter will generally be found on the next line.
\end{verbatim}
\endgroup
\end{verbatim}
We try to recover from error in case the user types \texttt{\{return\}} at the prompt. We where defining \verb@tempa@ which contains now \verb@?@... where ? stands for * or nothing.

Some initialisation before starting to read the bibliography.

And finally start to read the bibliography. This is the end of \verb@thebibliography@}

At the end of the document, we first do a \verb@clearpage@ to be sure that all the writes have been performed. Then we close the auxiliary file and finally read it to check whether any change occured between the previous run and the current one. If so, we issue a warning.

\AtEndDocument{\
\clearpage 
\immediate\closeout\fb@auxout 
\begingroup 
\let\citation\gobble \let\bibstyle\gobble \let\bibdata\gobble 
\def\bibcite#1#2#3#4#5{% 
\advance\fb@citecount\@ne 
\fb@vedef\@tempa{#1}%
\edef\@tempa{{\@tempa}{#2}{#3}{#4}{#5}}% 
\expandafter\ifx\csname fb@c.\the\fb@citecount\endcsname\@tempa\else\@tempswatrue\fi}
\fb@citecount\z@ \@tempswafalse
\input\fb@bibname.aux 
\if@tempswa 
\PackageWarning{footbib}{Bibliography not yet stable. Rerun \LaTeX\gobble}%
\fi
\endgroup }
4.11 Output routine

We redefine the macros `\@specialoutput`, `\@doclearpage`, `\@makecol` and `\@reinserts` used by the output routine of \LaTeX so that we may insert the foot bibliography. The code is just a patch to the macros defined in the \LaTeX 2e kernel.

`\@specialoutput` If a foot bibliography is present, `\@specialoutput` must add to the height of the page the height plus depth of the foot bibliography and the length of the skip above it.

```
def\@specialoutput{\%\n  \ifnum \outputpenalty>\-\@Mii\n    \@doclearpage\n  \else\n    \ifnum \outputpenalty<\-\@Mii\n      \ifnum \outputpenalty<\-\@MM \deadcycles \z@ \fi\n      \global \setbox\@holdpg \vbox \{\unvbox\@cclv\}\%\n    \else\n      \global \setbox\@holdpg \vbox \{\unvbox\@holdpg \unvbox\@cclv\}\%\n      \setbox\@tempboxa \lastbox\n      \unskip\%\n      \@pagedp \dp\@holdpg\n      \@pageht \ht\@holdpg\n      \unvbox \@holdpg\n      \global \setbox\@holdpg \vbox \{\unvbox\@holdpg \unvbox\@cclv\}\%\n      \unvbox \@kludgeins\n      \ifdim \wd\@kludgeins=\z@\n       \advance \@pageht \ht\@kludgeins\n      \fi\n      \@reinserts\n      \@addtocurcol\n    \fi\n  \fi\n}
```

footbib addition

```
  \ifvoid\fb@ins\else\n    \advance \@pageht \ht\fb@ins\n    \advance \@pageht \skip\fb@ins\n    \advance \@pageht \dp\fb@ins\n  \fi\n
  \ifvoid\fb@ins\else\n    \advance\@pageht\ht\fb@ins\n    \advance\@pageht\skip\fb@ins\n    \advance\@pageht\dp\fb@ins\n  \fi\n
  \ifvoid\fb@ins\else\n    \advance\@pageht\ht\fb@ins\n    \advance\@pageht\skip\fb@ins\n    \advance\@pageht\dp\fb@ins\n  \fi\n```

```
def\@specialoutput{\%\n  \ifnum \outputpenalty>\-\@Mii\n    \@doclearpage\n  \else\n    \ifnum \outputpenalty<\-\@Mii\n      \ifnum \outputpenalty<\-\@MM \deadcycles \z@ \fi\n      \global \setbox\@holdpg \vbox \{\unvbox\@cclv\}\%\n    \else\n      \global \setbox\@holdpg \vbox \{\unvbox\@holdpg \unvbox\@cclv\}\%\n      \setbox\@tempboxa \lastbox\n      \unskip\%\n      \@pagedp \dp\@holdpg\n      \@pageht \ht\@holdpg\n      \unvbox \@holdpg\n      \global \setbox\@holdpg \vbox \{\unvbox\@holdpg \unvbox\@cclv\}\%\n      \unvbox \@kludgeins\n      \ifdim \wd\@kludgeins=\z@\n       \advance \@pageht \ht\@kludgeins\n      \fi\n      \@reinserts\n      \@addtocurcol\n    \fi\n  \fi\n}
```
The test at the beginning of `\@doclearpage` has been modified so that it checks that both footnotes and the foot bibliography are empty.

```
\def \@doclearpage {%
  % footbib modification
  % \ifvoid\footins
  \@tempswatrue
  \ifvoid\footins\else\@tempswafalse\fi
  \ifvoid\fb@ins\else\@tempswafalse\fi
  \if@tempswa
    \ifvbox\@kludgeins
      \setbox\@tempboxa \box\@kludgeins
    \fi
    \setbox\@tempboxa \vsplit\@cclv to\z@ \unvbox\@tempboxa
    \setbox\@tempboxa \box\@cclv
    \xdef\@deferlist{\@toplist\@botlist\@deferlist}
    \global \let \@toplist \@empty
    \global \let \@botlist \@empty
    \global \@colroom \@colht
    \ifx \@currlist\@empty
      \else\latexerr{Float(s) lost}\@ehb
      \global \let \@currlist \@empty
    \fi
    \@makefcolumn\@deferlist
    \@whilesw\if@fcolmade \fi{
      \@opcol\@makefcolumn\@deferlist}
    \if@twocolumn
      \if@firstcolumn
        \xdef\@dbldeferlist{\@dbltoplist\@dbldeferlist}
        \global \let \@dbltoplist \@empty
        \global \@colht \textheight
        \begingroup
        \@dblfloatplacement
        \@makefcolumn\@dbldeferlist
        \@whilesw\if@fcolmade \fi{
          \@outputpage\@makefcolumn\@dbldeferlist}
      \else\fi
    \fi
  \else
    \latexerr{Float(s) lost}\@ehb
  \fi
\fi
\fi}
```
In addition to footnotes (if any), \makecol must add the foot bibliography to the page. It is added immediately below the footnotes. The test at the beginning of \makecol has been modified in the same way as in \doclearpage.

\def \makecol {
% footbib modification
\ifvoid\footins
\@tempswatrue
\ifvoid\footins\else\@tempswafalse\fi
\ifvoid\fb@ins\else\@tempswafalse\fi
\if@tempswa
\setbox\@outputbox \box\@cclv
\else
\setbox\@outputbox \vbox {\boxmaxdepth \@maxdepth
\unvbox \@cclv
\ifvoid\footins \else
\vskip \skip\footins
\color@begingroup
\normalcolor
\footnoterule
\unvbox \footins
\color@endgroup
\fi
\ifvoid\fb@ins\else
\vskip \skip\fb@ins
\color@begingroup
\normalcolor
\footbibrule
\unvbox \fb@ins
\color@endgroup
\fi
\fi
\setbox\@cclv \vbox{\box\@cclv\vfil}\% \makecol \opcol
\fi}

% footbib addition
\ifvoid\footins \else
\vskip \skip\footins
\color@begingroup
\normalcolor
\footnoterule
\unvbox \footins
\color@endgroup
\fi
\ifvoid\fb@ins\else
\vskip \skip\fb@ins
\color@begingroup
\normalcolor
\footbibrule
\unvbox \fb@ins
\color@endgroup
\fi
\fi
\@reinserts The macro \@reinsert was modified to reinsert also the foot bibliography after float processing.
\def\@reinserts{%  
  \ifvoid\footins\else\insert\footins{\unvbox\footins}\fi  
  \ifvoid\fb@ins\else\insert\fb@ins{\unvbox\fb@ins}\fi  
  \ifvbox\@kludgeins\insert\@kludgeins{\unvbox\@kludgeins}\fi  
}\endinput