

# Program and package xindex

—

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Herbert Voß

[hvoss@tug.org](mailto:hvoss@tug.org)

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## 1. Introduction

The Lua program `xindex` is a unicode aware program for creating an index (`.ind`) file from an `.idx` source file. It is completely compatible to the current `makeindex` program, but can handle UTF-8, 16, 32, and 64. The  $\text{\LaTeX}$  package `xindex` is a package which provides a  $\text{\LaTeX}$  command which writes additional text into the index file. This text (comments and/or macros) will be accepted by the program `xindex`.

The general structure of a data element in the Lua table is:

```
data = { Entry = <text>, -- like the input line without command \indexentry
  pages = {
    { number = <roman/arabic number or text>,
      special = <macro> }, -- the part after | in the input
    [...]
    { number = <roman/arabic number or text>,
      special = <macro> }
  },
  sortChar = <unicode codepoint>, -- of the first character of Entry
  Macro = <TeX macro> -- only useful with LaTeX package xindex
}
```

After reading the input file the Lua table `pages` has only one element for the number and the so-called special command. When the pages are compressed the table will collect all pages which refer to the same entry name.

### 1.1. Syntax

The syntax is `xindex [...] <file(s)>` where `[...]` are optional arguments, either in short or long form which, of course, can be mixed:

```
xindex
  [-q,--quiet ]
  [-h,--help ]
  [-v ] verbose
  [-V,--version ]
  [-a,--no_casesensitive ] default is false
  [-b,--no_labels ] default is false
  [-c,--config ] default is cfg
  [-e,--escapechar ] default is "
  [-f,--fix_hyperref ] default is false
  [-g,--no_pagenumber] default is false
  [-i,--ignoreSpace ] default is false
  [-k,--checklang ] default ist false
  [-l,--language ] default is en
```

```

[-n,--noheadings ]           default is false
[-o,--output ]             default is <input>.ind
[-p,--prefix]             default L
[-s,--use_stdin ]          default is false
<files...> (default stdin) file(s)[.idx]  one or more files

```

For example:



```

xindex -q -l fr -b myDoc
xindex -l de -c DIN2 demo1 demo2 demo3
xindex -c norsk -o index.ind demo1 demo2.bdx demo3.adx

```

1. -q: quiet; -l fr: french language setting; -b: no labels; myDoc: input data myDoc or myDoc.idx  
output data will be myDoc.ind and logfile myDoc.ilg
2. -l de: German language setting; -c DIN2: config file xindex-DIN2.lua; demo1 demo2 demo3: input data files  
with or without extension .idx  
output data will be demo1.ind and logfile xindex.ilg
3. -c norsk: config file xindex-norsk.lua; -o index.ind: output file; demo1 demo2.bdx demo3.adx: input data files  
with or without extension .idx  
output data will be index.ind and logfile xindex.ilg

It is also possible to use standard input for the index data, which needs the -s parameter:



```
cat myDoc.idx | xindex -q -l fr -b -s xindex -l de -c DIN2 < myDoc.idx
```



The language has to be chosen as an international abbreviation in lower- or uppercase letters, see [https://en.wikipedia.org/wiki/ISO\\_3166-2](https://en.wikipedia.org/wiki/ISO_3166-2)

## 1.2. How it works

xindex creates by default an output file <input>.ind which can be read by the  $\LaTeX$  document with the default command `\printindex`. One can use another output filename, which makes only sense if one doesn't use the `\printindex` command for typesetting the index. The default sorting is given by the configuration file, which defines replacements for accented characters, like `ö→o`.

## 1.3. The .idx file

There are three (four) characters which must be escaped if used in the command `\index`: `!`, `@`, or `|` and the current escape character itself. These characters have a special meaning for the index.



The default escape character is the double quote `"`. The braces `{` and `}` cannot be used as argument for the command `\index`. Use `\braceLeft` and `\braceRight` instead (defined in the package xindex).

xindex-1.tex

```

\usepackage{makeidx}\makeindex
\usepackage{xindex}% for \braceLeft|\braceRight

\section{Escaping characters}
\begin{itemize}
\item Exclamation mark ! \index{Exclamation (!)}\index{!}
\item Vertical bar | \index{Vertical bar (|)}\index{|}
\item Doublequote \verb|"| \index{"}
\item Double doublequote \verb|""| \index{""}
\item At character @ \index{At (@)}\index{@}
\item Left parenthesis { \index{\braceLeft}
\item Right parenthesis } \index{\braceRight}
\end{itemize}
run \texttt{xindex -l fr <file.idx>}\index{file.idx@\texttt{<file.idx>}|textit}\index{123}
\index{Etagé} \index{Étagé}
\twocolumn
\printindex

```

## 1 Escaping characters

- Exclamation mark !
- Vertical bar |
- Doublequote "
- Double doublequote ""
- At character @
- Left parenthesis {
- Right parenthesis }

```
run xindex -l fr <file.idx>
```

## Index

### Symboles

!, 1  
", 1  
"", 1  
{, 1  
, 1  
@, 1  
|, 1

### Nombres

123, 1

### A

At (@), 1

### E

Etagé, 1  
Étagé, 1  
Exclamation (!), 1

### F

<file.idx>, 1

### V

Vertical bar (|), 1

It is by design that the braces { and } cannot be used as index entry. The *package* xindex defines the two commands \braceLeft and \braceRight which can be used instead (see examples above and below).

For the German language the double quote is an active character and it makes life easier if one chooses another character. The escape character can be changed easily by the optional argument -e "<char>" or --escapechar "<char>". The following example shows how it works for the escape character »>« (greater). By default the expression »>>>« will be a T<sub>E</sub>X ligature with the output »>>>«.

With the beginning of xindex the escaped chars are converted into the internal strings and later back to the original meaning. The two characters {} cannot be used as \{\} inside the argument of \index. The package xindex defines the two helper macros



```

\providecommand\braceLeft{\{}
\providecommand\braceRight{\}}

```

The following example shows how to use it:

xindex-2.tex

```

\usepackage{xindex}
\usepackage{makeidx}\makeindex

```

```

\section{Escaping characters with >}
\begin{itemize}
\item Exclamation mark ! \index{exclaim (>!)}}
\item Vertical bar| \index{Vertical bar (>|)}}
\item Escapechar \verb|>| \index{>}}
\item Double escapechar \verb|>>| \index{>>>}}
\item At character @ \index{At (>@)}}
\item Group start \{ \index{\braceLeft}}
\item Group end \} \index{\braceRight}}
\end{itemize}
Run \texttt{xindex} with \texttt{xindex -e ">" -n}\index{<file.idx>}\index{123}
\newpage
\printindex

```

## 1 Escaping characters with >

- Exclamation mark !
- Vertical bar|
- Escapechar >
- Double escapechar >>
- At character @
- Group start {
- Group end }

Run `xindex` with `xindex -e ">" -n`

## Index

```

{, 1
}, 1
<file.idx>, 1
>, 1
», 1

123, 1

At (@), 1

exclaim (!), 1

Vertical bar (|), 1

```

## 2. Language

The language is only important for the first two headers in the output of the index data. They are by default *Symbols* followed by *Numbers*. In a new version of `xindex` it will be customizable. The predefined language is »en« and currently the following languages which its alias are defined:

```

<id> = {<symbols>, <numbers>, <alias language name>, ...}
indexheader = {
  cs = {"Symboly", "Číslo", "czech"},
  da = {"Symboler", "Tal", "danish"},
  de = {"Symbole", "Zahlen", "austrian", "german", "germanb", "ngerman", "naustrian"},
  en = {"Symbols", "Numbers", "english", "USenglish", "american", "UKenglish", "british", "canadian", "australian", "newzealand"},
  es = {"Símbolos", "Números", "spanish"},
  fr = {"Symboles", "Nombres", "french", "français", "canadien", "acadian"},
  it = {"Simboli", "Numeri", "italian"},
  jp = {"シンボル", "番号", "japanese"},
  nl = {"Symbolen", "Nummers", "dutch"},
  no = {"Symboler", "Tal", "norsk", "nynorsk"},
  ru = {"Символы", "Числа", "russian"},
}

```

The following example was run with `xindex -l it <file>.idx`:

```
\usepackage{makeidx}\makeindex
```

```

\section{Escaping simboli con >}
\begin{itemize}
\item punto esclamativo ! \index{exclaim (>!)}
\item linea verticale | \index{Vertical bar (>|)}
\item escapechar \verb|>| \index{>}
\item doppio escapechar \verb|>>| \index{>>>}
\item At simboli @ \index{At (>@)}
\end{itemize}
Initio \texttt{xindex} con \texttt{xindex -l it -e ">"}\index{123}
\twocolumn \printindex

```

## 1 Escaping simboli con >

- punto esclamativo !
- linea verticale |
- escapechar >
- doppio escapechar >>
- At simboli @

Initio xindex con xindex -l it -e ">"

## Indice analitico

<b>Simboli</b>	<b>A</b>
>, 1	At (@), 1
», 1	<b>E</b>
	exclaim (!), 1
<b>Numeri</b>	<b>V</b>
123, 1	Vertical bar ( ), 1

The following example was run with `xindex -k <file>.idx`. In this case `xindex` tries to detect the language from the aux file(s). This is only possible if package `babel` or `polyglossia` are used.

index-4.tex

```

\usepackage[dutch]{babel} % !!!!
\usepackage{makeidx}\makeindex

\section{Escaping characters with ?}
\begin{itemize}
\item Exclamation mark ! \index{exclaim (!)}
\item Vertical bar | \index{Vertical bar (?|)}
\item Escapechar \verb|?| \index{??}
\item Double escapechar \verb|??| \index{????}
\item At character @ \index{At (?@)}\index{?@}
\end{itemize}
Run \texttt{xindex} with \texttt{xindex -k -e "?"}\index{123}
\twocolumn\index{xindex@\texttt{xindex}}
\printindex

```

## 1 Escaping characters with ?

- Exclamation mark !
- Vertical bar|
- Escapechar ?
- Double escapechar ??
- At character @

Run xindex with xindex -k -e "?"

## Index

<b>Symbolen</b>	<b>A</b>
?, 1	At (@), 1
??, 1	<b>E</b>
@, 1	exclaim (!), 1
<b>Nummers</b>	<b>V</b>
123, 1	Vertical bar ( ), 1

For the Russian language you have to choose the language and the config file. This allows to have different indexes with different language.

```
\usepackage[russian]{babel}
\usepackage{fontspec}
\usepackage[regular]{newcomputermodern}
\defaultfontfeatures{Ligatures=TeX}
\usepackage{xindex}\makeindex % run with xindex -l RU -c RU <file>
```

```
\begin{tabular}{ll}
Хвойные: & \verb|\index{Хвойные} |\index{Хвойные} \\
\quad торрея, &
\quad \verb|\index{Хвойные!тисовые!торрея (Torreya)}| %
\quad \index{Хвойные!тисовые!торрея (Torreya)} \\
\quad тис ягодный, &
\quad \verb|\index{Хвойные!тисовые!тис!ягодный (Táxus baccata)}| %
\quad \index{Хвойные!тисовые!тис!ягодный (Táxus baccata)} \\
\quad ливанский кедр, &
\quad \verb|\index{Хвойные!сосновые!кедр!ливанский (Cedrus libani)}| %
\quad \index{Хвойные!сосновые!кедр!ливанский (Cedrus libani)} \\
\quad ель обыкновенная. &
\quad \verb|\index{Хвойные!сосновые!ель!обыкновенная (Píceá ábies)}| %
\quad \index{Хвойные!сосновые!ель!обыкновенная (Píceá ábies)} \\
Под колючей ежевикой & \verb|\index{Ежевика (Rúbus)}| %
\index{Ежевика (Rúbus)} \\
жил ушастый ёж. &
\quad \verb|\index{Ёж!ушастый (Hemiechinus auritus)}| %
\quad \index{Ёж!ушастый (Hemiechinus auritus)}
\end{tabular}
\printindex % xindex -l RU -c RU -n <file>
```

xindex-5.tex

Хвойные:	\index{Хвойные}
торрея,	\index{Хвойные!тисовые!торрея (Torreya)}
тис ягодный,	\index{Хвойные!тисовые!тис!ягодный (Táxus baccata)}
ливанский кедр,	\index{Хвойные!сосновые!кедр!ливанский (Cedrus libani)}
ель обыкновенная.	\index{Хвойные!сосновые!ель!обыкновенная (Píceá ábies)}
Под колючей ежевикой	\index{Ежевика (Rúbus)}
жил ушастый ёж.	\index{Ёж!ушастый (Hemiechinus auritus)}

## Предметный указатель

Ёж	— — — обыкновенная (Píceá ábies), 1
— ушастый (Hemiechinus auritus), 1	— — кедр
Ежевика (Rúbus), 1	— — — ливанский (Cedrus libani), 1
	— тисовые
Хвойные, 1	— — тис
— сосновые	— — — ягодный (Táxus baccata) , 1
— — ель	— — торрея (Torreya) , 1

### 3. Default sorting by the UCA (Unicode Collection Algorithm)

This Lua library from Michal Hoftich is part of T<sub>E</sub>XLive and is used by default for sorting. The supported languages and variants are listed in the file `lua-uca-languages.lua`:



af, am, ar, as, az, be, bg, bn, bs, bs\_cyrl, ca, chr, cs, cy, da, de, de\_din2, dsb, dz, ee, el, en, eo, es, et, fa, fi, fil, fo, fr, fr\_backward\_accents, ga, gl, gu, ha, haw, he, hr, hi, hsb, hu, hy, id, ig, is, it, ja, ka, kk, kl, km, kn, ko, kok, ky, lb, lkt, ln, lo, lt, lv, mk, ml, mn, mr, ms, mt, my, nb, ne, nl, nn, no, om, pa, pl, ps, pt, ro, ru, se, si, sk, sl, smn, sq, sr, sr\_latn, sv, sw, ta, te, th, tk, to, tr, ug, uk, ur, uz, vi, vo, wae, wo, yi, yo, zh, zu

The sorting order can be easily modified. Read the documentation of the package `LUA-UCA` on how to do it and what languages are supported so far. Any additional code setting for UCA should be done in the file `xindex-cfg-uca.lua`, which will automatically be read by `xindex`. Language-specific sorting orders can also be defined in a config file.

xindex-6.tex

```
\usepackage{multicol}
\usepackage{makeidx}\makeindex
\def\Index#1{#1\index{#1}}
```

```
Sorted with \verb|-l cs|
\Index{ahoj} \Index{crha}, \Index{čaj}, \Index{chachar},
\Index{rak}, \Index{řeka}, \Index{srp}, \Index{šutr},
\Index{hudba}, \Index{linux}, \Index{zebra},
\Index{žába}, \Index{7 dubů}
\begin{multicols}{2} \printindex \end{multicols}
```

Sorted with `-l cs` ahoj crha, čaj, chachar, rak, řeka, srp, šutr, hudba, linux, zebra, žába, 7 dubů

Index	L
	linux, 1
<b>A</b>	<b>R</b>
ahoj, 1	rak, 1
<b>C</b>	<b>Ř</b>
crha, 1	řeka, 1
<b>Č</b>	<b>S</b>
čaj, 1	srp, 1
<b>H</b>	<b>Š</b>
hudba, 1	šutr, 1
<b>Ch</b>	<b>Z</b>
chachar, 1	zebra, 1

Modifications can be done in a config file which is then loaded by the option `-c`. For example: the file `xindex-cfg-uca.lua` has modification for french and norwegian. For french the standard sorting rules `fr_backward_accents`, are a bit special and should be the default also for the language `fr`:

```
languages.fr = function(collator_obj)
  -- reverse search for accents in French (recommended):
  collator_obj.accents_backward = true
  local tailoring = function(s) collator_obj:tailor_string(s) end
  tailoring("&æ=ae")
  tailoring("&æ=oe")
  tailoring("&th<p<<<p") -- Canadian, see SGQRI004.pdf
  return collator_obj
end
```



end

Add any additional modifications to this file or create an own config file and load it with -c.

## 3.1. Examples

### 3.1.1. French language

```
\usepackage{makeidx}\makeindex
\usepackage{hvindex}
```

```
\Index{CÔTÉ} \Index{cote} \Index{Côté} \Index{COTÉ} \Index{côte} \Index{COTE}
\Index{côté} \Index{Coté} \Index{coté} \Index{Cote} \Index{CÔTE} \Index{Côte}
\Index{lésé} \Index{péch  } \Index{boh  me} \Index{g  n  } \Index{p  che} \Index{  sium}
\Index{p  cher} \Index{r  v  le} \Index{p  cher} \Index{r  v  l  } \Index{Boh  me} \Index{rel  ve}
\Index{P  CH  } \Index{ma  on} \Index{relev  } \Index{  l  ve} \Index{g  ne} \Index{  lev  }
\Index{M  CON} \Index{g  ne} \Index{Boh  mien} \Index{caennais} \Index{l  se}
\Index{coexistence} \Index{  ur} \Index{coefficient} \Index{cafard}
\Index{C  UR} \Index{C  SIUM} \newpage \Index{cot  } \Index{  ur} \Index{p  ch  } \newpage
\Index{cot  } \Index{coefficient}
\printindex
```

xindex-7.tex

## Index

### B

boh  me, 1  
Boh  me, 1  
Boh  mien, 1

### C

caennais, 1  
  sium, 1  
C  SIUM, 1  
cafard, 1  
coefficient, 1, 3  
C  UR, 1  
coexistence, 1  
cote, 1  
Cote, 1  
COTE, 1  
C  te, 1  
c  te, 1  
C  TE, 1

cot  , 1  
Cot  , 1  
COT  , 1  
c  t  , 1  
C  t  , 1  
C  T  , 1  
cot  , 2 sq.  
  ur, 1 sq.

### E

  l  ve, 1  
  lev  , 1

### G

g  ne, 1  
g  ne, 1  
g  n  , 1

### L

l  se, 1

l  s  , 1

### M

M  CON, 1  
ma  on, 1

### P

p  che, 1  
p  ch  , 1  
P  CH  , 1  
p  ch  , 2  
p  cher, 1  
p  cher, 1

### R

rel  ve, 1  
relev  , 1  
r  v  le, 1  
r  v  l  , 1

3.1.2. German language

The default sorting where Umlauts are identical to the base latter: ö→o and »ß→s«

xindex-8.tex

```
\usepackage{makeidx}\makeindex
\newcommand\Index[1]{\index{#1}#1}

Sorted with \verb|-l DE |\par
\Index{Österreich} \Index{Öresund}
\Index{Ostern} \Index{Ober}
\Index{Oberin} \Index{Österreich}
\Index{Öresund} \Index{Ostern}
\Index{Ober} \Index{Oberin}
\Index{Obstler} \Index{Öl}
\Index{ölen} \Index{Ödem}
\Index{Oligarch} \Index{Oder}
\Index{oder} \index{Fluss!Oder}
\index{Oder|seealso{Fluss}}
\Index{Göbel} \Index{Goethe}
\Index{Göthe} \Index{Götz}
\Index{Goldmann}

\printindex
```

### Index

<b>F</b>		
Fluss		Oberin, 1
- Oder, 1		Obstler, 1
		Ödem, 1
<b>G</b>		oder, 1
Göbel, 1		Oder, 1, <i>siehe auch</i>
Goethe, 1		Fluss
Goldmann, 1		Öl, 1
Göthe, 1		ölen, 1
Götz, 1		Oligarch, 1
		Öresund, 1
<b>O</b>		Ostern, 1
Ober, 1		Österreich, 1

3.1.3. German language (DIN2)

The same sorted with the language setting »German DIN variant 2«, which can be set. with --language de\_din2 or l de\_din2. Umlauts are now converted into »ö→oe« and »ß→ss«:

xindex-9.tex

```
\usepackage{makeidx}\makeindex
\newcommand\Index[1]{\index{#1}#1}

Sorted with
\verb|-l de_din2|

\Index{Österreich} \Index{Öresund}
\Index{Ostern} \Index{Ober}
\Index{Oberin} \Index{Österreich}
\Index{Öresund} \Index{Ostern}

\Index{Ober} \Index{Oberin}
\Index{Obstler} \Index{Öl}
\Index{ölen} \Index{Ödem}
\Index{Oligarch} \Index{Oder}
\Index{oder} \index{Fluss!Oder}
\index{Oder|seealso{Fluss}}
\Index{Göbel} \Index{Goethe}
\Index{Göthe} \Index{Götz}
\Index{Goldmann}

\printindex
```

### Index

<b>F</b>		
Fluss		Oberin, 1
- Oder, 1		Obstler, 1
		oder, 1
<b>G</b>		Oder, 1, <i>siehe auch</i>
Göbel, 1		Fluss
Goethe, 1		Ödem, 1
Göthe, 1		Öl, 1
Götz, 1		ölen, 1
Goldmann, 1		Öresund, 1
		Österreich, 1
<b>O</b>		Oligarch, 1
Ober, 1		Ostern, 1

### 3.1.4. Japanese language

The following runs with `xindex -l jp <file>`:

```
\usepackage{fontspec}
\setmainfont{SourceHanSans}
\usepackage[japanese]{babel}
\addto\captionsjapanese{\def\indexname{指数}}
\usepackage{hvinindex}% for \Index
\usepackage{makeidx}\makeindex
```

```
\Index{車} \Index{車道} 日本\index{日本|fbox} \Index{病院}
\Index{コンピュータ} \Index{プリンタ} \Index{印刷}
\Index{スイミングプール} \Index{天王} \Index{広島}
\Index{ドイツ} \Index{日本} \Index{ワープロ}
\Index{foo} und \Index{bar} \Index{//} \Index{4711}
\newpage\printindex
```

#### 指数

シンボル

//, 1

番号

4711, 1

B

bar, 1

F

foo, 1

こ

コンピュータ, 1

す

スイミングプール, 1

と

ドイツ, 1

ふ

プリンタ, 1

わ

ワープロ, 1

印刷, 1

天王, 1

広島, 1

日本, 1, 1

病院, 1

車, 1

車道, 1

xindex-10.tex

In Japanese, sorting by character code (Unicode) does not follow standard dictionary or index conventions. Because Kanji (ideographic characters) often have multiple phonetic readings depending on context, they must be sorted based on their pronunciation (Kana) rather than the character itself.

For example, a term like 車 should be sorted under 'ku' (kuruma), but its Unicode position is completely different. To make `xindex` viable for professional Japanese publications, it is essential to emphasize the use of the `Entry@Reading` syntax, such as:

```
\usepackage{fontspec}
\setmainfont{SourceHanSans}
\usepackage[japanese]{babel}
\addto\captionsjapanese{\def\indexname{指数}}
\usepackage{hvinindex}% for \Index
\usepackage{makeidx}\makeindex
```

```
\Index{ワープロ@わあぷろ} \Index{印刷@いんさつ}
\Index{天王@てんのう} or depends on context,
\Index{天王@てんおう} \Index{広島@ひろしま}
\Index{日本@にほん} \Index{病院@びょういん}
\Index{車@くるま} \Index{車道@しゃどう}
\newpage\printindex
```

#### 指数

わ

わあぷろ, 1

い

いんさつ, 1

て

てんのう, 1

てんおう, 1

ひ

ひろしま, 1

に

にほん, 1

ひ

びょういん, 1

く

くるま, 1

×

しゃどう, 1

xindex-11.tex

Without these explicit sort keys, the resulting index will not be readable for Japanese users.

## 3.2. Case sensitive index entries

By default `foo` and `Foo` are two different entries and will be handled differently by `xindex`: `Foo` will be as an own entry *before* `foo`. Let's see a more complex example. In the index the entry `xindex-DIN2.lua` is the first one of the `xindex-???` series because uppercase letters are sorted before lowercase letters.

```
xindex-12.tex
\usepackage{makeidx}
\usepackage{hyperref}

foo\newpage
\printindex
```

## Index

### X

xindex package, 2, 15  
 xindex program, 4, 13f  
 xindex-cfg-common.cfg file, 9  
 xindex-cfg-common.lua file, 14  
 xindex-cfg.lua file, 6, 10  
 xindex-DIN2.lua file, 6  
 xindex-dtk.lua file, 12  
 xindex-HAdW-eKO.lua file, 10  
 xindex-newfile.lua file, 6

The same example sorted with the `-a` or `--no_casesensitive` has another output: now `xindex-cfg-common.lua` is the first one of the `xindex-???` series.

```
xindex-13.tex
\usepackage{makeidx}
\usepackage{hyperref}

foo\newpage
\printindex
```

## Index

### X

xindex package, 2, 15  
 xindex program, 4, 13f  
 xindex-cfg-common.cfg file, 9  
 xindex-cfg-common.lua file, 14  
 xindex-cfg.lua file, 6, 10  
 xindex-DIN2.lua file, 6  
 xindex-dtk.lua file, 12  
 xindex-HAdW-eKO.lua file, 10  
 xindex-newfile.lua file, 6

### 3.3. Ignore space for sorting

By default »alpha sort« will be sorted *before* »alphaA«:

```
xindex-14.tex
\usepackage{makeidx}\makeindex
% default sorting

Test
\index{alpha sort}\index{alphaA}
\newpage
\printindex
```

## Index

### A

alpha sort, 1  
 alphaA, 1

This can be changed with the optional argument `-i` or `--ignoreSpace`:

```
\usepackage{makeidx}\makeindex
% sort with xindex -i <file>

Test
\index{alpha sort}\index{alphaA}
\newpage
\printindex
```

Index

A  
alphaA, 1  
alpha sort, 1

4. Pagenumbers

4.1. Compressing pagenumber series

By default page sequences of an entry are compressed to

- 8f** page 8 and 9
- 8ff** page 8, 9, and 10
- 8-12** page 8, 9, ..., 12

The so-called folio abbreviation is language dependent and defined in the file xindex-cfg-common.cfg:

```
folium = {
  cs = {"f.", "ff."},
  da = {"f", "ff"},
  de = {"f", "ff"},
  en = {"f", "ff"},
  es = {"f", "ff"},
  fr = {"\\", "sq.", "\\sq."},
  it = {"f", "ff"},
  jp = {"シンボル", "番号"},
  nl = {"f.", "ff."},
  no = {"\\", "f.", "\\ff."},
  ru = {"", ""}, -- doesn't exist
}
```

```
\usepackage[french]{babel}
\usepackage{makeidx}\makeindex

Sorted with \verb|-l fr|

foobar\index{foobar|}{
foo\index{foo}\index{bar}\index{baz}\newpage
foo\index{foo}\index{bar}\index{baz}\newpage
foo\index{bar}\index{baz}\newpage
foo\index{baz}\newpage
foo\index{foo}foobar\index{foobar|}}
\newpage
\printindex
```

Index

B  
bar, 1 sqq.  
baz, 1–4  
  
F  
foo, 1 sq., 5  
foobar, 1–5

## 4.2. Modify Pagenumber

Every page can be combined with an additional macro, like `\index{foo|fbox}`, the page number will be set into a framebox. If we have on the same page the two commands:

```
foo\index{foo} and foo\index{foo|bar}
```

then we have two *different* index entries which will not be compressed to one entry. In the following example we have four different entries for *foo* which is the reason that we do not get an output like *foo*, 1--4. Only the first two entries are of the same type, so we get 1f in the output.

xindex-17.tex

```
\usepackage{makeidx}\makeindex

Ein foo\index{foo} \newpage und \index{foo}
ein foo\index{foo|textit} \newpage
und foo\index{foo|textbf} \newpage
und foo\index{foo|fbox}

\newpage
\printindex
```

## Index

**F**  
foo, 1f, 2, **3**, 4

## 4.3. Supress Pagenumber

Instead of printing an index in the default way, one can also print a glossary without the pagenumbers. This is possible with the optional argument `-g` which is equivalent to the long form `--no_pagenumber`. The following example uses an own config file for the definition of the description environment:

```
itemPageDelimiter = ""
compressPages     = true
fCompress         = false
minCompress       = 2
rangeSymbol       = "--"
numericPage       = true
sublabels         = {"", "\\item", "\\item", "\\item"}
pageNoPrefixDel   = ""
idxnewletter      = "\\textbf"
envStart          = "\\begin{description}"
indexOpening      = "\\makeatletter\z
                    \\def\\subitem{\\@idxitem} \\def\\subsubitem{\\@idxitem}\z
                    \\def\\subsubsubitem{\\@idxitem}\z
                    \\makeatother\z
                    \\itemsep 0.1ex" -- commands after envStart
envStop           = "\\end{description}"
```

xindex-18.tex

```
\usepackage[english]{babel}
\usepackage[noautomatic]{imakeidx}
\makeindex
\makeindex[name=gls, options= -c description -n --no_pagenumber]
```

Abbreviations:

```
XAS,\index{XAS --- X-ray absorption spectroscopy.}
XAFS,\index{XAFS --- Extended x-ray absorption fine structure.}
EXAFS,\index{EXAFS --- Extended x-ray absorption fine structure.}
```

```

XANES,\index{XANES --- X-ray absorption near edge structure.}
PES,\index{PES --- Photo emission spectroscopy.}
ARPES,\index{ARPES --- Angle resolved photo electron spectroscopy.}
SCES,\index{SCES --- Strongly correlated tlectron systems.}
HTSC,\index{HTSC --- High temperature superconductivity.}
MOCVD,\index{MOCVD --- Metalorganic chemical vapour deposition.}
PLD.\index{PLD ---Pulsed laser deposition.}

\smallskip Terms.

Fermions:
\index[gl]{Fermions@[Fermions]}%
\index[gl]{Fermions@[Fermions]!\[sf Fermion] --- a particle with a
half-odd-integer spin  $S=1/2$ .}electron,
\index[gl]{Fermions@[Fermions]!\[sf Electron] --- a subatomic particle
with a negative elementary electric charge:  $S=1/2$ .}proton,
\index[gl]{Fermions@[Fermions]!\[sf Proton] --- a subatomic particle with a
positive elementary electric charge:  $S=1/2$ .}positron,
\index[gl]{Fermions@[Fermions]!\[sf Positron] --- a particle with a positive
elementary electric charge, and the same mass as an electron:  $S=1/2$ .}neutron,
\index[gl]{Fermions@[Fermions]!\[sf Neutron] --- a subatomic electrically
neutral particle:  $S=1/2$ .}neutrino.
\index[gl]{Fermions@[Fermions]!\[sf Neutrino] --- an elementary electrically
neutral particle with very small rest mass:  $S=1/2$ .}

Bosons:
\index[gl]{Bosons@[Bosons]}%
\index[gl]{Bosons@[Bosons]!\[sf Boson] --- a particle with an
integer spin  $S$ .}photon,
\index[gl]{Bosons@[Bosons]!\[sf Photon] --- a quantum of the
electromagnetic field:  $S=1$ .}meson,
\index[gl]{Bosons@[Bosons]!\[sf Meson] --- a hadronic subatomic particle
composed of an equal number of quarks and antiquarks:  $S=0$ .}pion.
\index[gl]{Bosons@[Bosons]!\[sf Pion] --- any of  $\pi^0$ -,  $\pi^+$ -,
 $\pi^-$ - mesons consisting of quark and antiquark:  $S=0$ .}

\printindex
\printindex[gl]

```

ARPES — Angle resolved photo electron spectroscopy.

EXAFS — Extended x-ray absorption fine structure.

HTSC — High temperature superconductivity.

MOCVD — Metalorganic chemical vapour deposition.

PES — Photo emission spectroscopy.

PLD — Pulsed laser deposition.

SCES — Strongly correlated electron systems.

XAFS — Extended x-ray absorption fine structure.

XANES — X-ray absorption near edge structure.

XAS — X-ray absorption spectroscopy.

ARPES — Angle resolved photo electron spectroscopy.

#### Bosons

Boson — a particle with an integer spin  $S$ .

Meson — a hadronic subatomic particle composed of an equal number of quarks and antiquarks:  $S = 0$ .

Photon — a quantum of the electromagnetic field:  $S = 1$ .

Pion — any of  $\pi^0$ -,  $\pi^+$ -,  $\pi^-$ - mesons consisting of quark and antiquark:  $S = 0$ .

EXAFS — Extended x-ray absorption fine structure.

#### Fermions

Electron — a subatomic particle with a negative elementary electric charge:  $S = 1/2$ .

Fermion — a particle with a half-odd-integer spin  $S$ .

Neutrino — an elementary electrically neutral particle with very small rest mass:  $S = 1/2$ .

Neutron — a subatomic electrically neutral particle:  $S = 1/2$ .

Positron — a particle with a positive elementary electric charge, and the same mass as an electron:  $S = 1/2$ .

Proton — a subatomic particle with a positive elementary electric charge:  $S = 1/2$ .

HTSC — High temperature superconductivity.

MOCVD — Metalorganic chemical vapour deposition.

PES — Photo emission spectroscopy.

PLD — Pulsed laser deposition.

## 5. The config file

The main config file is `xindex-cfg.lua` and used by default. A new config file must have the prefix `xindex-` and the file extension `.lua`, for example: `xindex-HAdW-eK0.lua` which can be used with `--config HAdW-eK0`. The file must be saved in the documents directory or in one which is known to `kpsewhich`, for example<sup>1</sup> `$TEXMFLOCAL/tex/lualatex/xindex/` Do not forget to update the filename database.

A new config file must declare at least the variables which are part of the default config file: the translation tables and

```
itemPageDelimiter = ","      -- Hello, 14
compressPages      = true
-- something like 12--15, instead of 12,13,14,15. the |( ... |) syntax is still valid
fCompress          = true    -- 3f -> page 3, 4 and 3ff -> page 3, 4, 5
minCompress        = 3      -- 14--17
rangeSymbol        = "--"
numericPage        = true    -- for non numerical pagenumbers, like "VI-17"
sublabels          = {"", "-\\-", "--\\-", "---\\-"}
-- for the sub(sub-items, first one is empty
pageNoPrefixDel    = ""     -- a delimiter for page numbers like "VI-17" -- not used !!!
indexOpening       = ""     -- commands/text after \begin{theindex}
```

The new config file can define own functions for compressing the pagelist for a given entry and for the formatting of the output. They must be called `specialCompressPageList` and `specialGetPageList`.

For example:

<sup>1</sup>The directory `xindex` must be created before saving the file.



```
function specialCompressPageList(pages)
  if (pages[1]["number"] == "") then pages[1]["number"] = " " end
  if (#pages <= 1) then
    pages[1]["number"] = pages[1]["number"]:gsub('-',':~')-- replace "-" with ":~"
    return pages
  end -- only one pageno
  local sortPages = {}
  local roman
  local volume
  local page
  local i
  for i=1,#pages do
    roman = string.gsub(pages[i]["number"],'%U*', '') -- only uppercase to catch VII/1-123f and VII/3-123ff (folium pages)
    if romanToNumber(roman) then
      roman = string.format("%05d",tonumber(romanToNumber(roman))) -- only roman part VII
    else
      roman = ""
    end
    volume = string.gsub(pages[i]["number"],'%a*', '') -- only the number /2 123 or /2-123
    if volume then volume = volume:gsub('-', '%d*', '') end -- delete - char to get /2
    page = string.gsub(pages[i]["number"],'.*-', '')
    page = string.format("%5s",page)
    sortPages[#sortPages+1] = {
      origin = pages[i],
      sort = roman..volume.." "..page } -- no minus between Roman/Volume and first page
    end
  end
  table.sort(sortPages, function(a,b) return a["sort"] < b["sort"] end )

  [...]

  return pages
end
end
```

The above code is a special function which can handle page numbers like VII-17, VIII/2/1-186. Internally exists a function `compressPageList` which is used if no `specialCompressPageList` is defined.

```
\usepackage{makeidx}
```

```
\mbox{}}\printindex
```

index-19.tex

## Personenverzeichnis

### A

Aachen, Johannes von ..... VII/1 : 215  
 Aarones ..... VII/2/1 : 1003, 1012  
 Abrahamson ..... VII/2/1 : 864, 991, 1048, 1067, 1156  
 Adamson ..... VII/2/1 : 1223, IX/1 : 1228  
 Adrian  
   - Hauster ..... VII/1 : 514, XI/1 : 515  
 Altling  
   - Mensa ..... VII/1 : 426, 434, 453, 455, 466f.

### B

Braunschweig-Wolfenbüttel  
   - Karl Viktor von, Herzog ..... VI/1 : 83  
 Bremen  
   - Heinz von, Erzbischof ..... *see* Sachsen-Lauenburg

### J

Julian  
   - Apostata, römischer Kaiser ..... VII/2/1 : 904  
 Justinian I., byzantinischer Kaiser ..... VII/1 : 326, 734,  
   VII/2/1 : 1011

### K

Karl  
   - II., Kaiser ..... VII/1 : 147  
   - III., Kaiser ..... VII/1 : 149  
   - IV., Kaiser ..... VI/1 : 12, VII/1 : 34, 147  
   - V., Kaiser ..... VI/1 : 84, 284, 654, VI/2 : 708, 1014,  
     1043, 1131, 1210, VII/1 : 34  
   - VI., Kaiser ..... VII/1 : 296  
   - IX., Kaiser ..... VII/1 : 296  
   - X., Kaiser ..... VII/1 : 149  
   - der Große, Kaiser ..... VI/2 : 987, 989, 1028

### O

Osnabrück  
   - Heinz von, Bischof ..... *see* Sachsen-Lauenburg

### S

Schleswig-Holstein  
   - Rudolf von, Herzog ..... VII/2/1 : 758-761, 765

### Z

Zwingl, Haldrich ..... IX : 479, 692

The .idx file of the above example looks like

```
\indexentry{Karl!V., Kaiser}{VI/2-1210}
\indexentry{Braunschweig-Wolfenbüttel!Karl Viktor von, Herzog}{VI/1-83}
\indexentry{Schleswig-Holstein!Rudolf von, Herzog}{VII/2/1-758}
\indexentry{Schleswig-Holstein!Rudolf von, Herzog}{VII/2/1-759}
[...]
```

The config file xindex-dtk.lua defines a special page output:

```
function specialGetPageList(v,hyperpage) -- Entry table, boolean
  local Pages = {}
[.]
  if (Pages[1]["special"] == nil) or (Pages[1]["number"] == nil) then return "" end
  if #Pages == 1 then
    return "\\relax"..Pages[1]["number"].."\\@nil"
  else
    pageNo = "\\relax"..Pages[1]["number"]
    for i=2,#Pages do
      if Pages[i]["number"] then
        pageNo = pageNo..", "..Pages[i]["number"].."\\@nil"
        Pages[i] = {}
      end
    end
  end
[.]
end
```

The following example runs xindex -c dtk -l de -n <input> and the .idx file looks like

```
\indexentry{BährendtsenElke@Elke Bährendtsen!\Email {elke"@xyz.de}}{14}
\indexentry{JacekJonasson Jared@Jonasson Jared Jazek!\Email {mail"@jones.net}}{20}
[...]
```

```

\usepackage{url}
\DeclareUrlCommand\Email{%
  \def\UrlLeft{}%
  \def\UrlRight{}%
  \def\UrlLinkPrefix{mailto:}%
  \def\UrlType{email}%
}
\usepackage{multicol}
\makeatletter
\def\DTK@scan@item#1\subitem#2\relax#3\@nil{%
  \def\DTK@tempa{#1}\def\DTK@tempb{#2}\def\DTK@tempc{#3}%
}
\def\theindex{%
  only for demonstration
  \columnseprule=\z@ \columnsep=10\p@
  \begin{multicols}{2}[\noindent\textbf{\large Autorenliste}]%
    \makeatletter
    \def\indexspace{}%
    \parindent\z@
    \setlength{\parskip}{\z@ \@plus .3\p@}%
    \setlength{\parfillskip}{\z@ \@plus 1fil}%
    \raggedright
    \def\item#1\@nil{\DTK@scan@item#1\@nil
      \par\parbox{\columnwidth}{%
        \textbf{\DTK@tempa}\hfill[\DTK@tempc]\par\DTK@tempb
      }%
      \par\bigskip
    }%
  \end{multicols}
}
\def\endtheindex{\end{multicols}}
\makeatother
\usepackage{makeidx}

\mbox{}\label{president}
\printindex

```

xindex-20.tex

### Autorenliste

<b>Elke Bährendtsen</b> elke@xyz.de	[14]	<b>Eike Schuler</b> Haussteig 15 36396 Stuttgart eike.schuler@kabel.de	[40]
<b>Horst Fannt</b> Friedrichallee 74 13233 Neu-Isenburg horst.fannt@gmxnet.de	[48]	<b>Markus Severs</b> siehe Seite 1	[4]
<b>Jonasson Jared Jazek</b> mail@jones.net	[20]	<b>Herbert Voß</b> Wasgensteig 12 10127 Potsdam herbert@xyz.de	[3, 5]
<b>Martin Koon</b> Freiherr-Links-Weg 16 15525 Neckar koo@xyz.org	[24, 31]	<b>Michael Ziegenda</b> Lokostr. 19 20713 Kallin ziegenda@mail.com	[9]

There are three predefined sublabels for \subitems. The program itself can handle more, there is no limit for xindex.

index-21.tex

```

\makeatletter
\g@addto@macro{\theindex}{%
  \def\subsubsubitem{\@idxitem\hspace*{35\p@}}
  \def\subsubsubsubitem{\@idxitem\hspace*{40\p@}}
}
\makeatother
\usepackage{makeidx}\makeindex

foo\index{foo} bar\index{foo!bar}
baz\index{foo!bar!baz} foobar%
\index{foo!bar!baz!foobar} Kuba
\index{foo!bar!baz!foobar!Kuba}
\newpage \printindex

```

## Index

### F

foo, 1  
   - bar, 1  
     - baz, 1  
       — foobar, 1  
       — Kuba, 1

## 6. hyperref

Using the package hyperref is no problem:

index-22.tex

```

\usepackage{makeidx}\makeindex
\usepackage{hvinde}% for \Index
\usepackage{colorlinks}{hyperref}

Sorted with \verb|-l DE| \par
\Index{Österreich} \Index{Öresund} \Index{Ostern}
\Index{Ober} \Index{Oberin} \Index{Österreich}
\index{Öresund|textbf} \Index{Ostern} \Index{Ober}
\Index{Oberin} \Index{Obstler} \Index{Öl} \Index{ölen}
\Index{Ödem} \Index{Oligarch} \Index{Oder} \Index{oder}
\index{Fluss!Oder|textit} \Index{Oder|seealso{Fluss}}
\Index{Göbel} \Index{Goethe} \Index{Göthe} \Index{Götz}
\newpage\Index{Goldmann} \Index{Goethe} \newpage \printindex

```

## Index

### F

Fluss  
   - [Oder](#), 1

### G

Göbel, 1  
 Goethe, 1f  
 Goldmann, 2  
 Göthe, 1  
 Götz, 1

### O

[Ober](#), 1

[Oberin](#), 1  
[Obstler](#), 1  
[Ödem](#), 1  
[Oder](#), 1  
 oder, 1  
 Oder, *siehe auch*  
     [Fluss](#)  
[Öl](#), 1  
[ölen](#), 1  
[Oligarch](#), 1  
[Öresund](#), 1, 1  
[Ostern](#), 1  
[Österreich](#), 1

The following example fixes a problem with hyperref and escaping the | character, e.g. "|. In such a case hyperref ignores the vertical bar. With the optional parameter -f | --fix\_hyperref, which is still experimental, xindex tries to fix this problem. However, instead of using this problematic vertical character, you can use \textbar, which also solves the problem.

index-23.tex

```

\usepackage[noautomatic]{imakeidx}
\usepackage{hvinde}
\makeindex[columns=5, columnsep=6pt, options=--fix_hyperref]
\usepackage{hyperref}

Symbols:\\
! \index{"!} " \index{""} \# \index{#@\#} \$ \index{${}\$}
\% \index{%%\%} \& \index{&\&} ' \index{' } \index{')}
( \index{(} * \index{*} + \index{+} , \index{,} @, \,
- \index{-} . \index{.} / \index{/} : \index{:}
; \index{;} < \index{<} = \index{=} > \index{>}

```

```
? \index{?} @ \index{"@} [ \index{[] } \index{[]}  
\_ \index{_\_} ` \index{' } | \index{\textbar}  
\newpage\index{"|}\index{\textbar}\index{123}\Index{Post}  
\{ \index{\braceLeft} \} \index{\braceRight}  
\textbackslash \index{\@\textbackslash}  
\textasciicircum \index{^\textasciicircum}  
\textasciitilde \index{~\textasciitilde}  
  
Alphabet: \Index{Z},\Index{Zeppelin}\Index{Foo}\dots  
\Index{...@\ldots}  
\printindex
```

Index

<b>Symbols</b>	<b>'</b> , 1	<b>*</b> , 1	<b>=</b> , 1	<b>F</b>
<b>_</b> , 1	<b>"</b> , 1	<b>/</b> , 1	<b>&gt;</b> , 1	<b>Foo</b> , 2
<b>-</b> , 1	<b>"</b> , 2	<b>\</b> , 2	<b> </b> , 1f	
<b>,</b> , 1	<b>(</b> , 1	<b>&amp;</b> , 1	<b>~</b> , 2	<b>P</b>
<b>;</b> , 1	<b>)</b> , 1	<b>#</b> , 1	<b>\$</b> , 1	<b>Post</b> , 2
<b>:</b> , 1	<b>[</b> , 1	<b>%</b> , 1		
<b>!</b> , 1	<b>]</b> , 1	<b>'</b> , 1		<b>Z</b>
<b>?</b> , 1	<b>,</b> , 2	<b>^</b> , 2	<b>Numbers</b>	<b>Z</b> , 2
<b>.</b> , 1	<b>,</b> , 2	<b>+</b> , 1	<b>123</b> , 2	<b>Zeppelin</b> , 2
<b>...</b> , 2	<b>@</b> , 1	<b>&lt;</b> , 1		

7. Including commands into the .idx file

The command \addtocontents doesn't work for the index file. With the L<sup>A</sup>T<sub>E</sub>X package xindex (same name as the Lua program xindex) defines a macro \writeidx which writes its argument into the .idx file. This can be useful to insert a pagebreak/columnbreak before a new letter in the output of the index file:

```
\documentclass{article}  
\usepackage{makeidx}  
\makeindex  
\usepackage{xindex}  
\begin{document}  
  
\index{foo}foo and  
\writeidx{\clearpage}  
\index{bar}bar  
  
\printindex  
\end{document}
```

Such commands are then taken into account by the program xindex. With the often used program makeindex such commands are ignored. In the following example we put an horizontal line after the first entry:

```
\usepackage{xindex}  
\makeindex  
  
\index{foo}foo and  
\writeidx{\item\protect\hrulefill}  
\index{bar}bar
```

xindex-24.tex

```
\index{gex}gex
\printindex
```

## Index

### B

bar, 1

### F

foo, 1

### G

gex, 1

## 8. Headings

By default the output uses the English headings: *Symbols*, *Numbers*, and *A ...* There are three predefined languages en, de, and fr. The definition is in the file `xindex-cfg-common.lua` (see also section 2 on page 5). It can easily be extended for other languages. Sometimes the headers are not needed, for example in a name list. With the optional argument `-n` or `--noheadings` the created `.ind` file has only the vertical space between different first letters:

xindex-25.tex

```
\usepackage{makeidx}\makeindex
```

```
Ein foo\index{foo}\index{bar|({}
  \newpage und \index{foo}
ein foo\index{foo|textit} \newpage
und foo\index{foo|textbf} \newpage
und foo\index{foo|fbox}
\index{bar|)}
\newpage
\verb|xindex -n <file>|
\printindex
```

```
xindex -n <file>
```

## Index

bar, 1–4

foo, 1f, 2, 3, 4

The headings are printed by default as `\textbf`. This can be changed in the config file by setting the variable `idxnewletter`, for example: `idxnewletter = "\\textit"`. If you need some more code here then define an own macro for it, which can be seen in the following example. It has an own config file `xindex-header.lua` which has the line

```
idxnewletter = "\\idxnewletter"
```

In the documents preamble there is the definition:

```
\newcommand\idxnewletter[1]{\textbf{\textit{#1}}}
```

```
\usepackage{makeidx}\makeindex
\newcommand\idxnewletter[1]{\textbf{\textit{#1}}}
```

```
\section{Escaping characters}
\begin{itemize}
\item Exclamation mark ! \index{exclaim (!)}
\item Vertical bar | \index{Vertical bar (|)}
\item Doublequote \verb|"| \index{""}
\item Double doublequote \verb|""| \index{""""}
\item At character @ \index{At (@)}
\end{itemize}
run \verb|xindex -c header <file.idx>|
\index{<file.idx>@\texttt{<file.idx>}}
\index{123}
\newpage \printindex
```

## Index

### *Symbols*

", 1  
 "", 1  
 <file.idx>, 1

### *Numbers*

123, 1

### *A*

At (@), 1

### *E*

exclaim (!), 1

### *V*

Vertical bar (|), 1

## 9. Automatic index creation

With package `xindex` one can define several different index files, e.g. an index of names. With the optional argument `imakeidx` the package itself loads `imakeidx` and adds the program `xindex` as the default program to `imakeidx`.

## Index of names

Fairbairns, Robin,  
Feuerstack, Thomas,

Kew, Jonathan,  
Knuth, Donald,  
Kohm, Markus,

Lamport, Leslie,  
Lemberg, Werner,

Mittelbach, Frank,

Niepraschk, Rolf,

Pégourié-Gonnard, Manuel,  
Preining, Norbert,

Roux, Élie,

Schenk, Christian,

Thành, Hàn Thê,  
Theiling, Henrik,  
Tobin, Geoffrey,

Volovich, Vladimir,

Wilson, Peter,

xindex-27.tex

```
\usepackage[imakeidx]{xindex}
\makeindex[name=persons,title=Index of names,
  columns=1,options= --noheadings]
\def\ThanhVN{Hàn Thê\protect\llap{%
  \raise 0.5ex\hbox{'{}}}}

foo\index[persons]{Niepraschk,~ Rolf}
foo\index[persons]{Lamport,~ Leslie}
foo\index[persons]{Knuth,~ Donald}
foo\index[persons]{Knuth,~ Donald}
\newpage
foo\index[persons]{Lamport,~ Leslie}
foo\index[persons]{Thành,~ \ThanhVN}
foo\index[persons]{Kew,~ Jonathan}
foo\index[persons]{Kohm,~ Markus}
foo\index[persons]{Preining,~ Norbert}
\newpage
foo\index[persons]{Schenk,~ Christian}
foo\index[persons]{Feuerstack,~ Thomas}
foo\index[persons]{Tobin,~ Geoffrey}
foo\index[persons]{Wilson,~ Peter}
\newpage
foo\index[persons]{Kohm,~ Markus}
foo\index[persons]{Theiling,~ Henrik}
foo\index[persons]{Pégourié-Gonnard,~ Manuel}
foo\index[persons]{Roux,~ Élie}
\newpage
foo\index[persons]{Mittelbach,~ Frank}
foo\index[persons]{Fairbairns,~ Robin}
foo\index[persons]{Lemberg,~ Werner}
foo\index[persons]{Volovich,~ Vladimir}

\printindex[persons]
```

You have to run  $\LaTeX$  with the `--shell-escape` option to run `xindex` from within the  $\LaTeX$  document.

## 10. Labels

By default `xindex` creates labels in the index for the symbols, numbers, and other parts (letters) to which one can refer. with `\ref{label}`. The labels are named `L-xindex-<name>`. The prefix `L` can be changed by the config file. `<name>` may be symbols, numbers, or A (a letter). For example

```
\begin{theindex}
\par\textbf{Symbols}\label{L-xindex-symbols}
\nopagebreak[4]
  \item @, \hyperpage{3}
  \item (, \hyperpage{3}
  \item !, \hyperpage{3}

\indexspace
\textbf{A}\label{L-xindex-A}
[...]
```



The labels can be used to create a reference to a specific part in the index, for example the letter X is in the index on page 27 (\pageref{L-xindex-X}).

With the optional argument -b for the run of xindex one can suppress the creation of the labels, e.g. xindex -b -l fr ...

11. Demerits

- For more than 5000 entries in the .idx file the internal Lua function for sorting may take some time.
- The .idx file is not checked for L<sup>A</sup>T<sub>E</sub>X errors in the argument of \indexentry.

A. Examples

Correct french sorting with UCA:

```
%%% xindex -l fr <file>
\IND{CÔTÉ} \IND{cote} \IND{côté} \IND{COTÉ} \IND{côte}
\IND{COTE} \IND{coté} \IND{Coté} \IND{coté} \IND{Cote}
\IND{CÔTE} \IND{Côte} \IND{lésé} \IND{péch  }
\IND{boh  me} \IND{g  n  } \IND{p  che} \IND{  sium}
\IND{p  cher} \IND{r  v  le} \IND{p  cher} \IND{r  v  l  }
\IND{Boh  me} \IND{rel  ve} \IND{P  CH  } \IND{ma  on}
\IND{relev  } \IND{  l  ve} \IND{g  ne} \IND{  lev  }
\IND{M  CON} \IND{g  ne} \IND{Boh  mien} \IND{caennais}
\IND{l  se} \IND{coexistence} \IND{  cur}
\IND{coefficient} \IND{cafard} \IND{  CUR} \IND{C  SIUM}
\newpage \IND{cot  } \IND{  cur} \IND{p  ch  } \newpage
\IND{cot  }\IND{coefficient} \newpage

\pagestyle{empty} \printindex
```

Index

<b>B</b>		
boh��me, 1	cot��, 1	l��s��, 1
Boh��me, 1	Cot��, 1	
Boh��mien, 1	COT��, 1	<b>M</b>
	c��t��, 1	M��CON, 1
	C��t��, 1	ma��on, 1
<b>C</b>	C��T��, 1	
caennais, 1	cot��, 2 sq.	<b>P</b>
��sium, 1	c��ur, 1 sq.	p��che, 1
C��SIUM, 1		p��ch��, 1
cafard, 1	<b>E</b>	P��CH��, 1
coefficient, 1, 3	��l��ve, 1	p��ch��, 2
C��UR, 1	��lev��, 1	p��cher, 1
coexistence, 1		p��cher, 1
cote, 1	<b>G</b>	
Cote, 1	g��ne, 1	<b>R</b>
COTE, 1	g��ne, 1	rel��ve, 1
C��te, 1	g��n��, 1	relev��, 1
c��te, 1	<b>L</b>	r��v��le, 1
C��TE, 1	l��se, 1	r��v��l��, 1

xindex-28.tex

```
\usepackage{makeidx} \makeindex
% Brian Dunn

First level.\index{first level}\par
First level second level.\index{first level!second level}\par
Duplicate.\index{first level!second level}\par
Alpha.\index{alpha}\par
Alpha beta.\index{alpha!beta}\par
Alpha beta gamma.\index{alpha!beta!gamma}\par
Duplicate alpha beta.\index{alpha!beta}\par
Duplicate alpha beta gamma.\index{alpha!beta!gamma}
\newpage
\printindex
```

Index

<b>A</b>	
alpha, 1	
- beta, 1	
- gamma, 1	
<b>F</b>	
first level, 1	
- second level, 1	

xindex-29.tex

xindex-30.tex

```
\usepackage{makeidx}\makeindex
```

```
Test \index{A!Test} oder auch \index{B!Test}
\newpage
\printindex
```

## Index

**A**

A  
- Test, 1

**B**

B  
- Test, 1

xindex-31.tex

```
%% Denis Bitouzé
```

```
\usepackage{makeidx}\makeindex
```

```
Foo\index{foo!bar1!baz1}
Foo\index{foo!bar1!baz2}
Foo\index{foo!bar2!baz1}
Foo\index{foo!bar2!baz2}
\printindex
```

## Index

**F**

foo  
- bar1  
- baz1, 1  
- baz2, 1  
- bar2  
- baz1, 1  
- baz2, 1

# Index

## Symbols

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", 3  
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\}, 4  
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