The `sanitize-umlaut` package

Manual for version 1.3.0 (2023/05/15)

Thomas F. Sturm[1]

https://www.ctan.org/pkg/sanitize-umlaut

https://github.com/T-F-S/sanitize-umlaut

Abstract

The packages sanitizes umlauts to be used directly in index entries for MakeIndex and friends with `pdflatex`. This means, that inside `\index` an umlaut can be used as `"U` or Ü. In both cases, the letter is written as `"U` into the raw index file for correct processing with MakeIndex and `pdflatex`. `lualatex` and `xelatex` are also supported with a different approach.

Contents

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1 Purpose of the Package

The package sanitizes umlauts to be used directly in index entries for `makeindex` and friends with `pdflatex`. This means, that inside `\index` an umlaut can be used as `"U` or `Ü`. In both cases, the letter is written as `"U` into the raw index file for correct processing with `makeindex` and `pdflatex`.

The package is intended

- for documents in German language using the babel package with a setting identical or similar to `\usepackage[ngerman]{babel}`.
- for documents which are processed by `latex` or `pdflatex` (also for `lualatex` or `xelatex`, but with more compilation overhead).
- for documents with an index which is processed using the MakeIndex program.
- for authors who like to use `\index{Übermaß}` instead of `\index{"Uberma"s}`.

All these conditions are satisfiable by simply including the `sanitize-umlaut` package.

An alternative would be to filter the resulting raw `.idx` index *before* `makeindex` is applied to create the final `.ind` index. Another alternative is to replace MakeIndex by Xindy or another index processor.

2 Important Compatibility Informations

2.1 Past

Until 2018, the default encoding for LaTeX files was 7-bit ASCII. For other encodings, packages like `inputenc` had to be loaded. Also, `inputenc` used to expand characters like umlauts during `\index` output. The package `sanitize-umlaut` version 1.00 replaced this expansion code for `\index` output to get `"U` instead of `Ü`, etc.

2.2 Present

Since April 2018, the default encoding for LaTeX files has been changed to UTF-8. This is done by preloading the UTF-8 settings of the package `inputenc` by default LaTeX, i.e. if you want to use UTF-8 (recommended!), you do not longer need to load `inputenc` inside your preamble. But, also the implementation of `inputenc` changed for UTF-8 (October 2019?). Nowadays, characters like umlauts are not longer expanded during `\index` output, but are preserved as is. Therefore, `sanitize-umlaut` version 1.00 **is not compatible** to `inputenc` with UTF-8 dating from 2019 or newer.

`sanitize-umlaut` version 1.10 (or newer) patches some UTF-8 code of LaTeX/`inputenc` to return and replace character expansion during `\index` output. This patch **is not compatible** to older versions of LaTeX/`inputenc` (before October 2019). Therefore, if your LaTeX distribution is not reasonable up to date, you should stay at version 1.00 of `sanitize-umlaut`.

With the 2022 June release of LaTeX, characters defined via `utf8.def` are now defined as `\protected` macros. Therefore, `sanitize-umlaut` version 1.2.0 (or newer) patches some relevant parts of two-octets characters during `\index` back to pre 2022 June behaviour. Obviously, you loose `\protected` here, if you load `sanitize-umlaut`.

`sanitize-umlaut` version 1.3.0 (or newer) also supports `lualatex` and `xelatex` with a different approach. Here, `\index` is patched such that its argument is processed to replace umlauts.

2.3 Future

As always, the future is dark and difficult to see. Further changes of `inputenc` implementation may force further changes of `sanitize-umlaut`. Hopefully, this will not happen too soon or too often. Also, if some miracle happens, MakeIndex may be updated one day to recognize UTF-8 properly to make `sanitize-umlaut` superfluous.

3 Package Usage

3.1 Prerequisites

The source document may need some encoding by `inputenc` since `pdflatex` is assumed as engine. For example:

```
\usepackage[latin1]{inputenc}
```

For `utf8` (UTF-8), modern LaTeX does not need this package inclusion any more! Also, for `lualatex` and `xelatex` this has to be omitted.

Just some few encodings are supported by `sanitize-umlaut`. These are the most important for German language texts:

encoding	recognized as
utf8	utf8
utf8-2018	utf8-2018
latin1, ansinew, cp1252	latin1
applemac	applemac

Further, the `babel` package with German settings is needed:

```
\usepackage[ngerman]{babel}
```

3.2 Package Application

Now, the package application is simple. You just put

```
\usepackage{sanitize-umlaut}
```

into your document preamble *after* `inputenc` and, maybe, after `babel`. That is all.

3.3 Sanitized Characters

The umlauts and the sharp s are replaced by their `babel` shorthand codes which are written to the `.idx` file.

character	replacement
ä	"a
ö	"o
ü	"u
Ä	"A
Ö	"O
Ü	"U
ß	"s

3.4 Technical Information

The package uses `\inputencodingname` (set by LaTeX and the `inputencoding` package) to determine the current encoding.

The package redefines the `\@sanitize` macro at the begin of the document. It adds some encoding redefinitions to this macro. `\@sanitize` is used inside `\index` in a local group. If another package (besides `babel`) also changes this macro or uses it outside `\index`, strange things may happen.

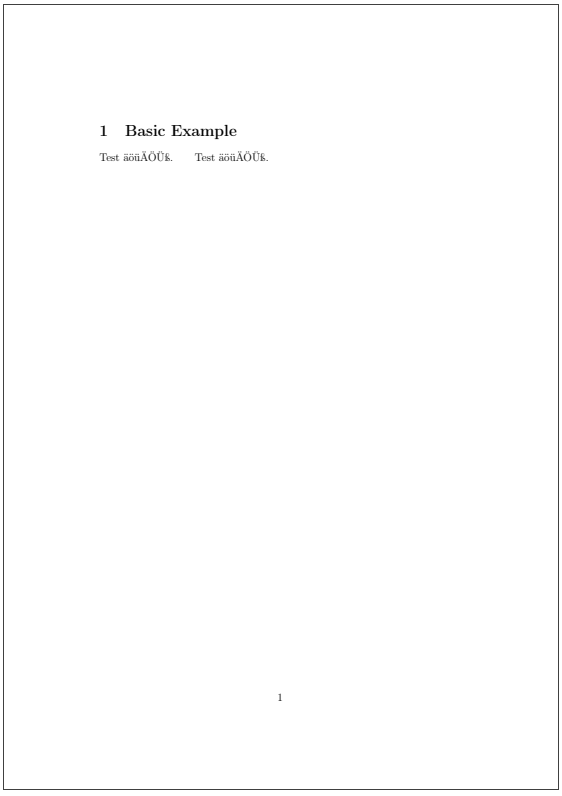
If `\inputencodingname` is *not* present, the package checks, if the current engine is `luatex` or `xetex` and patches the `\index` macro itself. All umlauts inside the argument of `\index` are replaced by their `babel` shorthand codes using LaTeX3 token replacement. This increases compilation time considerably compared to the `\@sanitize` hack for `pdflatex`. A very rough figure is approximately a plus of 0.8 seconds per 10000 `\index` calls (will differ on other maschines and other example codes).

4 Application Examples

file "german.ist" for the examples

```
actual '='    %  instead of @
quote  '!'    %  instead of "
level  '>'    %  instead of !
```

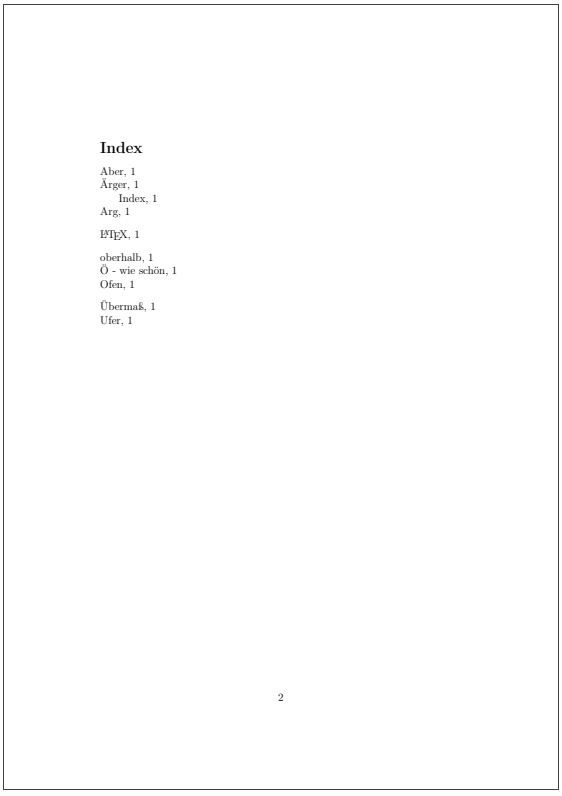
```
% !TeX encoding=UTF-8
% arara: pdflatex
% arara: makeindex: { style: german.ist, german: true }
% arara: pdflatex
\documentclass[a4paper,12pt]{article}
\usepackage[T1]{fontenc}
%\usepackage[utf8]{inputenc}   % utf8 is default now
\usepackage[ngerman]{babel}
\usepackage{makeidx}
\usepackage{sanitize-umlaut}
\makeindex
\begin{document}
\section{Basic Example}
Test äöüÄÖÜß.
\index{Aber}   \index{Arg}   \index{Ärger}
\index{Ofen}   \index{Ö - wie schön}   \index{oberhalb}
\index{Ufer}   \index{Übermaß}
\index{Latex=\LaTeX}   \index{Ärger>Index}
Test äöüÄÖÜß.
\printindex
\end{document}
```



1 Basic Example

Test äöüÄÖÜß. Test äöüÄÖÜß.

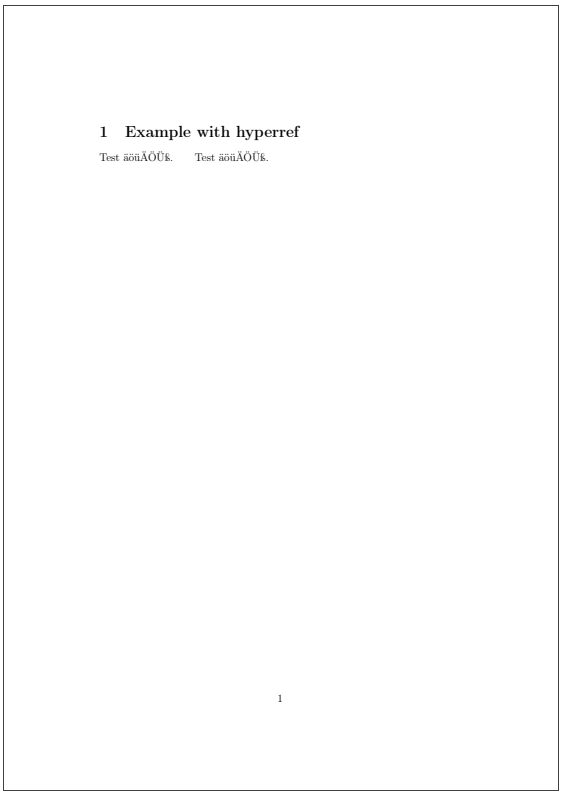
1



Index

2

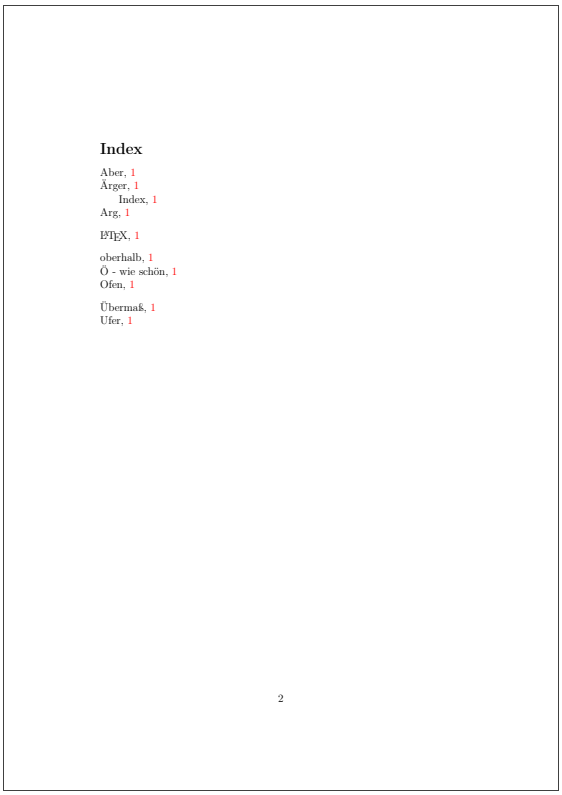
```
% !TeX encoding=UTF-8
% arara: pdflatex
% arara: makeindex: { style: german.ist, german: true }
% arara: pdflatex
\documentclass[a4paper,12pt]{article}
\usepackage[T1]{fontenc}
%\usepackage[utf8]{inputenc}   % utf8 is default now
\usepackage[ngerman]{babel}
\usepackage{makeidx}
\usepackage{sanitize-umlaut}
\usepackage[hyperindex,colorlinks]{hyperref}
\makeindex
\begin{document}
\section{Example with hyperref}
Test äöüÄÖÜß.
\index{Aber}   \index{Arg}   \index{Ärger}
\index{Ofen}   \index{Ö - wie schön}   \index{oberhalb}
\index{Ufer}   \index{Übermaß}
\index{Latex=\LaTeX}   \index{Ärger>Index}
Test äöüÄÖÜß.
\printindex
\end{document}
```



1 Example with hyperref

Test äöüÄÖÜß. Test äöüÄÖÜß.

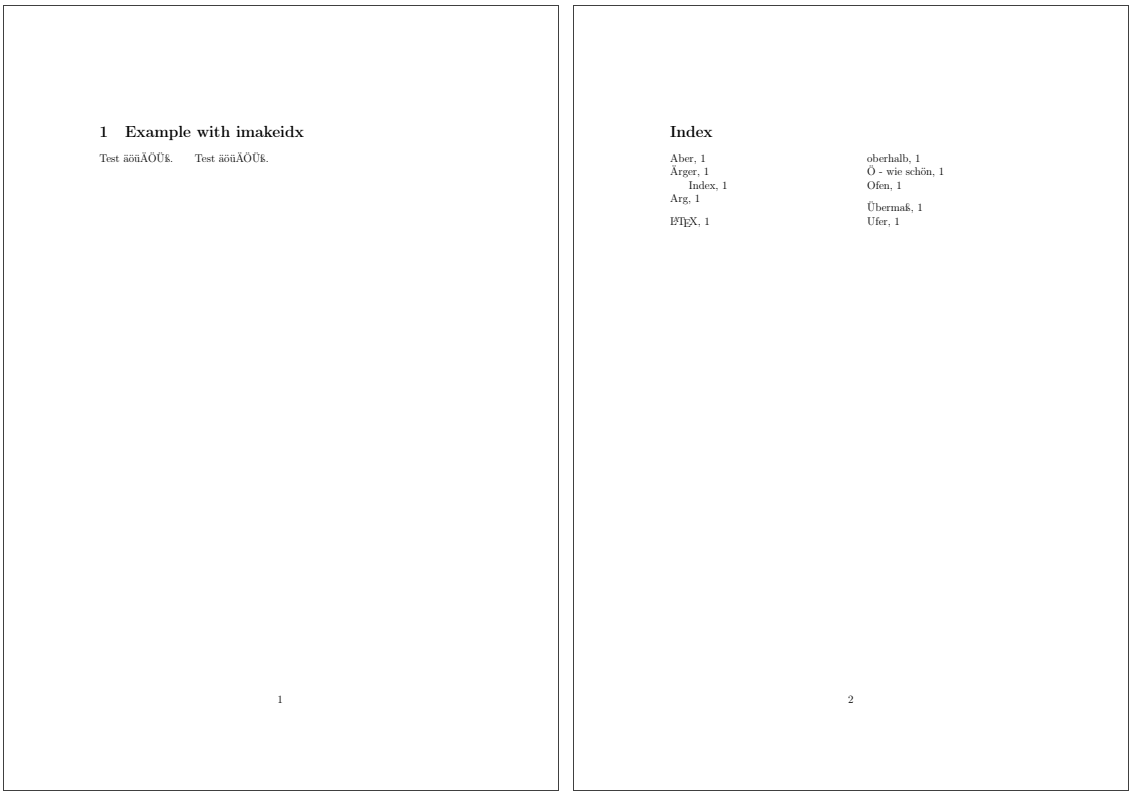
1



Index

2

```
% !TeX encoding=UTF-8
% arara: pdflatex
\documentclass[a4paper,12pt]{article}
\usepackage[T1]{fontenc}
%\usepackage[utf8]{inputenc}   % utf8 is default now
\usepackage[ngerman]{babel}
\usepackage[makeindex]{imakeidx}
\makeindex[options=-s german.ist -g]
\usepackage{sanitize-umlaut}
\begin{document}
\section{Example with imakeidx}
Test äöüÄÖÜß.
\index{Aber}   \index{Arg}   \index{Ärger}
\index{Ofen}   \index{Ö - wie schön}   \index{oberhalb}
\index{Ufer}   \index{Übermaß}
\index{Latex=\LaTeX}   \index{Ärger>Index}
Test äöüÄÖÜß.
\printindex
\end{document}
```



1 Example with imakeidx

Test äöüÄÖÜß. Test äöüÄÖÜß.

1

Index

Aber, 1
Ärger, 1
  Index, 1
Arg, 1

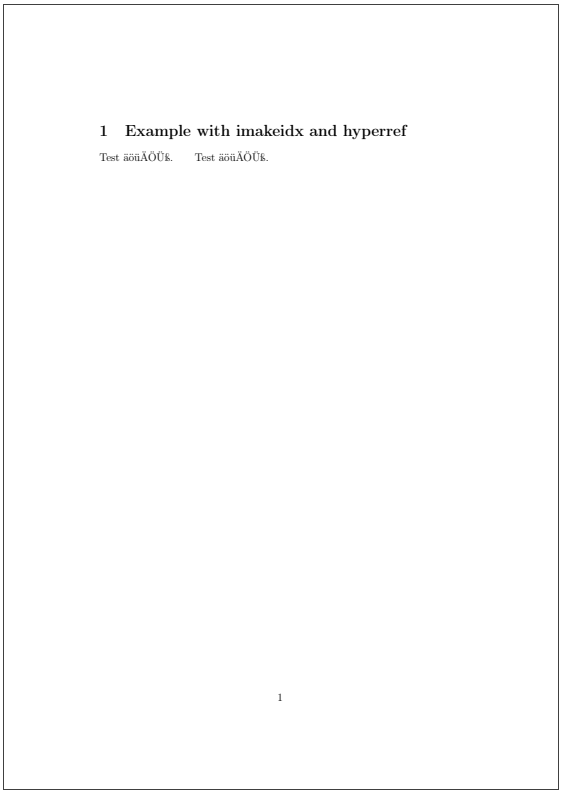
LaTeX, 1

oberhalb, 1
Ö - wie schön, 1
Ofen, 1

Übermaß, 1
Ufer, 1

2

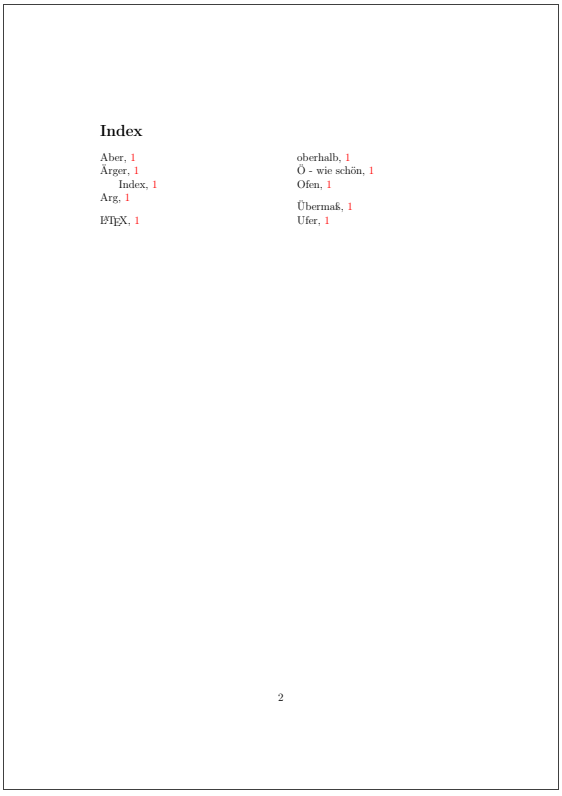
```
% !TeX encoding=UTF-8
% arara: pdflatex
\documentclass[a4paper,12pt]{article}
\usepackage[T1]{fontenc}
%\usepackage[utf8]{inputenc}   % utf8 is default now
\usepackage[ngerman]{babel}
\usepackage[makeindex]{imakeidx}
\makeindex[options=-s german.ist -g]
\usepackage{sanitize-umlaut}
\usepackage[hyperindex,colorlinks]{hyperref}
\begin{document}
\section{Example with imakeidx and hyperref}
Test äöüÄÖÜß.
\index{Aber}   \index{Arg}   \index{Ärger}
\index{Ofen}   \index{Ö - wie schön}   \index{oberhalb}
\index{Ufer}   \index{Übermaß}
\index{Latex=\LaTeX}   \index{Ärger>Index}
Test äöüÄÖÜß.
\printindex
\end{document}
```



1 Example with imakeidx and hyperref

Test äöüÄÖÜß. Test äöüÄÖÜß.

1

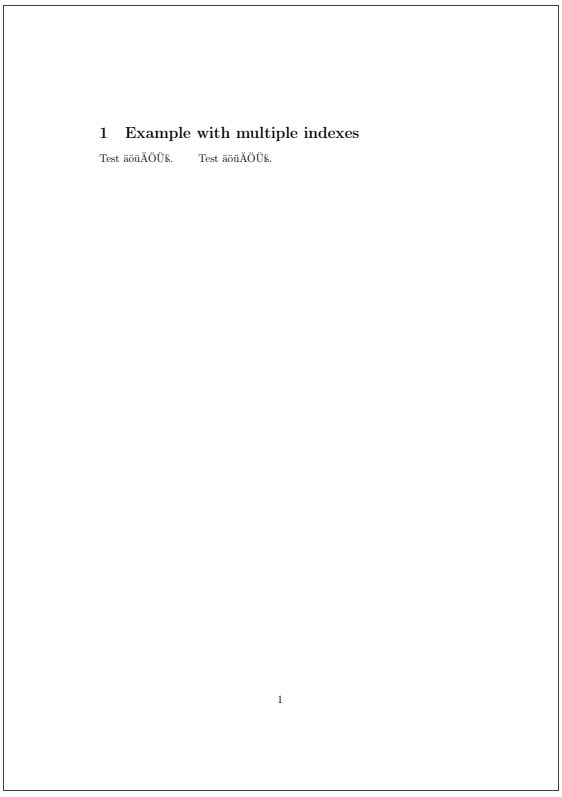


Index

Aber, 1
Ärger, 1
  Index, 1
Arg, 1
LaTeX, 1
oberhalb, 1
Ö - wie schön, 1
Ofen, 1
Übermaß, 1
Ufer, 1

2

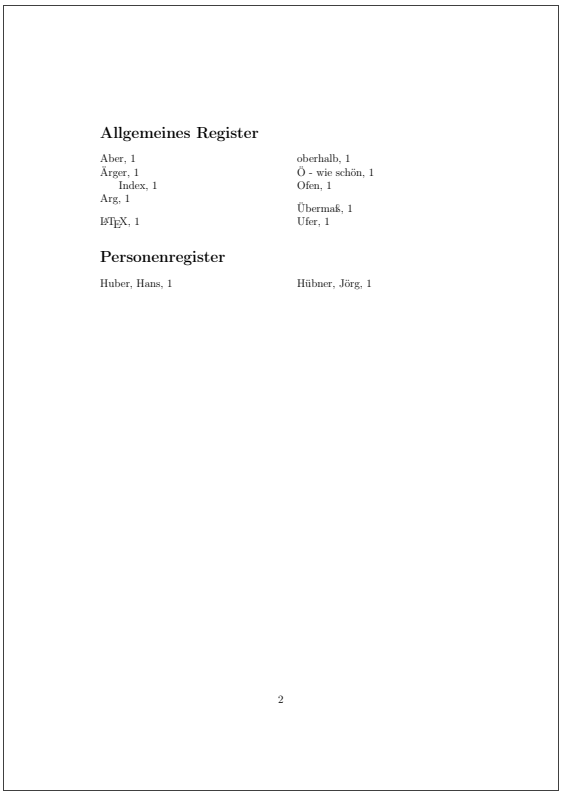
```
% !TeX encoding=UTF-8
% arara: pdflatex
\documentclass[a4paper,12pt]{article}
\usepackage[T1]{fontenc}
%\usepackage[utf8]{inputenc}   % utf8 is default now
\usepackage[ngerman]{babel}
\usepackage[makeindex]{imakeidx}
\indexsetup{level=\section*,noclearpage}
\makeindex[name=personen,title=Personenregister,options=-s german.ist -g]
\makeindex[name=allgemein,title=Allgemeines Register,options=-s german.ist -g]
\usepackage{sanitize-umlaut}
\begin{document}
\section{Example with multiple indexes}
Test äöüÄÖÜß.
\index[personen]{Huber, Hans}    \index[personen]{Hübner, Jörg}
\index[allgemein]{Aber}          \index[allgemein]{Arg}
\index[allgemein]{Ärger}         \index[allgemein]{Ofen}
\index[allgemein]{Ö - wie schön} \index[allgemein]{oberhalb}
\index[allgemein]{Ufer}          \index[allgemein]{Übermaß}
\index[allgemein]{Latex=\LaTeX}  \index[allgemein]{Ärger>Index}
Test äöüÄÖÜß.
\clearpage
\printindex[allgemein]
\printindex[personen]
\end{document}
```



1 Example with multiple indexes

Test äöüÄÖÜß. Test äöüÄÖÜß.

1



Allgemeines Register

Aber, 1
Ärger, 1
  Index, 1
Arg, 1

LaTeX, 1

oberhalb, 1
Ö - wie schön, 1
Ofen, 1

Übermaß, 1
Ufer, 1

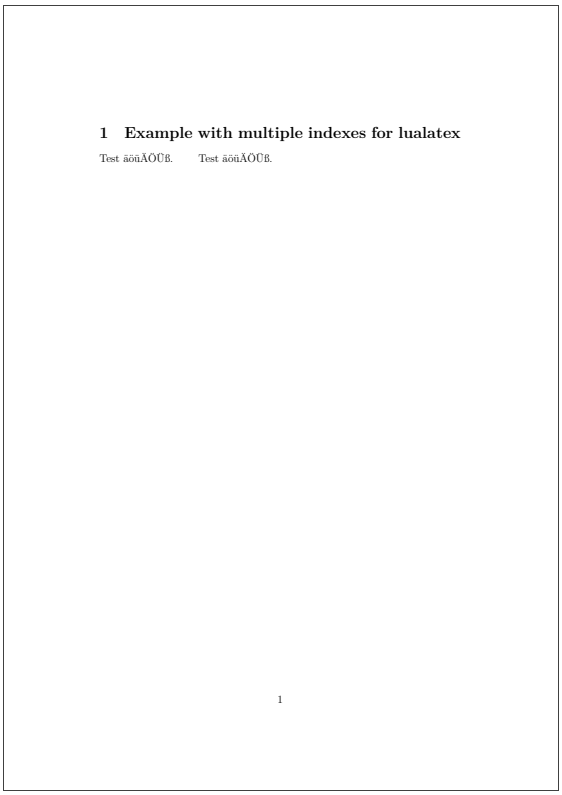
Personenregister

Huber, Hans, 1

Hübner, Jörg, 1

2

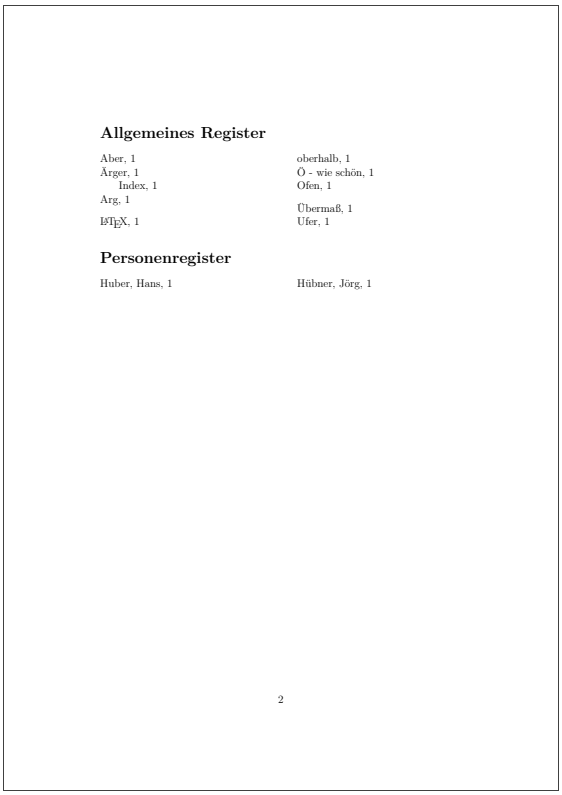
```
% !TeX encoding=UTF-8
% arara: lualatex
\documentclass[a4paper,12pt]{article}
\usepackage{fontspec}
\usepackage[ngerman]{babel}
\usepackage[makeindex]{imakeidx}
\indexsetup{level=\section*,noclearpage}
\makeindex[name=personen,title=Personenregister,options=-s german.ist -g]
\makeindex[name=allgemein,title=Allgemeines Register,options=-s german.ist -g]
\usepackage{sanitize-umlaut}
\begin{document}
\section{Example with multiple indexes for lualatex}
Test äöüÄÖÜß.
\index[personen]{Huber, Hans}    \index[personen]{Hübner, Jörg}
\index[allgemein]{Aber}          \index[allgemein]{Arg}
\index[allgemein]{Ärger}         \index[allgemein]{Ofen}
\index[allgemein]{Ö - wie schön} \index[allgemein]{oberhalb}
\index[allgemein]{Ufer}          \index[allgemein]{Übermaß}
\index[allgemein]{Latex=\LaTeX}  \index[allgemein]{Ärger>Index}
Test äöüÄÖÜß.
\clearpage
\printindex[allgemein]
\printindex[personen]
\end{document}
```



1 Example with multiple indexes for lualatex

Test äöüÄÖÜß. Test äöüÄÖÜß.

1



Allgemeines Register

Personenregister

2