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How to write "ä" and other umlauts and accented letters in bibliography?

How to write in bibliography (package natbib) letter "a" with two dots above? Specially, I mean the word Birkhäuser.

Is there a general rule or way how to write such umlauts or other accented letters in bibliographies?

{bibtex} {accents} {characters}

edited Jul 18 '12 at 14:17   asked May 29 '12 at 12:01
doncherry   Laura
23.7k   15   89   156   1,040   2   10   19

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5   The symbol is called an umlaut a – Caramdir May 29 '12 at 16:43

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3   @Jane I extended the scope of your (good!) question a bit to cover other such letters, hope you don't
     mind. We do this here occasionally to make questions "canonical". – doncherry Jul 18 '12 at 14:17

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2 Answers

To typeset accented characters inside bibliography fields for processing with BibTeX, encase them in curly braces. To list but a few accented characters:

```
{\"a} {\^e} {\`i} {\.I} {\o} {\'u} {\aa} {\c c} {\u g} {\l} {\~n} {\H o} {\v r}
{\ss}
```

ä ê ì İ ø ú å ç ğ ł ñ ő ř ß

The word Birkhäuser should therefore be entered as `Birkh{\"a}user`.

Addendum: There is an obvious follow-up question to the "**How** does one enter a special character for use in BibTeX?" question. Namely: **Why** is it necessary to encase these "special characters" in this manner? Or: **Why** is the ordinary methods of entering these characters in

a LaTeX document –– say, `\"{a}` or `\"a`, let alone `ä` –– not quite right for BibTeX? There are two separate reasons for this requirement.

1. If you use double-quotes, i.e., `" ... "`, to delimit the contents of a bibliographic field, you will find that writing

   `author = "Anna H\"{a}user",`

   generates a BibTeX error, whereas

   `author = "Anna H{\"a}user",`

   does not. I.e., BibTeX isn't quite smart enough on its own to distinguish between the two uses of the `"` character and needs extra help.

2. In addition, contents of bibliographic fields –– certainly the `author` and `editor` fields, but potentially other fields as well, including the `title`, `booktitle`, and `organization` fields –– are frequently used to *sort* entries alphabetically.

   How do BibTeX (and LaTeX) sort characters with Umlaute, diacritics, and other special

features relative to the basic 26 characters of the Latin alphabet? How is one supposed to sort three authors named, say, `Peter Hauser` , `Anna Häuser` , and `John Hill` ? For some pretty sound reasons –– but which are way too ancient and obscure to go into any adequate level of detail here; to explore these reasons properly, it's crucial to have Appendix C of the TeXBook handy... –– a decision was made in the design of BibTeX to "purify" (the BibTeX function that does this job really is called `purify$` !) the contents of various fields as follows (this method conforms, probably not surprisingly, to US and UK sorting criteria; it needn't be "correct" outside of English-speaking regions, as I will note below) *for sorting purposes*:

- `{\"a}` , `{\'a}` , `{\^a}` , etc are all made equivalent to `a` ,
- `{\"o}` , `{\'o}` , `{\H o}` and `{\o}` are all made equivalent to `o` ,
- `{\l}` and `{\L}` become equivalent to `l` and `L` , respectively,
- `{\ss}` becomes equivalent to `ss` ,
- `{\aa}` becomes equivalent to `aa` ,
- and so on for all other "accented" characters,
- finally, any characters that do not fit into this scheme, including `ä` , are moved to the very end, i.e., *after* `z` . This may seem arbitrary and ill-informed from today's vantage point, but back when BibTeX was created more than 20 years ago the only relevant character encoding and sorting system was ASCII.

As you can immediately appreciate, this "purification" step is greatly simplified and made more robust if the "accented" characters are all entered consistently in the manner suggested in the first part of this answer.

Turning to the earlier case of the three authors named `Peter Hauser` , `Anna Häuser` , and `John Hill` : How will they appear in a bibliography whose entries are sorted alphabetically by the authors' surnames? If Anna's last name is entered as `H{\"a}user` , the three authors will end up being listed as `Häuser, A.` – `Hauser, P.` – `Hill, J.` . In contrast, if Anna's last name had been entered as `Häuser` , the sorting order would have been Hauser – Hill – Häuser. For most English-speaking readers, the second ordering will look completely wrong.

Some specialists from, say, Sweden, may object that this approach to sorting characters that aren't among the basic 26 characters of the Latin alphabet doesn't meet the specific national standards of, say, Sweden. [I obviously don't mean to pick on any Swedes. I mention them because I remember having read somewhere that in the Swedish alphabet, `ä` does come *after* `z` and hence is definitely *not* equivalent (not even for sorting purposes!) to `a` .] My answer to this objection is: If you're a Swedish author writing in Swedish for a Swedish target audience, you had better conform to specific Swedish customs. On the other hand, if you're a Swede writing in English in a journal that's exclusively published in English, it'll do you no good at all if you try to insist on obeying Swedish sorting customs in your paper's bibliography. Of course, the very inability of BibTeX to be easily adaptable to non-English sorting customs is one of the reasons for the development and adoption of BibLaTeX and Biber. However, that's a topic for another day, isn't it?

The issue of how BibTeX sorts bibliographic entries (as well as many other fascinating [!] issues) is examined at length and explained admirably in the surprisingly readable (given the enormous dryness of the subject!) essay Tame the BeaST by Nicolas Markey. If you have TeXLive or MikTeX as your TeX distribution, you can also access this document by typing "texdoc tamethebeast" at a command prompt.

edited Dec 18 '14 at 11:42

answered May 29 '12 at 12:07

Mico
108k   8   142   327

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4 It's not necessary to write `\"\i` , as `\"i` works as well (and gives no issue for the alphabetical order). The more common accents work: `\`i` and `\'i` , for example (but not `\u{i}` , unfortunately). – egreg May 29 '12 at 20:21

@egreg: thanks for this; I'll update the example code. – Mico May 29 '12 at 20:56

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1 +1 for embedding "ř" `{\v r}` into the answer :) – yo' May 30 '12 at 14:28

I expanded the scope of the question, but as far as I can see, your answer covers it all already. – doncherry Jul 18 '12 at 14:19

1   Great answer. Completely correct about the Swedish usage of å, ä, and ö (they come after z). – jocap Aug 22 '13 at 19:11

When using `\usepackage[utf8]{inputenc}` you can have it directly.

Consider the following `.bib` file:

```
@BOOK
   {Goe,
    AUTHOR  = "Gödel",
    TITLE   = "Die Vollständigkeit der Axiome des logischen Funktionenkalküls.",
    PUBLISHER = "Monatshefte für Mathematik und Physik",
    YEAR = 1930
   }
```

for example. Then

```
\documentclass{article}
\usepackage[utf8]{inputenc}

\begin{document}
\bibliographystyle{plain}

\section{Introduction}
Hällo Wörld\cite{Goe}

\bibliography{encodingInBib}

\end{document}
```

yields the desired result. Or, you could also use `biblatex` and the following code:

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{biblatex}
\bibliography{ref}
\begin{document}
Hällo Wörld\cite{Goe}
\printbibliography
\end{document}
```

In the final result, using either method, the umlauts are inserted automatically.

edited Dec 25 '13 at 10:35   answered May 30 '12 at 4:54

Snicksie   Dror
210   1   8   7,332   6   43   107

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5   You may want to state a bit more prominently that this method requires the use of `biblatex`. The OP provided the tag "bibtex" rather than "biblatex", and hence it may be worth pointing out your method's requirement explicitly. – Mico May 30 '12 at 9:58

2   @Dror: `bibtex` won't sort this correctly (Gödel should be sorted as Godel). – Caramdir May 30 '12 at 19:37

2   @Caramdir: Depends on the language, in Finnish, for example, it wouldn't be sorted that way. – morbusg Jul 18 '12 at 14:25

1   @morbusg – I guess Caramdir was assuming implicitly that the publication in question is written in English for an English language speaking target audience. For someone accustomed to English-language sorting rules, it would look very wrong indeed (and probably downright weird as well) to see `Gödel` sorted after, say, `Gyntelberg`. – Mico Jul 19 '12 at 11:35

sorted after, say, cylinderberg? – Theo Jan 15 '15 at 11:56

4 @SubhamoySengupta For XeLaTeX just encode the documents in `utf8` and make sure you load
`fontspec` so you get a font that has the accented characters, e.g. `\usepackage{fontspec}` will be
enough, as this loads `lmodern` . – Andrew Swann Jan 3 '14 at 10:43