

# Section name references in L<sup>A</sup>T<sub>E</sub>X<sup>\*</sup>

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<https://github.com/latex3/hyperref/issues>

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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).

[ChangeLog](#) This file records the version history.

[Bookmark talk, slides](#) Slides for the talk “PDF information and navigation elements with hyperref, pdfTeX and thumbpdf” at EuroT<sub>E</sub>X 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 L<sup>A</sup>T<sub>E</sub>X” (this file)

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<sup>\*</sup>This file has version number v2.54, last revised 2023-10-05.

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## 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  $\text{\LaTeX}$  macros, so it is vulnerable to future changes.

## 2 Background and advice for package and class authors

The package redefines the `\label` command to write additionally `\@currentlabelname` to the `.aux` file. This can then be referenced with `\nameref`. Package authors who want to support `nameref` should define this command (locally) in a suitable way. The content should be so that it can be safely written to the `.aux` file. `nameref` itself uses the package `getttitlestring` but this is not required.

`nameref` patches a number of commands (mostly sectioning commands) and environments so that they store `\@currentlabelname`. A class or a package that want to provide native support instead can suppress this patches by defining commands described below. The commands must be defined before the patch is made, in most cases before `nameref` is loaded, sometimes only before begin document.

**sectioning commands** Redefined are

- `\@sect`: beside adding a command that stores the title of a sectioning command (if present the optional argument is used) `nameref` also stores the level number in a counter `section@level` (reason is unknown, only two packages, `e-french` and `pdfscreen` seem to use it), and surrounds the text with `\Sectionformat` (only used by `acmart`, `memoir`, `pdfscreen`, `pdfslide`), a command which takes two argument: the first the text, the second the level.
- `\@ssect`: command to store the title added, `\Sectionformat` is added.
- `\M@sect` (`memoir` class): command to store the title added
- `\@part`, `\@spart`, `\@chapter`, `\@schapter`: command to store the title added
- `\ttl@sect@i` (from the `titlesec` package): command to store the title added

All the patches excepted the last are disabled if the command `\NR@nopatch@sectioning` is defined (the actual definition is irrelevant, only existence is tested). The titlesec patch is disabled if `\NR@nopatch@titlesec` is defined. This currently only suppress the actual patches, the counter, `\Sectionformat` and also the internal copies `\NR@sect` etc are still defined.

**captions** The following commands are patched

- `\@caption`: command to store the title added. This is done at begin document, but only if `hyperref` is not detected. With `hyperref` the patch is done there (and must be disabled in `hyperref`).  
This patch can be disabled by defining `\NR@nopatch@caption`
- `\LTcc@ption` (from the `longtable` package): command to store the title added.  
This patch can be disabled by defining `\NR@nopatch@longtable`
- `\lst@MakeCaption` (from the `listings` package)  
This patch can be disabled by defining `\NR@nopatch@listings`

**lists** The following command is patched

- `\descriptionlabel`: command to store the label text added. To reference this text the `\label` must be put *inside* the label. This is not compatible with the `enumitem` package as internal formatting commands are written to the `.aux` file too.  
This patch can be disabled by defining `\NR@nopatch@lists`

**theorems** • `\@opargbegintheorem`: command to store the title added.  
This patch can be disabled by defining `\NR@nopatch@theorem`

- `\@begintheorem` (if `amsthm` is loaded and if the command has a tested meaning): command to store the title added.  
This patch can be disabled by defining `\NR@nopatch@amsthm`

**beamer** In the `beamer` class the following commands are patched: `\beamer@section`, `\beamer@subsection`, `\beamer@subsubsection`, `\beamer@descriptionitem` and the template `theorem begin`. If `\NR@nopatch@beamer` is defined nothing is done.

### 3 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 `getttitlestring` 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 `getttitlestring` how to change the method. It also provides a hook to remove additional unwanted macros, not supported by the package. Example:

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

## 4 Implementation

```
1 (*package)
2 \RequirePackage{refcount}[2006/02/12]
3 \RequirePackage{getttitlestring}[2009/12/18]
4 \RequirePackage{ltxcmds}[2009/12/12]
```

In formats older than 2023-06-01 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).

`\NR@strip@period`

```
5 \def\NR@strip@period#1.\ltx@empty#2\@nil{#1}
```

`\strip@period` Macro `\strip@period` was removed in `nameref` 2012/07/28 v2.41 and reinserted in 2012/07/31 v2.42 for compatibility reasons with package `subfig`.

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

7 \def\NR@sanitize@labelname{%
8   \@onelevel@sanitize\@currentlabelname
9   \edef\@currentlabelname{%
10     \expandafter\NR@strip@period\@currentlabelname
11     \ltx@empty.\ltx@empty\@nil
12   }%
13 }
```

### 4.1 `\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.

`\ifNR@showkeys`

```
14 \newif\ifNR@showkeys
15 \NR@showkeysfalse
16 \ifpackageloaded{showkeys}{%
17   \begingroup
```

```

18   \ifundefined{SK@@label}{%
19   }{%
20     \global\NR@showkeystrue
21   }%
22   \endgroup
23 }{}

```

`\label@hook` Starting with LaTeX 2023-06-01 it is not longer needed to redefine `\label` as the kernel provides a hook and stores `\@currentlabelname`. But as there are packages like `ntheorem` and `revtex` which overwrites the kernel definition and then break `nameref` and `hyperref` we add a guard. We still support `\label@hook` for now as it is used below in `\slabel` and also in `hyperref`.

```

24 \providecommand*{\label@hook}{}
25 \ltx@GlobalAppendToMacro{\label@hook}{%
26   \NR@sanitize@labelname
27 }
28 \ifl@t@r\fmtversion{2023-06-01}
29 {
30   \def\NR@label@copy#1{\@bsphack
31     \begingroup
32     \UseHookWithArguments{label}{1}{#1}%
33     \protected@write\@auxout{%
34       {\string\newlabel{#1}{\@currentlabel}{\thepage}%
35       {\@currentlabelname}{\@currentHref}{\@kernel@reserved@label@data}}}%
36   \endgroup
37   \@esphack}
38   \ifx\label\NR@label@copy
39   \else
40     \PackageWarning{nameref}{The definition of \string\label\space has changed!
41       \MessageBreak Check your packages!
42       \MessageBreak Replacing it with the kernel definition}
43     \let\label\NR@label@copy
44     \let\ltx@label\label %for amsmath
45   \fi
46   \AddToHookWithArguments{label}{\def\label@name{#1}\label@hook}
47 }
48 {
49

```

`\label`

```

50   \def\label#1{%
51     \@bsphack
52     \begingroup
53     \def\label@name{#1}%
54     \label@hook
55     \protected@write\@auxout{}{%
56       \string\newlabel{#1}{%
57         {\@currentlabel}%
58         {\thepage}%
59         {\@currentlabelname}%
60         {\@currentHref}}}%
61     }%
62   }%
63   \endgroup

```

```

64     \@esphack
65   }%
66   \ifNR@showkeys
67     \def\label#1{%
68       \@bsphack
69       \SK@\SK@@label{#1}%
70       \begingroup
71         \def\label@name{#1}%
72         \label@hook
73         \protected@write\@auxout{}\{%
74           \string\newlabel{#1}\{%
75             {\@currentlabel}%
76             {\thepage}%
77             {\@currentlabelname}%
78             {\@currentHref}\}%
79         }%
80       }%
81     \endgroup
82     \@esphack
83   }%
84   \fi
85 }

```

`\ltx@label` Starting with LaTeX 2023-06-01 it is not longer needed to update the amsmath command `\ltx@label` as nameref no longer changes `\label`

```

86 \@ifl@t@r\fmtversion{2023-06-01}
87 {}{\let\ltx@label\label}

```

Needed for the *subeqnarray* package.

```

\slabel
88 \@ifundefined{slabel}{}{%
89   \def\slabel#1{%
90     \@bsphack
91     \if@filesw
92       \begingroup
93         \def\label@name{#1}%
94         \label@hook
95         \let\thepage\relax
96         \def\protect{\noexpand\noexpand\noexpand}%
97         \edef\@tempa{%
98           \write\@auxout{%
99             \string\newlabel{#1}\{%
100               {\thesubequation}%
101               {\thepage}%
102               {\@currentlabelname}%
103               {\@currentHref}\}%
104             }%
105           }%
106         }%
107       \expandafter\endgroup
108       \@tempa
109     \if@nobeak\ifvmode\nobeak\fi\fi
110   \fi

```

```

111     \@esphack
112   }%
113 }

```

Overload an AMS L<sup>A</sup>T<sub>E</sub>X command, which uses `\newlabel`. Sigh!

```

\@writetocindents@
114 \def\@writetocindents@{%
115   \begingroup
116   \@for\@tempa:=-1,0,1,2,3\do{%
117     \immediate\write\@auxout{%
118       \string\newlabel{tocindent\@tempa}{%
119         \csname r@tocindent\@tempa\endcsname}{-}{-}{-}%
120     }%
121   }%
122 }%
123 \endgroup
124 }

```

## 4.2 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.

```

\NR@getttitle
125 \def\NR@getttitle#1{%
126   \GetTitleString{#1}%
127   \let\@currentlabelname\GetTitleStringResult
128 }

```

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

```

\NR@ssect
129 \let\NR@ssect\@ssect
130 \newcounter{section@level}

\@ssect
131 \ifundefined{NR@nopatch@sectioning}
132 {\def\@ssect#1#2#3#4#5#6[#7]#8{%
133   \setcounter{section@level}{#2}%
134   \NR@getttitle{#7}%
135   \NR@ssect{#1}{#2}{#3}{#4}{#5}{#6}[{#7}]{\Sectionformat{#8}{#2}}%
136 }}{}

```

and now the unnumbered ones

```

\NR@sssect
137 \let\NR@sssect\@sssect

```

\@ssect

```
138 \@ifundefined{NR@nopatch@sectioning}
139 {\def\@ssect#1#2#3#4#5{%
140   \NR@getttitle{#5}%
141   \NR@ssect{#1}{#2}{#3}{#4}{\Sectionformat{#5}{#1}}%
142 }}{}
```

Support for class memoir.

```
143 \@ifundefined{NR@nopatch@sectioning}
144 {\ltx@ifundefined{ifheadnameref}{%
145   {%
146     \ltx@ifundefined{M@ssect}{%
147       {%
148         \let\NRorg@M@ssect\M@ssect
149         \def\M@ssect#1#2#3#4#5#6[#7][#8]{%
150           \ifheadnameref
151             \NR@getttitle{#8}%
152           \else
153             \NR@getttitle{#7}%
154           \fi
155           \NRorg@M@ssect{#1}{#2}{#3}{#4}{#5}{#6}[[#7]][[#8]]%
156         }%
157       }%
158     }}{}}
```

Parts and chapters are treated differently. sigh. \@part and \@spart are \long because of class memoir.

```
159 \let\NR@part\@part
160 \let\NR@spart\@spart
161 \let\NR@chapter\@chapter
162 \let\NR@schapter\@schapter
163 \@ifundefined{NR@nopatch@sectioning}
164 {%
165   \long\def\@part[#1]#2{%
166     \NR@getttitle{#1}%
167     \NR@part[[#1]][#2]%
168   }
169   \long\def\@spart#1{%
170     \NR@getttitle{#1}%
171     \NR@spart{#1}%
172   }
173   \def\@chapter[#1]#2{%
174     \NR@getttitle{#1}%
175     \NR@chapter[[#1]][#2]%
176   }
177   \@ifclassloaded{memoir}{%
178     \ltx@ifundefined{ifheadnameref}{%
179       {%
180         \def\@chapter[#1]#2{%
181           \ltx@ifundefined{ch@pt@c}{%
182             \NR@getttitle{#1}%
183           }{%
184             \ifx\ch@pt@c\ltx@empty
185               \NR@getttitle{#2}%
186             }
187           }
188         }
189       }
190     }
191   }
```



```

186         \else
187         \def\NR@temp{#1}%
188         \ifx\NR@temp\ltx@empty
189         \expandafter\NR@getttitle\expandafter{\ch@pt@c}%
190         \else
191         \ifheadnameref
192         \NR@getttitle{#1}%
193         \else
194         \expandafter\NR@getttitle\expandafter{\ch@pt@c}%
195         \fi
196         \fi
197         \fi
198     }%
199     \NR@chapter[{#1}]{#2}%
200 }%
201 }%
202 {}{}
203 \def\@schapter#1{%
204     \NR@getttitle{#1}%
205     \NR@schapter{#1}%
206 }{}{}

```

#### Captions

```

207 \AtBeginDocument{%
208     \@ifpackageloaded{hyperref}{%
209     {%
210         \@ifundefined{NR@nopatch@caption}%
211         {\let\NR@@caption\@caption
212         \long\def\@caption#1[#2]{%
213             \NR@getttitle{#2}%
214             \NR@@caption{#1}[{#2}]}%
215         }}%
216     }{}%
217 }%
218 \@ifpackageloaded{longtable}{%
219     \@ifundefined{NR@nopatch@longtable}%
220     {%
221         \let\NRorg@LT@c@ption\LT@c@ption
222         \def\LT@c@ption#1[#2]#3{%
223             \NRorg@LT@c@ption{#1}[{#2}]{#3}%
224             \def\@tempa{#2}%
225             \ifx\@tempa\@empty
226             \else
227             \NR@getttitle{#2}%
228             \fi
229         }%
230     }{}%
231 }{}%

```

#### Environment ‘description’.

```

232 \ltx@ifundefined{descriptionlabel}{%
233 }{%
234     \@ifundefined{NR@nopatch@lists}%
235     {\let\NRorg@descriptionlabel\descriptionlabel

```

```

236 \def\descriptionlabel#1{%
237 \NR@getttitle{#1}%
238 \NRorg@descriptionlabel{#1}%
239 }%
240 }{}%
241 }%
242 }

```

Compatibility for package titlesec.

```

243 \AtBeginDocument{%
244 \@ifpackageloaded{titlesec}{%
245 \let\NRorg@ttl@sect@i\ttl@sect@i
246 \@ifundefined{NR@nopatch@titlesec}
247 {%
248 \def\ttl@sect@i#1#2[#3]#4{%
249 \NR@getttitle{#4}%
250 \NRorg@ttl@sect@i{#1}{#2}[{#3}]{#4}%
251 }%
252 }{}%
253 }{}%
254 }

```

#### 4.2.1 Class beamer

```

255 \@ifclassloaded{beamer}{%
256 \@ifclasslater{beamer}{2022-05-17}
257 }{}%do nothing
258 {%
259 \@ifundefined{NR@nopatch@beamer}
260 {%
261 \def\NR@PatchBeamer#1{%
262 \expandafter\let\csname NRorg@beamer@#1\expandafter\endcsname
263 \csname beamer@#1\endcsname
264 \begingroup
265 \edef\x{\endgroup
266 \long\def\expandafter\noexpand\csname beamer@#1\endcsname
267 [####1]{% hash-ok
268 \noexpand\NR@getttitle{####1}%
269 \expandafter\noexpand\csname NRorg@beamer@#1\endcsname
270 [{####1]}%
271 }%
272 }%
273 \x
274 }%
275 \AddToHook{class/beamer/after}{%
276 \NR@PatchBeamer{section}%
277 \NR@PatchBeamer{subsection}%
278 \NR@PatchBeamer{subsubsection}%

```

Theorem names.

```

279 \addtobeamertemplate{theorem begin}{%
280 \expandafter\NR@getttitle\expandafter{\inserttheoremaddition}%
281 }{}%
282 \@ifdefinable{\NRorg@beamer@descriptionitem}{%
283 \let\NRorg@beamer@descriptionitem\beamer@descriptionitem

```

```

284 \renewcommand{\beamer@descriptionitem}[1]{%
285 \NR@getttitle{#1}%
286 \NRorg@beamer@descriptionitem{#1}%
287 }%
288 }%
289 }%Hook
290 }{}%@ifundefined
291 }%class later
292 }{}

```

#### 4.2.2 Theorems

```

293 \@ifundefined{NR@nopatch@theorem}{%
294 \ltx@ifundefined{@opargbegintheorem}{}%
295 \let\NRorg@opargbegintheorem\@opargbegintheorem
296 \def\@opargbegintheorem#1#2#3{%
297 \NR@getttitle{#3}%
298 \NRorg@opargbegintheorem{#1}{#2}{#3}%
299 }%
300 }
301 }{}
302 \@ifundefined{NR@nopatch@amsthm}{%
303 \AtBeginDocument{%
304 \@ifpackageloaded{amsthm}{%
305 \let\NRorg@begintheorem\@begintheorem
306 \begingroup
307 \edef\x{\macro:\string#1\string#2[\string#3]}%
308 \@onelevel@sanitize\x
309 \def\y#1->#2\@nil{#1}%
310 \edef\z{\expandafter\y\meaning\@begintheorem->\@nil}%
311 \@onelevel@sanitize\z
312 \expandafter\endgroup
313 \ifx\x\z
314 \def\@begintheorem#1#2[#3]{%
315 \NR@getttitle{#3}%
316 \NRorg@begintheorem{#1}{#2}[\{#3\}]%
317 }%
318 \fi
319 }{}%
320 }{}

```

#### 4.3 Referencing stuff

We default the label and hypertext reference to be empty.

```

321 \providecommand*{\@currentlabelname}{}
322 \providecommand*{\@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:

```

\@firstoffive
323 \long\def\@firstoffive#1#2#3#4#5{#1}

\@secondoffive
324 \long\def\@secondoffive#1#2#3#4#5{#2}

```

```

\@thirdoffive
325 \long\def\@thirdoffive#1#2#3#4#5{#3}

\@fourthoffive
326 \long\def\@fourthoffive#1#2#3#4#5{#4}

\@fifthoffive
327 \long\def\@fifthoffive#1#2#3#4#5{#5}

We have to redefine \ref, \Ref and \pageref to know about extra reference
elements. Make them robust, and compatible with Babel. We also define starred
versions so that it doesn't depend on hyperref if they are defined or not. We use
the same internal names as hyperref. 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.

\@safe@activetrue
328 \providecommand*\@safe@activetrue{}%

\@safe@activesfalse
329 \providecommand*\@safe@activesfalse{}%

\NR@ref@showkeys
330 \newcommand\NR@ref@showkeys[1]{}%

\NR@setref
331 \def\NR@setref#1{%
332   \begingroup
333     \@safe@activetrue
334     \expandafter
335   \endgroup
336   \expandafter\NR@@setref\csname r@#1\endcsname
337 }

\NR@@setref
338 \def\NR@@setref#1{%
339   \ifx\@undefined#1%
340     \let#1\relax
341   \fi
342   \@setref#1%
343 }

\T@ref
344 \def\T@ref#1{%
345   \NR@ref@showkeys{#1}%
346   \NR@setref{#1}\@firstoffive{#1}%
347 }%

\@refstar
348 \def\@refstar#1{%
349   \NR@ref@showkeys{#1}%
350   \NR@setref{#1}\@firstoffive{#1}%
351 }%

```

```

\T@pageref
352 \def\T@pageref#1{%
353   \NR@ref@showkeys{#1}%
354   \NR@setref{#1}\@secondoffive{#1}%
355 }%

\@pagerefstar
356 \def\@pagerefstar#1{%
357   \NR@ref@showkeys{#1}%
358   \NR@setref{#1}\@secondoffive{#1}%
359 }%

\T@Ref
360 \def\T@Ref#1{%
361   \NR@ref@showkeys{#1}%
362   \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
363 }%
364 \def\NR@MakeUppercaseFirstOfFive#1#2#3#4#5{%
365   \MakeUppercase#1%
366 }%

\@Refstar
367 \def\@Refstar#1{%
368   \NR@ref@showkeys{#1}%
369   \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
370 }%

371 \ifNR@showkeys
372   \ifx\SK@ref\@empty
373   \else
374     \renewcommand\NR@ref@showkeys[1]{%
375       \@safe@activetrue
376       \SK@\SK@ref{#1}%
377       \@safe@activesfalse}
378   \fi
379 \fi

```

Package `hyperref` uses the same definitions of `\ref`, `\Ref` and `\pageref` but has to redefine the non-starred command to add the hyperlink support. `\DeclareRobustCommand` is used by `hyperref`. Package `nameref` can be loaded before, after `hyperref` or after `hyperref`'s definitions in `\AtBeginDocument`. We have to postpone the definition to `\AtBeginDocument` to avoid that `showkeys` overwrites them again.

```

380 \AddToHook{begindocument}{%

```

```

\ref
381 \DeclareDocumentCommand\ref{s}
382   {\IfBooleanTF{#1}{\@refstar}{\T@ref}}%

```

```

\pageref
383 \DeclareDocumentCommand\pageref{s}
384   {\IfBooleanTF{#1}{\@pagerefstar}{\T@pageref}}%

```

\Ref

```
385 \DeclareDocumentCommand\Ref{s}
386 {\IfBooleanTF{#1}{\@Refstar}{\T@Ref}}%
387 }
388 \DeclareHookRule{begindocument}{showkeys}{before}{nameref}
```

## 4.4 Usage and frontend

Access the (third) name part with \nameref;

\T@nameref

```
389 \def\T@nameref#1{%
390 \NR@ref@showkeys{#1}%
391 \begingroup
392 \let\label\@gobble
393 \NR@setref{#1}\@thirdoffive{#1}%
394 \endgroup
395 }%
```

\@namerefstar

```
396 \def\@namerefstar#1{%
397 \NR@ref@showkeys{#1}%
398 \begingroup
399 \let\label\@gobble
400 \NR@setref{#1}\@thirdoffive{#1}%
401 \endgroup
402 }%
```

\nameref

```
403 \@ifundefined{nameref}
404 {
405 \NewDocumentCommand\nameref{s}
406 {\IfBooleanTF{#1}{\@namerefstar}{\T@nameref}}
407 }
408 {
409 \PackageWarning{nameref}{Redefining \string\nameref}
410 \RenewDocumentCommand\nameref{s}
411 {\IfBooleanTF{#1}{\@namerefstar}{\T@nameref}}
412 }
```

\Nameref An extended form which gives title and page number. Not really useful, quotes are english, and no starred version. varioref can do that better. Remove??

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

\Sectionformat The default for \Sectionformat

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

## 4.5 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`: Changed/disabled 2022-04-13: ifthen takes care itself to change `\pageref` to an expandable version.

```

415 \ifundefined{@kernel@pageref@exp}
416   {\ifpackageloaded{ifthen}{%
417     \let\NROrg@ifthenelse\ifthenelse
418     \def\ifthenelse{%
419       \let\begingroup\NR@TE@begingroup
420       \NROrg@ifthenelse
421     }%
422     \let\NROrg@begingroup\begingroup
423     \def\NR@TE@begingroup{%
424       \let\begingroup\NROrg@begingroup
425       \begingroup
426       \def\ref##1{\getrefbykeydefault{##1}{}{??}}%
427       \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
428     }%
429   }{}{}}
```

## 4.6 Compatibility with varioref

[This section was derived by Corey Minyard [minyard@acm.org](mailto:minyard@acm.org) from the `varioref` package] Changed in 2019-09-12 by Frank Mittelbach to adapt to changes in `varioref`

```

430 \AtBeginDocument{%
431   \ifx\csname @vppageref\endcsname\relax
432   \else
This requires a varioref newer than 2019-09-12
433     \let\NR@@vppageref\@vppageref
434     \def\@vppageref#1[#2]#3{%
435       \begingroup
436         \csname @safe@activestrue\endcsname
437         \edef\x{#3}%
438         \@onelevel@sanitize\x
439         \toks@{%
440           \NR@@vppageref{#1}[{#2}]%
441         }%
442         \edef\x{\endgroup
443           \the\toks@{\x}%
444         }%
445       \x
446     }%
447     \DeclareRobustCommand\vnameref[1]{%
448       \unskip~\nameref{#1} %
449       \@vppageref[\unskip]{#1}%
450     }%
451   \fi
452 }
```

## 4.7 Support for package listings

```

453 \AtBeginDocument{%
454   \ifpackageloaded{listings}{%
455     \ifundefined{NR@nopatch@listings}
456       {%
457         \let\NR@org@lst@MakeCaption\lst@MakeCaption
458         \def\lst@MakeCaption{%
459           \ifx\lst@label\@empty
460             \else
461               \let\@currentlabelname\lst@caption
462             \fi
463           \NR@org@lst@MakeCaption
464         }%
465       }{}%
466     }{}%
467 }
468 \end{package}

```

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