Section name references in LaTeX*

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Documentation overview for `hyperref`

The documentation for package `hyperref` consists of several files:

Manual The **USER MANUAL** (also available as HTML).

README The **README** file (also available as text file). Here information is collected that is not yet in the manual: new features, package compatibility, limitations, known problems, . . .

ChangeLog This file records the version history (also available as text file).

Options This file provides a short option summary.

Bookmark talk, slides Slides for the talk "PDF information and navigation elements with hyperref, pdfTeX and thumbpdf" at EuroTeX 1999.

Bookmark talk, paper The paper version of the talk.

Source code documentation:

hyperref.dtx This is the source code documentation for hyperref.

backref.dtx "Back referencing from bibliographical citations"

☞ **nameref.dtx** "Section name references in LaTeX" (this file)

Contents

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*This file has version number v2.36, last revised 2010/01/25.

1 Introduction

Cross-referencing to include the *name* of the section, rather than just the number or page. This works by redefining some of the inside LaTeX macros, so it is vulnerable to future changes.

2 History

Sebastian Rahtz, for Lou Burnard, March 15th 1994;
SPQR CERN July 1994;
Last mod. Sept. 3th MG;
Sept. 19th SPQR;
April 11th 1995 SPQR (added section formatting hook);
April 14th 1995 SPQR (compatibility with hyperref);
June 22 1995 SPQR (removed typeout from Sectionformat);
September 22 1997 added varioref hacks by Corey Minyard;
September 28th changes by David Carlisle.
More recent changes are recorded in ChangeLog.

The versions before 2009/11/27 v2.32 did not expand the title strings (of `\section`, `\caption`, ...). Then the behaviour switched to expanding, because this allows to remove unwanted macros (`\label`, ...). Despite this method is used in package titleref and class memoir, the first feedbacks let me conclude that this is not robust enough. Therefore I wrote package gettitlestring that uses the non-expanding method as default. It also allows me to use this package in package zref-titleref. See the package documentation of package gettitlestring how to change the method. It also provides a hook to remove additional unwanted macros, not supported by the package. Example:

```
\usepackage{gettitlestring}
\GetTitleStringDisableCommands{%
  \let\mylabel\@gobble
  \renewcommand\myindex[2]{}%
}
```

3 Implementation

1 ⟨*package⟩

2 \RequirePackage{refcount}[2006/02/12]
3 \RequirePackage{gettitlestring}[2009/12/18]

We redefine `\label` so that it also writes the name of the current section to the .aux file; if the name ends in a dot, we zap it. To allow for the hyperref package, also write fourth and fifth fields (empty by default; used for cross-ref name, and file).

4 \def\strip@period#1.\relax#2\@@@{#1}

3.1 \label stuff

Here is tested, whether package showkeys is loaded. But if option final is used, the macros of showkeys are not defined, so we have to check an additional test.

5 \newif\ifNR@showkeys

```
 6 \NR@showkeysfalse
 7 \@ifpackageloaded{showkeys}{%
 8   \begingroup
 9     \@ifundefined{SK@@label}{%
10     }{%
11       \global\NR@showkeystrue
12     }%
13   \endgroup
14 }{}

15 \def\label#1{%
16   \@bsphack
17   \begingroup
18     \@onelevel@sanitize\@currentlabelname
19     \edef\@currentlabelname{%
20       \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
21     }%
22     \protected@write\@auxout{}{%
23       \string\newlabel{#1}{%
24         {\@currentlabel}%
25         {\thepage}%
26         {\@currentlabelname}%
27         {\@currentHref}{}%
28       }%
29     }%
30   \endgroup
31   \@esphack
32 }%
33 \ifNR@showkeys
34   \def\label#1{%
35     \@bsphack
36     \SK@\SK@@label{#1}%
37     \begingroup
38       \@onelevel@sanitize\@currentlabelname
39       \edef\@currentlabelname{%
40         \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
41       }%
42       \protected@write\@auxout{}{%
43         \string\newlabel{#1}{%
44           {\@currentlabel}%
45           {\thepage}%
46           {\@currentlabelname}%
47           {\@currentHref}{}%
48         }%
49       }%
50     \endgroup
51     \@esphack
52   }%
53 \fi

54 \let\ltx@label\label
```

Needed for the *subeqnarray* package.

```
55 \@ifundefined{slabel}{}{%
56   \def\slabel#1{%
57     \@bsphack
58     \if@filesw
59       {%
60         \@onelevel@sanitize\@currentlabelname
```

```
61        \edef\@currentlabelname{%
62          \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
63        }%
64        \let\thepage\relax
65        \def\protect{\noexpand\noexpand\noexpand}%
66        \edef\@tempa{%
67          \write\@auxout{%
68            \string\newlabel{#1}{%
69              {\thesubequation}%
70              {\thepage}%
71              {\@currentlabelname}%
72              {\@currentHref}{}%
73            }%
74          }%
75        }%
76        \expandafter
77      }%
78      \@tempa
79      \if@nobreak\ifvmode\nobreak\fi\fi
80    \fi
81    \@esphack
82  }%
83 }
```

Overload an AMS LaTeX command, which uses \newlabel. Sigh!

```
84 \def\@writetocindents@{%
85   \begingroup
86   \@for\@tempa:=-1,0,1,2,3\do{%
87     \immediate\write\@auxout{%
88       \string\newlabel{tocindent\@tempa}{%
89         \csname r@tocindent\@tempa\endcsname{}{}{}{}%
90       }%
91     }%
92   }%
93   \endgroup
94 }
```

3.2   Changes of section macros

Add to the underlying section heading macros so that they note the section name for use by label.

If a section heading or the like has a \label in it, we need to extract it, or subsequent processing breaks.

```
95 \def\NR@gettitle#1{%
96   \GetTitleString{#1}%
97   \let\@currentlabelname\GetTitleStringResult
98 }
```

First the numbered sections. While we are about it, put in a useful section formatting macro.

```
99  \let\NR@sect\@sect
100 \newcounter{section@level}
101 \def\@sect#1#2#3#4#5#6[#7]#8{%
102   \setcounter{section@level}{#2}%
103   \NR@gettitle{#7}%
104   \NR@sect{#1}{#2}{#3}{#4}{#5}{#6}[{#7}]{\Sectionformat{#8}{#2}}%
105 }
```

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and now the unnumbered ones

```
106 \let\NR@ssect\@ssect
107 \def\@ssect#1#2#3#4#5{%
108   \NR@gettitle{#5}%
109   \NR@ssect{#1}{#2}{#3}{#4}{\Sectionformat{#5}{#1}}%
110 }
```

Parts and chapters are treated differently. sigh.

```
111 \let\NR@part\@part
112 \def\@part[#1]#2{%
113   \NR@gettitle{#1}%
114   \NR@part[{#1}]{#2}%
115 }
116 \let\NR@chapter\@chapter
117 \def\@chapter[#1]#2{%
118   \NR@gettitle{#1}%
119   \NR@chapter[{#1}]{#2}%
120 }
121 \let\NR@schapter\@schapter
122 \def\@schapter#1{%
123   \NR@gettitle{#1}%
124   \NR@schapter{#1}%
125 }
```

Captions

```
126 \AtBeginDocument{%
127   \@ifpackageloaded{hyperref}{%
128     \@ifpackagelater{hyperref}{2009/12/05}\@gobble\@firstofone
129   }\@firstofone
130   {%
131     \let\NR@@caption\@caption
132     \long\def\@caption#1[#2]{%
133       \NR@gettitle{#2}%
134       \NR@@caption{#1}[{#2}]%
135     }%
136   }%
137 }
```

```
138 \AtBeginDocument{%
139   \@ifpackageloaded{longtable}{%
140     \let\NRorg@LT@c@ption\LT@c@ption
141     \def\LT@c@ption#1[#2]#3{%
142       \NRorg@LT@c@ption{#1}[{#2}]{#3}%
143       \def\@tempa{#2}%
144       \ifx\@tempa\@empty
145       \else
146         \NR@gettitle{#2}%
147       \fi
148     }%
149   }{}%
150 }
```

Compatibility for package titlesec.

```
151 \AtBeginDocument{%
152   \@ifpackageloaded{titlesec}{%
153     \let\NRorg@ttl@sect@i\ttl@sect@i
154     \def\ttl@sect@i#1#2[#3]#4{%
155       \NR@gettitle{#4}%
```

```
156        \NRorg@ttl@sect@i{#1}{#2}[{#3}]{#4}%
157      }%
158   }{}%
159 }
```

3.2.1 Class beamer

```
160 \@ifclassloaded{beamer}{%
161   \def\NR@PatchBeamer#1{%
162     \expandafter\let\csname NRorg@beamer@#1\expandafter\endcsname
163                  \csname beamer@#1\endcsname
164     \begingroup
165       \edef\x{\endgroup
166         \long\def\expandafter\noexpand\csname beamer@#1\endcsname
167           [####1]{% hash-ok
168           \noexpand\NR@gettitle{####1}%
169           \expandafter\noexpand\csname NRorg@beamer@#1\endcsname
170           [{####1}]%
171         }%
172       }%
173     \x
174   }%
175   \NR@PatchBeamer{section}%
176   \NR@PatchBeamer{subsection}%
177   \NR@PatchBeamer{subsubsection}%
178 }{}
```

3.3 Referencing stuff

We default the label and hypertext reference to be empty.

```
179 \def\@currentlabelname{}
180 \def\@currentHref{}
```

Since the second part of the preserved reference now has five parts (number, page, name, hypertext reference and file), we need extra utility macros:

```
181 \long\def\@firstoffive#1#2#3#4#5{#1}
182 \long\def\@secondoffive#1#2#3#4#5{#2}
183 \long\def\@thirdoffive#1#2#3#4#5{#3}
184 \long\def\@fourthoffive#1#2#3#4#5{#4}
185 \long\def\@fifthoffive#1#2#3#4#5{#5}
```

We have to redefine \ref and \pageref to know about extra reference elements. Make them robust, and compatible with Babel. The Babel switch is mimicked if not already defined. Some support for package showkeys is implemented. If option notref of that package is set, \SK@ref has the meaning of \@empty.

```
186 \providecommand*\@safe@activestrue{}%
187 \providecommand*\@safe@activesfalse{}%
188 \def\NR@setref#1{%
189   \begingroup
190     \@safe@activestrue
191     \expandafter
192   \endgroup
193   \expandafter\NR@@setref\csname r@#1\endcsname
194 }
195 \def\NR@@setref#1{%
196   \ifx\@undefined#1%
197     \let#1\relax
198   \fi
```

```
199    \@setref#1%
200 }
201 \def\T@ref#1{%
202    \NR@setref{#1}\@firstoffive{#1}%
203 }%
204 \def\T@pageref#1{%
205    \NR@setref{#1}\@secondoffive{#1}%
206 }%
207 \ifNR@showkeys
208   \ifx\SK@ref\@empty
209   \else
210     \def\T@ref#1{%
211       \@safe@activestrue
212       \SK@\SK@@ref{#1}%
213       \@safe@activesfalse
214       \NR@setref{#1}\@firstoffive{#1}%
215     }%
216     \def\T@pageref#1{%
217       \@safe@activestrue
218       \SK@\SK@@ref{#1}%
219       \@safe@activesfalse
220       \NR@setref{#1}\@secondoffive{#1}%
221     }%
222   \fi
223 \fi
```

Package `hyperref` uses its own definitions of `\ref` and `\pageref` because it extends the syntax by the star form. `\DeclareRobustCommand` is used by hyperref. Package `nameref` can be loaded before, after hyperref or after hyperref's definitions in `\AtBeginDocument`.

```
224 \@ifpackageloaded{hyperref}{%
225 }{%
226   \DeclareRobustCommand{\ref}{\T@ref}%
227   \DeclareRobustCommand{\pageref}{\T@pageref}%
228 }
```

3.4   Usage and frontend

Access the (third) name part with `\nameref`;

```
229 \def\T@nameref#1{%
230   \begingroup
231     \let\label\@gobble
232     \NR@setref{#1}\@thirdoffive{#1}%
233   \endgroup
234 }%
235 \ifNR@showkeys
236   \ifx\SK@ref\@empty
237   \else
238     \def\T@nameref#1{%
239       \@safe@activestrue
240       \SK@\SK@@ref{#1}%
241       \@safe@activesfalse
242       \begingroup
243         \let\label\@gobble
244         \NR@setref{#1}\@thirdoffive{#1}%
245       \endgroup
246     }%
```

```
247    \fi
248 \fi
249 \def\nameref{\protect\T@nameref}
```

An extended form which gives title and page number.

```
250 \def\Nameref#1{'\nameref{#1}' on page~\pageref{#1}}
```

The default for \Sectionformat

```
251 \providecommand\Sectionformat[2]{#1}
```

3.5   Package ifthen support

Package ifthen's \isodd does not work with \pageref because of the extra link and the star form. Therefore we need an expandable variant.

Unfortunately there is no hook in \ifthenelse in order to provide expandable versions without link of \ref and \pageref. As possible target I could only find \begingroup:

```
252 \@ifpackageloaded{ifthen}{%
253   \let\NROrg@ifthenelse\ifthenelse
254   \def\ifthenelse{%
255     \let\begingroup\NR@TE@begingroup
256     \NROrg@ifthenelse
257   }%
258   \let\NROrg@begingroup\begingroup
259   \def\NR@TE@begingroup{%
260     \let\begingroup\NROrg@begingroup
261     \begingroup
262     \def\ref##1{\getrefbykeydefault{##1}{}{??}}%
263     \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
264   }%
265 }{}
```

3.6   Compatibility with varioref

[This section was derived by Corey Minyard minyard@acm.org from the varioref package]

```
266 \AtBeginDocument{%
267   \ifx\csname @@vpageref\endcsname\relax
268   \else
269     \def\@@vpageref#1[#2]#3{%
270       \begingroup
271         \csname @safe@activestrue\endcsname
272         \edef\x{#3}%
273         \@onelevel@sanitize\x
274         \toks@{%
275           \NR@@vpageref{#1}[{#2}]%
276         }%
277         \edef\x{\endgroup
278           \the\toks@{\x}%
279         }%
280       \x
281     }%
282     \def\NR@@vpageref#1[#2]#3{%
283       \leavevmode\unskip
284       \global\advance\c@vrcnt\@ne
285       \@ifundefined{r@\the\c@vrcnt @vr}%
286         {\@namedef{r@\the\c@vrcnt @vr}{{??}{??}{}{}{}}}{}%
```

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```
287        \edef\@tempa{%
288          \expandafter\expandafter\expandafter
289          \@secondoffive\csname r@\the\c@vrcnt @vr\endcsname
290        }%
291        \@ifundefined{r@\the\c@vrcnt @xvr}%
292          {\@namedef{r@\the\c@vrcnt @xvr}{{??}{??}{}{}{}}}{}%
293        \edef\@tempb{%
294          \expandafter\expandafter\expandafter
295          \@secondoffive\csname r@\the\c@vrcnt @xvr\endcsname
296        }%
297        {%
298          \let\@currentlabel\@empty
299          \expandafter\label\expandafter{\the\c@vrcnt @xvr}%
300        }%
301        \ifx\@tempa\@tempb
302        \else
303          \vref@err{%
304            \noexpand\vref at page boundary %
305            \@tempb-\@tempa\space (may loop)%
306          }%
307        \fi
308        \@ifundefined{r@#3}{\@namedef{r@#3}{{??}{??}{}{}{}}}{}%
309        \edef\thevpagerefnum{%
310          \expandafter\expandafter\expandafter
311          \@secondoffive\csname r@#3\endcsname
312        }%
313        \ifx\vref@space\@undefined
314          \space
315        \else
316          \vref@space
317        \fi
318        \ifx\@tempa\thevpagerefnum
319          #1%
320        \else
321          #2%
322          \is@pos@number\thevpagerefnum{%
323            \is@pos@number\@tempa{%
324              \@tempcnta\@tempa
325              \advance\@tempcnta\@ne
326            }{%
327              \@tempcnta\maxdimen
328            }%
329            \ifnum \thevpagerefnum =\@tempcnta
330              \ifodd\@tempcnta
331                \if@twoside
332                  \reftextfaceafter
333                \else
334                  \reftextafter
335                \fi
336              \else
337                \reftextafter
338              \fi
339            \else
340              \advance\@tempcnta-2 %
341              \ifnum \thevpagerefnum =\@tempcnta
342                \ifodd\@tempcnta
343                  \reftextbefore
```

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```
344          \else
345            \if@twoside
346              \reftextfacebefore
347            \else
348              \reftextbefore
349            \fi
350          \fi
351        \else
352          \reftextfaraway{#3}%
353        \fi
354      \fi
355    }{%
356      \reftextfaraway{#3}%
357    }%
358    \fi
359    {%
360      \let\@currentlabel\@empty
361      \expandafter\label\expandafter{\the\c@vrcnt @vr}%
362    }%
363    }%
364    \DeclareRobustCommand\vnameref[1]{%
365      \unskip~\nameref{#1}%
366      \@vpageref[\unskip]{#1}%
367    }%
368  \fi
369 }
370 \@ifundefined{@Refstar}{%
371   \def\T@Ref#1{%
372     \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
373   }%
374   \def\NR@MakeUppercaseFirstOfFive#1#2#3#4#5{%
375     \MakeUppercase#1%
376   }%
377 }{}%
378 \AtBeginDocument{%
379   \@ifpackageloaded{varioref}{%
380     \@ifundefined{@Refstar}{%
381       \DeclareRobustCommand*{\Ref}[1]{%
382         \T@Ref{#1}%
383       }%
384     }{}%
385   }{}%
386 }%
```

3.7   Support for listings

```
387 \AtBeginDocument{%
388   \@ifpackageloaded{listings}{%
389     \let\NROrg@lst@MakeCaption\lst@MakeCaption
390     \def\lst@MakeCaption{%
391       \ifx\lst@label\@empty
392       \else
393         \let\@currentlabelname\lst@@caption
394       \fi
395       \NROrg@lst@MakeCaption
396     }%
397   }{}%
```

```
398   }

399   ⟨/package⟩
```

4   Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

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