The authorindex Package

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Abstract

The authorindex package lists all authors cited in a LaTeX document from the `\cite` entries and their associated `.bib` bibliography files. It will not run with bibliographical entries (`\bibitem`) explicitly typed into the document. Each author entry in the generated list contains the pages where these citations occur. Alternatively, the package can list the labels of the citations that appear in the references rather than the text pages. The package requires perl (version 5 or higher) to run an auxiliary script and BibTeX. The package can be used by itself or as a preprocessor for makeindex. It can produce separate indices and mini indices, which are merged in the bibliography. The package can run under Unix, Windows, or MS-DOS. The authorindex package is compatible with the standard bibliographical styles distributed with LaTeX and with hyperref. With the small patches listed here, it will also run with the chapterbib, chicago, harvard, and natbib bibliographical style packages.

1 Installation

The authorindex package consists of the LaTeX style file `authorindex.sty` and the perl script `authorindex`. It needs LaTeX, BibTeX [1] and perl (version 5 or better) to run.

To install the package, move `authorindex.sty` to a place where LaTeX looks for its style files. Unix: The perl script `authorindex` must be moved to a place in your executable path and be given execution permission. You may need to modify the path to the perl binary that appears in the first line of the script `authorindex`, replacing `/usr/bin/perl` by the correct path for your system. MS-DOS: A perl processor for MS-DOS such as ActivePerl can process the LaTeX auxiliary file `.aux` in a command window to produce the authorindex file `.ain`.

2 Using the package

The LaTeX source code includes the `authorindex` package via a `\usepackage` statement. It may also be necessary to replace your `\cite` commands by `\aicite` commands[1]. The `\aicite` command behaves like `\cite` but writes additional information to the `.aux` file needed to generate the author index.

[1] If you put the statement `\let\cite=\aicite` in the preamble after the loading of the package, `\cite` commands will be equivalent to `\aicite` commands, and you will not need to modify your text.

Additional commands are available. The command `\aimention` enters a name into the author index that does not appear in the bibliography file `.bib`. It is not strictly a "citation" command because it doesn't add a citation to the text. Its argument is an author name in the BibTeX name format like `\aimention{Carl Friedrich Gau{\ss}}`, for example. This command is designed to bridge the gap with keyword indices and might be useful for referring to famous people whose work (in contrast to their publications) is common knowledge. Multiple names are possible if they are separated by `and` as in the standard BibTeX author format. The command `\aionly` expects a bibliography key and puts the corresponding authors in the author index without generating a citation. In a sense, it is similar to `\nocite`.

To produce the author index, run the perl script `authorindex` and LaTeX sequentially; the procedure is similar to producing the bibliography output from BibTeX. The command `\printauthorindex` marks the point where the author index is to appear in the LaTeX output. A typical sequence to run the tools would be LaTeX, BibTeX, authorindex, LaTeX, authorindex, LaTeX. For MS-DOS or Windows, the authorindex step would be processed in a command window by an explicit statement like `perl authorindex` *`example`* `[cr]`, where *example* is the name of the `.aux` file and "`[cr]`" indicates the enter key. In a Unix environment, the `authorindex` script can be invoked simply by the statement `authorindex` *`example`* `[cr]`.

Options to the authorindex package are available,passed to the package in the usual way `\usepackage[option...]{authorindex}`. The option `withbib` automatically indexes the page where a bibliography entry appears in the references. There is also the possibility of generating an index that is merged into the corresponding bibliography entries themselves. This possibility is switched on by the package option `miniindex` discussed more below.

The details of including the author index are left to the author. Unlike the commands `\printindex` or the `\thebibliography`, `\printauthorindex` does not create a chapter or section heading. To format the author index in multiple columns on a page in a one-column document, use an additional package like multicol. With this package, a two-column author index will be created with

```
\begin{multicols}{2}
\printauthorindex
\end{multicols}
```

If you plan to generate several documents with author indices in a consistent style, consider redefining the `theauthorindex` environment to fit your needs.

3 Overall structure of the index

3.1 Normal `.ain` file

The `.ain` file created by the perl script `authorindex` from the `.aux` file and used by `\printauthorindex` will look like this:

```
\begin{theauthorindex}
\item[May, Karl] \aipages{\aifirstpage{iv}, 2, \aibibpage{77}}
\item[Musil, Robert] \aipages{7, 9, \aibibpage{\aifirstpage{77}}}
\indexspace
```

```
\item[Schmidt, Arno] \aipages{33, \aibibpage{78}}
\item[Souter, Nathaniel] \aipages{29--\aifirstpage{36}}
\end{theauthorindex}
```

Note the provision for both text and bibliographical pages. Author names that start with different letters are separated by the statement `\indexspace`, which inserts a blank line between the groups. This command has no arguments but can be redefined according to your needs inside or outside the `theauthorindex` environment. Also, note the provision for a sequential range of pages.

3.2 Font sizes

The command `\aisize` controls the font size used for the author index. It expects no arguments. You can redefine it outside the `theauthorindex` environment to customize the font size. In most cases, it will be sufficient to use one of those options in the authorindex package:

`small` will cause the author index to be typeset in small size.

`normal` (the default) will cause the author index to be typeset in the normal text size.

3.3 Separate entries for first and other authors

By default, authorindex generates exactly one entry for each author in the index. All pages with citations of the author's work go into this entry, no matter what the co-authors for the work that you cite are.

Optionally, you can generate a reference to first authors in the author list of all of the author's works. To this end, you call `\aialso` in the preamble of your document. The command takes two string arguments. The first argument is put before first author name, the second is used as a separator.

Alternatively, you can change this behavior with the `\aisee` command. You call `\aisee` in the preamble of your document with a string argument. For authors that are not the first in the author list of a work cited, authorindex generates an entry with this authors name, followed by the string you have given to `\aisee`, followed by the name of the first author of the cited work. Entries for authors that are first (or even only) authors of a work are listed in the author index as usual.

For example, if you write in German, you'd put

```
\aisee{, siehe }
```

in your preamble. If you write in English, you would use "see" instead of "siehe". For example, assume that we cite works with the following author lists: "A. Schmidt, R. Musil, and K. May" (cited on page 4); "R. Walser and K. May" (and page 4 and 5); "R. Musil" (on page 3); "R. Musil and N. Souter" (on page 5); "N. Souter and R. Musil" (on page 2 and 6). Then, the entries starting with "M" in the `.ain` file look like like

```
\item[\aitop{May, K.}, siehe \aifirst{Schmidt, A.}] \aipages{4}
\item[\airep{May, K.}, siehe \aifirst{Walser, R.}] \aipages{4, 5}
\item[Musil, R.] \aipages{\aifirstpage{3}, \aifirstpage{5}}
\item[\airep{Musil, R.}, siehe \aifirst{Souter, N.}] \aipages{2, 6}
\item[\airep{Musil, R.}, siehe \aifirst{Schmidt, A.}] \aipages{4}
```

3.4 Mini indices

Alternatively (or additionally) to the usual author index, you can use the package option `miniindex` in the preamble to cause `authorindex` to merge a mini index directly into your bibliography file; that is, the merge modifies the `.bbl`-file. This procedure requires that you run `authorindex` *after* you run `bibtex`. The page list is put into the single argument of the command `\bibindex`. By default, `\bibindex` prints nothing if its argument is empty. Otherwise, it passes the argument to `\aibibindex`, which prints the pages in bold type enclosed by braces (for example, **{10, 11, 36}**), as in Nelson F. Beebe's author index package [2]. For alternatives, you can redefine `\aibibindex` using `\renewcommand`. For obvious reasons, a mini index always contains the page numbers, even if the `biblabels` package option is used.

Normally, the mini index is placed at the end of each item. You can change this by hacking your bibliography style file. Let it place `\bibindex{}` on its own line where you want the mini index to go, and `authorindex` will do the rest.

4 Author names

4.1 Which names to include in the index?

There are two package options to authorindex to select which type of names to include in the index:

`editors` will cause the editor names to be included in the author index.

`avoideditors` will cause the editors names to be included only if there are no author names present for a cited work

`onlyauthors` (the default) will restrict the author index to the author names.

Previous comments concerning authors will also apply to editors when the `editors` option is invoked.

The command `\aimaxauthors[`*trunc*`]{`*max*`}` limits the maximum number of authors per work that will be included in the author index. The optional first argument *trunc* determines the number of authors to be included if the maximum number is exceeded. If it is omitted, *trunc* is assumed equal to *max*. Thus, `\aimaxauthors[1]{3}` will set the maximum number of authors to 3; for works with more than three authors only the first one will be included. In this example, for a work by "A. Schmidt, R. Musil, and K. May", all of them will appear in the author index while, for a four-author work by "A. Schmidt, R. Musil, K. May, and N. Souter", only Schmidt will. This usage is similar to the "et al." commonly used in in bibliographies. With `\aimaxauthors{3}`, on the other hand, for works with more than 3 authors, the 3 first ones will be included. For the two example author lists, in both cases, Schmidt, Musil, and May will be listed.

The authorindex package accepts package options for only the most important cases:

`onlyfirst` sets the maximum number of authors (or editors) per work that will be included in the index to 1. It corresponds to `\aimaxauthors{1}`.

`all` (the default) sets the maximum number of authors (or editors) per work that will be included to 9999. It corresponds to `\aimaxauthors{9999}`.

4.2 Formatting and sorting

The command `\ainamefmt` contains the specification for formatting and ordering of names. Its argument is a string consisting of one or more parts separated by semicolons. Each part is made up of one or two components, separated by a colon. If there is only one component, the both components are assumed to be equal. Each of the two component consists of a BibTeX-format string [3]. The first component formats the way the names are printed in the index; the second component, the way the names are sorted. It is therefore possible to include the same name multiple times in the index, each time sorted or printed differently. One restriction is that you cannot have different printed representations that have the same sort format. Because `\ainamefmt` can be messy to use, a few simple cases can be selected by options to the authorindex package:

`lastname` will only include the last name of the authors (and titles like "von", if present).

`firstabbrev` will also include the abbreviated first name(s) (and eventually also a "jr."), following the last name.

`fullname` (the default) will spell the names in full, to the extent given in the `.bib` file.

For example, the package options `fullname`, `lastname`, and `firstabbrev` correspond following uses of `\ainamefmt`:

```
\ainamefmt{{vv }{ll}{, ff}{, jj}}} % fullname
\ainamefmt{{vv }{ll}}}             % lastname
\ainamefmt{{vv }{ll}{, f.}{, jj}}} % firstabbrev
```

For a more complex example, assume we want to format the names like for the `firstabbrev` option but, in addition to the normal sorting, we also want to sort in names that have a 'von'-part ignoring that part. In other words, we want C. F. von Weizsäcker to appear both under "V" and "W" in the index, but nonetheless always typeset as "von Weizsäcker, C. F.":

```
\ainamefmt{%
  {vv }{ll}{, f.}{, jj};%
  {vv }{ll}{, f.}{, jj}:{ll}{vv }{, f.}{, jj}%
}
```

This approach would also work for name prefixes like "van" or "de la".

Note that the command `\indexspace`, which separates entries that start with a different letters, is placed according to the format used for sorting.

4.3 Dealing with name variations

In different publications, the name of the same author may appear in different forms. Causes of variation are differing style conventions of various journals, inconsistencies caused by the author, or plain errors.

Bibliographies should give the author names as close to what appears on the publication as the bibliography style allows. This in the interest of your readers, as is simplifies finding what you cite. But it also implies that inconsistencies carry over to the `author` fields of the BibTeX data base.

In contrast, for author indices, names should be used consistently. Readers consult the author index to find out about the works of a particular person, and should find all of them in a single entry, rather than scattered over multiple entries that correspond to different forms of the same name.

To meet the conflicting needs for bibliographies and author indices, authorindex supports two new fields for BibTeX data base entries:

`authauthor` Gives the author name list, using the authoritative form of the authors names. The format is like for the `author` field.

`autheditor` Likewise, for editors.

If a new field is present in a BibTeX entry, authorindex uses it instead of the `author` or `editor` field. Of course, the latter fields are still required for BibTeX.

4.4 Fonts for the names

`\ainame` is a command with one argument. It determines how the argument of `\item` inside the `theauthorindex` environment is printed.

The command `\aifirst` has one argument. It is used to typeset the name of the leading author from an entry with an additional author when using the command `\aisee`. The command `\aitop` typesets the name of the first occurrence of an additional author, that is, an author name before the string defined by `\aisee`.

Finally, `\airep` typesets a name that has already been used in the previous index entry. Look at the example in section 3.3 for clarification.

By redefining these commands, you can do more than just selecting fonts. One example would be to redefine

```
\renewcommand{\airep}[1]{---}
```

to cause the name of an author to printed only once when it occurs in many subsequent entries.

4.5 Advanced customization

If the standard command `\ainamefmt` does not provide enough flexibility, you can use the command `\authorindexstyle` in the preamble. Its single argument is the name of some `.bst`-file that you select to format the author names.

If you decide to write a custom `.bst`-file, it is necessary to understand hacking `.bst` files, e. g. by reading [3]. Your BibTeX style file needs to generate a `.bbl` file that contains three lines per author-label pair, each of which is followed by a line that contains just a percent sign. The first line is the name formatted according to your taste, as it appears in the index. The second line is the name format used for sorting. The third line contains the label of the citation, or is empty. In the latter case, the label of the previous three line entry is taken; furthermore, this entry is assumed to refer to the same author as the current one — differing only in the formatting or sorting rule. The default `.bst` file used to format the names is embedded in the perl script `authorindex`. You could use this as template. Use the command line option `-k` for `authorindex` (see Sec. 6).

The first author of the work is expected to be dumped into the `.bbl` file first.

5 Page numbers and bibliography labels

5.1 Page numbers or bibliography labels?

You have to possibility of selecting whether you want the page numbers or the bibliography numbers of the references to appear in the index. This selection is done through the package options

`biblabels` will include in the author index the reference label as it appears in the reference list instead of the page numbers.

`pages` (the default) the pages of the citations.

With the option `biblabels`, every citation will be indexed. There is no need to use the special citation commands `\aicite`, unless you want to have a mini index as well (see section 3.4). With this option, it makes no sense to use either the `\aimention` command or the `withbib` package option.

While this manual has referred to "pages, " it also applies to the indexing of bibliography labels unless explicitly noted otherwise.

5.2 Ordering of pages and compression of page ranges

The command `\aipagetypeorder{`*order*`}` can be used to determine the relative order of different types of page numbers, such as roman, arabic, and others. The argument *order* is a string consisting of a selection of the characters `rRnAa`, which indicate lowercase roman, uppercase roman, arabic, uppercase alphabetic, and lowercase alphabetic page numbers, respectively. The relative order of the letters in the string determine the order of the page numbers. For example, the argument `rn` will sort all lowercase roman pages before the arabic pages. If you want to use lowercase alphabetic numbers, you have to use `\aipagetypeorder` without putting `r` in the string; that is, you can't use lowercase roman numbers and lowercase alphabetic numbers at the same time. The same holds for using uppercase roman and alphabetical page numbers. Composite page numbers (like "4-17") are split into their components (using any character that cannot be interpreted as a digit as field separator) and sorted with the priority of components decreasing from left to right.

Normally, three or more adjacent page numbers are "compressed." If an author citation appears on pages 4.17, 4.18, and 4.19, the page range will appear as "4.17–4.19" in the index entry. However, a range of only two consecutive pages will not be compressed. To represent such a pair by the first page number plus some string (typically, "f"), specify that string as the argument of `\aitwosuffix` in the preamble. You can suppress range compression altogether by using the `nocompress` package option.

5.3 Fonts used for the pages

The command `\aipages` determines the overall font of the page numbers. The command `\aibibpage` is used to switch on additional properties to mark the pages that contain the bibliography entries of works of the author — relevant if the `withbib` package option is used. `\aifirstpage` is used to print page numbers of references in which the author is the leading author. All three commands expect one argument and can be redefined by `\renewcommand`.

5.4 Modifying the page numbers

The command `\theaipage` determines the string representing the page delivered to the perl script `authorindex`. This does not apply to bibliography labels, even if the `biblabels` package option is used. By default, this is simply defined as `\thepage`, but you can redefine it. Originally, allowing `\theaipage` to differ from `\thepage` was intended for multi-volume books, where the page numbers in each volume do not indicate the volume number. For example, page 231 of volume II will produce only a plain "231" as the page number, whereas you might prefer to have the indication of the volume in the index such as "II-231". You can also do more sophisticated things. For example, using the hyperref package with the `plainpages=false` option to create hyperlinks to the page where the citation is:

```
\def\theaipage{\string\hyperpage{\thepage}}
```

NB: To avoid keep `authorindex` from interpreting the string `\hyperpage` as an alphabetic page number, you should not use alphabetic page numbering and tell the perl script about it using `\aipagetypeorder`.

6 Running `authorindex`

Having run LaTeX on the properly prepared LaTeX source document, you then use the perl script `authorindex` to process the generated `.aux`-files, which produces the author index file (extension `.ain`).

The perl script can be called with any number of arguments. Without arguments, `authorindex` reads from the standard input. With several arguments, `authorindex` appends `.aux` extensions wherever necessary and processes these files. The output is written to the file whose name is extracted from the `.aux`-file for the `.tex`-file where `\printauthorindex` was given. It is necessary to give the `.aux`-file produced by the `.tex`-file containing `\begin{document}` to `authorindex`; this file passes information to the script regarding the style and content of the index.

If you use `\include` in your LaTeX source document, it is sufficient to give the master `.aux`-file to `authorindex`; the `.aux`-files of included files are then processed automatically.

`authorindex` recognizes the following command line options:

`-d` ("draft") Adds additional information to the `.ain` file: For each author, the labels of all references and the page numbers where they are cited are included as comments. This detail may help if you manually edit the generated author index. Also, some statistics are included at the bottom of the `.ain` file. This option does not work with the `-i` option.

`-h` ("help") Prints out a short help text.

`-i` ("index") Creates a file suitable for further processing with makeindex or the like. For example, you could use that to make a common author and subject index. Note the extension of the generated file still will be `.ain`. (Use the `-p` option and redirection to send the stuff anywhere else.)

`-k` ("keep") Retains the temporarily generated `.bst`-file after `authorindex` finishes. This information will give you a good starting point for advanced customization of the author index (see Sec. 4.5).

`-p` ("print") Prints the result to standard output instead of writing it to the `.ain`-file.

`-r` ("do not recurse") Does not automatically process `.aux`-files produced by included files.

7 authorindex and other packages

7.1 Compatible packages

7.1.1 Standard distribution package

The standard cite package included with the LaTeX distribution seems to work with authorindex without problems.

7.1.2 chapterbib

The chapterbib package also works well with authorindex. If you want to use the mini indices, be sure to run `authorindex` separately on the main `.aux`-file plus the `.aux`-file for each chapter using the `-r` option (see section 6). In addition, you may want to run `authorindex` on the main `.aux`-file to generate an author index for all chapters. For example, you might use a sequence of the form:

```
authorindex -r main chapter1
authorindex -r main chapter2
authorindex main
```

If you require chapterwise author indices, after the first two authorindex runs in the above example, you should rename `main.ain` to something else and `\input` these files in the place where you want the chapterwise authorindex to appear.

7.1.3 hyperref

The script authorindex works well with hyperref. In the standard version, the pages in the author index are not linked back to the page with the citation. Section 5.4 describes how to fix this problem.

7.2 Less compatible packages

Most problems with other bibliographical packages arise because the packages override or skip certain citation functions. The authorindex package modifies these functions to write page information along with the citation key to the `.aux` file. In the following examples, we show how to re-establish this additional output for a few specific packages. Please note that these "fixes" may no longer work if newer versions of these packages appear.

If you use a non-compatible package that is not listed below, it is worthwile to have a look into its source code. In the simplest case, the package might include one of the listed packages (using `\usepackage`), and hence one of the

examples below applies. Others might require more effort, but the basic strategy for a fix will be always similar to the examples below. If you encounter non-compatible packages, please notify me about them (ideally, with instructions for a fix) so that I can include them in this manual.

7.2.1 chicago

The standard version of the chicago package does not work with authorindex. For this package, there is a patch that apparently makes it work with authorindex. In the file `chicago.sty`, you replace the lines

```
\def\@citex[#1]#2{%
```

with

```
\def\@citex[#1]#2{\@aicitey{#2}%
```

and

```
\def\@citedatax[#1]#2{%
```

with

```
\def\@citedatax[#1]#2{\@aicitey{#2}%
```

and save the modified file under a new name, e. g. `aichicago.sty`. Use this file in place of the file `chicago.sty`.

7.2.2 harvard

The harvard package can be made to work with authorindexby adding code to the document preamble. After loading the harvard package with `\usepackage`, write the following lines into the preamble of your LaTeX-source file:

```
\makeatletter
\renewcommand{\HAR@citetoaux}[1]{%
  \if@filesw\immediate\write\@auxout{\string\citation{#1}}\fi%
  \if@filesw\@for\@citeb:=#1\do{\immediate\write\@auxout{%
      \string\citationpage{\@citeb}{\thepage}}}\fi}%
\makeatother
```

Then, in the main text, use the harvard citation commands `\cite`, `\citeyear`, etc., exactly as you would normally do without the authorindex package.

7.2.3 natbib

Like chicago, the package natbib also conflicts with authorindex. The following fix is based on a similar fix by Michael Friendly and Patrick W. Daly for Nelson Beebe's authidx package [2], plus additional support for natbib's numerical mode as proposed by Pieter Eendebak. You insert in your `natbib.cfg` the following lines:

```
% natbib.cfg
\AtBeginDocument{%
\@ifpackageloaded{authorindex}{%
  \ifNAT@numbers
    \let\org@@citex\NAT@citexnum
  \else
    \let\org@@citex\NAT@citex
  \fi
  \def\@citex[#1][#2]#3{%
    \typeout{indexing: [#1][#2]{#3}}%
    \org@@citex[#1][#2]{#3}%
    \@aicitey{#3}}%
  \renewcommand\NAT@wrout[5]{%
     \if@filesw{%
       \let\protect\noexpand\let~\relax
       \immediate\write\@auxout{\string\aibibcite{#5}{#1}}%
       \immediate\write\@auxout{\string\bibcite{#5}{{#1}{#2}{{#3}}{{#4}}}}}%
     \fi}{}}
\endinput
```

Please note that I tested this work-around superficially. It does not repair a conflict that occurs when the authorindex package option `withbib` is used.

7.2.4 bibunits

To make bibunits to work with authorindex, in `bibunits.sty`, replace the lines

```
\def\bu@@citex[#1]#2{%
```

by

```
\def\bu@@citex[#1]#2{\@aicitey{#2}%
```

and save the modfied file under a new name.

7.2.5 Other packages

monog3 A class from Oxford University Press that used chicago. See section 7.2.1.

8 Problems and restrictions

Currently, I am aware of the following problems and restrictions:

- Compression of page numbers ignores whether the pages will be printed in the same font; that is, you might get something like "7–**9**".
- Compression always uses the full page numbers, that is you will always get something like "4.8–4.10" rather than "4.8–10".
- Sorting of names is restricted. At this time, special characters are stripped, the case is ignored, and a normal comparison according to the ASCII Code is done. This might not be what you want if you have accented characters.

Consider using the option `-i` in conjunction with additional processing by a more flexible tool.

- If you use `\aicite` with multiple arguments and a page break occurs within the list of generated references, one part of the citations will be associated with the wrong page.
- You can not use the package when you explicitly type your bibliography in your LaTeX file (`\bibitem`) instead of using BibTeX. Consider using BibTeX instead. It is a powerful bibliographical tool worth the small additional effort.

9 Acknowledgement

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References

[1] O. Patashnik. BibTeX*ing* (1988). Documentation for general BibTeX users.

[2] N. H. F. Beebe. *AUTHIDX: An author/editor indexing package*. TUGboat **19**(1):1001–1007 (1998).

[3] O. Patashnik. *Designing* BibTeX *styles* (1988). The part of BibTeX's documentation that's not meant for general users.