

The latex-lab-toc-kernel-changes package

Changes and additions to the kernel related to tagging and links in toc entries

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Version 0.83 2023-06-07

Abstract

1 Introduction

The followings contains various changes to kernel commands needed for the tagging of table of contents and similar lists.

2 General kernel and class changes

Some of the changes can probably could go into the kernel. This are marked with [kernel?], the other are marked with [latex-lab]. A few changes must be done in the classes. They are marked as [class]. They are inserted with hooks here: this will break if a non-standard class is used.

2.1 Package declaration

```
1 <*kernelchange>
2 \ProvidesPackage{latex-lab-kernel-changes}
3     [\ltxlabkerneldate\space v\ltxlabkernelversion\space
4     General kernel and class changes]
```

2.2 Providing the counter representation \theHxx generally

[kernel?]

The \theHxx representation allows to create a unique representation of a counter that is for example used to create destination names. It will also be needed to add /Ref keys to various tagging structures. It makes therefore sense to provide it by default as soon as a counter is created. The \@addtoreset change (taken also from hyperref) tries to ensure the counter stays unique if it is reset.

At first we suppress the patches from hyperref:

```
5 \def\hyper@nopatch@counter{}
```

*Initial implementation done by Ulrike Fischer

```

6 \def\@definecounter#1{\expandafter\newcount\csname c@#1\endcsname
7   \setcounter{#1}\z@
8   \global\expandafter\let\csname cl@#1\endcsname\@empty
9   \@addtoreset{#1}{\@ckpt}%
10  \global\expandafter\let\csname p@#1\endcsname\@empty
11  \expandafter\gdef\csname theH#1\endcsname{\the\value{#1}}%new
12  \expandafter
13  \gdef\csname the#1\expandafter\endcsname\expandafter
14    {\expandafter\@arabic\csname c@#1\endcsname}}
15 \def\@addtoreset#1#2{\expandafter\@cons\csname cl@#2\endcsname {{#1}}%
16  \expandafter\gdef\csname theH#1\endcsname{\csname theH#2\endcsname.\the\value{#1}}%
17 }

```

The following counters are defined in the kernel

```

18 \gdef\theHenumi{\the\value{enumi}}
19 \gdef\theHenumii{\the\value{enumii}}
20 \gdef\theHenumiii{\the\value{enumiii}}
21 \gdef\theHenumiv{\the\value{enumiv}}
22 \gdef\theHequation{\the\value{equation}}
23 \gdef\theHfootnote{\the\value{footnote}}
24 \gdef\theHmpfootnote{\the\value{mpfootnote}}

```

2.3 Providing and updating \@currentHref

[kernel?]

\@currentHref contains the current unique representation of a counter. It is useful also without hyperref as it allows to connect with a /Ref key a toc entry with the heading it refers too. So \refstepcounter is extended to update the command. This is done at the begin so that the hyperref code can still adapt it later (using the cmd/refstepcounter/after hook would be too late, and could also break with cleverref.)

We also provide a kernel version that hyperref doesn't touch and so will never set a target.

```

25 \def\@currentHref{}
26 \def\refstepcounter#1{\stepcounter{#1}%
27   \edef\@currentcounter{#1}%
28   \xdef\@currentHref {#1.\csname theH#1\endcsname}%
29   \protected@edef\@currentlabel
30     {\csname p@#1\expandafter\endcsname\csname the#1\endcsname}%
31 }
32 \let\@kernel@refstepcounter\refstepcounter

```

2.4 Assigning the headings level numbers

[kernel?]

The code for the toc must be able to compare the level of subsection against section. So some numbers are needed. It uses for now the commands used by hyperref for the bookmark levels. While headings are more a class thing, it could make sense to provide a standard set already in the kernel. The numbers are a bit different to the one in hyperref, but imho sensible.

Note for the future: once that heading stuff is turned into template instances the template should set that number.

```

33 \def\toclevel@document{-10}

```

```

34 \def\toclevel@part{-1}
35 \def\toclevel@chapter{0}
36 \def\toclevel@section{1}
37 \def\toclevel@subsection{2}
38 \def\toclevel@subsubsection{3}
39 \def\toclevel@paragraph{4}
40 \def\toclevel@subparagraph{5}
41 \def\toclevel@figure{1}
42 \def\toclevel@table{1}
43 \kernelchange

```

2.5 load kernel changes

```

44 <*package>
45 \RequirePackage{latex-lab-kernel-changes}

```

2.6 \contentsline extension

[latex-lab] The tagging code must add code at the begin and end of `\contentsline`. This code must have access to the arguments. We set it up as config point for now.

```

46 \def\@contentsline@cfgpoint@before#1#2#3#4{}
47 \def\@contentsline@cfgpoint@after#1#2#3#4{}

```

for the hooks we need that the `\l@XX` pass also the destination and that `\l@XX` takes three arguments. TODO: test that, if there are too many problems we should pass the destination through a command name ...

```

48 \def\contentsline#1#2#3#4%
49   {%
50     \@contentsline@cfgpoint@before{#1}{#2}{#3}{#4}%
51     \gdef\@contentsline@destination{#4}%
52     \csname l@#1\endcsname{#2}{#3}%
53     \@contentsline@cfgpoint@after{#1}{#2}{#3}{#4}%
54   }

```

2.7 \addcontentsline changes

[latex-lab]

`\addcontentsline` should always write the unique counter representation `\@currentHref` so that we can create the `/Ref` key. At the same time we need a hook, so that `hyperref` can add its bookmarks code, the generic hook with arguments is ok.

```

55 \def\addcontentsline#1#2#3{% #1=toc extension, #2= heading type, tag
56   \addtocontents{#1}{%
57     \protect\contentsline{#2}{#3}{\thepage}{\@currentHref}\protected@file@percent
58   }}

```

2.8 \@starttoc

[kernel?]

We add a configuration point before and after reading the file for the tagging.

```

59 \def\@starttoc@cfgpoint@before#1{}
60 \def\@starttoc@cfgpoint@after#1{}
61 \def\@starttoc#1{%
62   \begingroup

```

```

63 \makeatletter
64 \@starttoc@cfgpoint@before{#1}%
65 \@input{\jobname.#1}%
66 \@starttoc@cfgpoint@after{#1}
67 \if@files
68 \expandafter\newwrite\csname tf@#1\endcsname
69 \immediate\openout \csname tf@#1\endcsname \jobname.#1\relax
70 \fi
71 \@nobreakfalse
72 \endgroup

```

2.9 Formatting of the toc entries

2.9.1 Kernel commands

[latex-lab] or [kernel?]?

We need hooks before and after the content and before and after the page number. The number needs some thing so that it can be tagged as label. The text and the page hooks are used in manual `\l@xx` commands and in `\l@xx` defined by `\@dottedtocline` or by other means. The arguments of the following hooks are:

#1 level as a *number* (integer expression), see above for the standard numbering. The standard first argument of `\contentsline` is not used, as `\@dottedtocline` knows only a number.

#2 content (the second argument of a `\contentsline`

#3 page (the third argument of a `\contentsline`

#3 target (the fourth argument of a `\contentsline`

```

73 \NewMirroredHookPairWithArguments{contentsline/number/before}{contentsline/number/after}{1}%
74 \NewMirroredHookPairWithArguments{contentsline/text/before}{contentsline/text/after}{4}%
75 \NewMirroredHookPairWithArguments{contentsline/page/before}{contentsline/page/after}{4}%

```

The dot in the leader must be set as artifact. But luatex requires that the mc are set outside the leaders. So we need a config point.

`\@dottedtocline` needs hooks and formatting commands. We add a sixth argument so that it can grab the destination too.

```

76 \def\@dottedtocline@cfgpoint@leaders#1{#1}
77
78 \def\@dottedtocline#1#2#3#4#5{%
79 \ifnum #1>\c@tocdepth \else
80 \vskip \z@ \@plus.2\p@
81 {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
82 \parindent #2\relax\@afterindenttrue
83 \interlinepenalty\@M
84 \leavevmode
85 \@tempdima #3\relax
86 \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
87 \UseHookWithArguments{contentsline/text/before}{4}{#1}{#4}{#5}{\@contentsline@destination}
88 \csname contentsline@text@#1\endcsname{#4}%
89 \UseHookWithArguments{contentsline/text/after}{4}{#1}{#4}{#5}{\@contentsline@destination}
90 \nobreak
91 \@dottedtocline@cfgpoint@leaders{%

```

```

92      \leaders\hbox{$\m@th
93      \mkern \dotsep mu\hbox{.}\mkern \dotsep
94      mu$}\hfill}%
95      \nobreak
96      \hb@xt@\pnumwidth{\hfil\normalfont \normalcolor
97      \UseHookWithArguments{contentsline/page/before}{4}{#1}{#4}{#5}{\@contentsline@destination}%
98      #5%
99      \UseHookWithArguments{contentsline/page/after}{4}{#1}{#4}{#5}{\@contentsline@destination}%
100      \kern-\p@\kern\p@}%
101      \par}%
102      \fi}

```

2.9.2 \numberline

[kernel?] Inside or outside the box?

```

103 \def\numberline#1{\hb@xt@\tempdima{%
104   \UseHookWithArguments{contentsline/number/before}{1}{#1}%
105   #1\hfil
106   \UseHookWithArguments{contentsline/number/after}{1}{#1}%
107   }}

```

2.9.3 \l@xx in the classes

Depending on the class we have to redefine also more commands. For other classes it should be documented what is needed. Let the commands grab also the third arguments. If a class redefines them again it will break tagging anyway.

```

108 \AddToHook{class/article/after}
109 {
110   \renewcommand*\l@part[2]{% as in contentsline: content, page
111   \ifnum \c@tocdepth >-2\relax
112     \addpenalty\secpenalty
113     \addvspace{2.25em \@plus\p@}%
114     \setlength\tempdima{3em}%
115     \begingroup
116       \parindent \z@ \rightskip \@pnumwidth
117       \parfillskip -\@pnumwidth
118       {\leavevmode
119        \large \bfseries
120        \UseHookWithArguments{contentsline/text/before}{4}
121        {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
122        \csname contentsline@text@-1@format\endcsname{#1}%
123        \UseHookWithArguments{contentsline/text/after}{4}
124        {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
125        \hfil
126        \hb@xt@\pnumwidth{\hss
127        \UseHookWithArguments{contentsline/page/before}{4}
128        {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
129        #2%
130        \UseHookWithArguments{contentsline/page/after}{4}
131        {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
132        \kern-\p@\kern\p@}}\par
133       \nobreak
134     \endgroup

```

```

135 \fi}
136 \renewcommand*\l@section[2]{%
137 \ifnum \c@tocdepth >\z@
138 \addpenalty\@secpenalty
139 \addvspace{1.0em \@plus\p@}%
140 \setlength\@tempdima{1.5em}%
141 \begingroup
142 \parindent \z@ \rightskip \@pnumwidth
143 \parfillskip -\@pnumwidth
144 \leavevmode \bfseries
145 \advance\leftskip\@tempdima
146 \hskip -\leftskip
147 \UseHookWithArguments{contentsline/text/before}{4}
148 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
149 \csname contentsline@text@10format\endcsname{#1}%
150 \UseHookWithArguments{contentsline/text/after}{4}
151 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
152 \nobreak\hfil
153 \nobreak\hb@xt@\@pnumwidth{\hss
154 \UseHookWithArguments{contentsline/page/before}{4}
155 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
156 #2%
157 \UseHookWithArguments{contentsline/page/after}{4}
158 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
159 \kern-\p@\kern\p@}\par
160 \endgroup
161 \fi}
162 }
163 \AddToHook{class/report/after}
164 {
165 \renewcommand*\l@part[2]{%
166 \ifnum \c@tocdepth >-2\relax
167 \addpenalty{-\@highpenalty}%
168 \addvspace{2.25em \@plus\p@}%
169 \setlength\@tempdima{3em}%
170 \begingroup
171 \parindent \z@ \rightskip \@pnumwidth
172 \parfillskip -\@pnumwidth
173 {\leavevmode
174 \large \bfseries
175 \UseHookWithArguments{contentsline/text/before}{4}
176 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
177 \csname contentsline@text@-10format\endcsname{#1}%
178 \UseHookWithArguments{contentsline/text/after}{4}
179 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
180 \hfil
181 \hb@xt@\@pnumwidth{\hss
182 \UseHookWithArguments{contentsline/page/before}{4}
183 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
184 #2%
185 \UseHookWithArguments{contentsline/page/after}{4}
186 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
187 \kern-\p@\kern\p@}}\par
188 \nobreak

```

```

189     \endgroup
190     \fi}
191 \renewcommand*\l@chapter[2]{%
192     \ifnum \c@tocdepth >\m@ne
193         \addpenalty{-\@highpenalty}%
194         \vskip 1.0em \@plus\p@
195         \setlength\@tempdima{1.5em}%
196         \begingroup
197             \parindent \z@ \rightskip \@pnumwidth
198             \parfillskip -\@pnumwidth
199             \leavevmode \bfseries
200             \advance\leftskip\@tempdima
201             \hskip -\leftskip
202             \UseHookWithArguments{contentsline/text/before}{4}
203             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
204             \csname contentsline@text@0@format\endcsname
205             {#1}%
206             \UseHookWithArguments{contentsline/text/after}{4}
207             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
208             \nobreak\hfil
209             \nobreak\hb@xt@\@pnumwidth{\hss
210             \UseHookWithArguments{contentsline/page/before}{4}
211             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}}%
212             #2%
213             \UseHookWithArguments{contentsline/page/after}{4}
214             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}}%
215             \kern-\p@\kern\p@\par
216         \penalty\@highpenalty
217     \endgroup
218     \fi}
219 }
220 \AddToHook{class/book/after}
221 {
222     \renewcommand*\l@part[2]{%
223         \ifnum \c@tocdepth >-2\relax
224             \addpenalty{-\@highpenalty}%
225             \addvspace{2.25em \@plus\p@}%
226             \setlength\@tempdima{3em}%
227             \begingroup
228                 \parindent \z@ \rightskip \@pnumwidth
229                 \parfillskip -\@pnumwidth
230                 {\leavevmode
231                 \large \bfseries
232                 \UseHookWithArguments{contentsline/text/before}{4}
233                 {\toclevel@part}{#1}{#2}{\@contentsline@destination}}%
234                 \csname contentsline@text@-1@format\endcsname{#1}%
235                 \UseHookWithArguments{contentsline/text/after}{4}
236                 {\toclevel@part}{#1}{#2}{\@contentsline@destination}}%
237                 \hfil
238                 \hb@xt@\@pnumwidth{\hss
239                 \UseHookWithArguments{contentsline/page/before}{4}
240                 {\toclevel@part}{#1}{#2}{\@contentsline@destination}}%
241                 #2%
242                 \UseHookWithArguments{contentsline/page/after}{4}

```

```

243         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
244         \kern-\p@\kern\p@}\par
245     \nobreak
246 \endgroup
247 \fi}
248 \renewcommand*\l@chapter[2]{%
249 \ifnum \c@tocdepth >\m@ne
250 \addpenalty{-\@highpenalty}%
251 \vskip 1.0em \@plus\p@
252 \setlength\@tempdima{1.5em}%
253 \begingroup
254 \parindent \z@ \rightskip \@pnumwidth
255 \parfillskip -\@pnumwidth
256 \leavevmode \bfseries
257 \advance\leftskip\@tempdima
258 \hskip -\leftskip
259 \UseHookWithArguments{contentsline/text/before}{4}
260 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
261 \csname contentsline@text@0@format\endcsname
262 {#1}%
263 \UseHookWithArguments{contentsline/text/after}{4}
264 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
265 \nobreak\hfil
266 \nobreak\hb@xt@\@pnumwidth{\hss
267 \UseHookWithArguments{contentsline/page/before}{4}
268 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
269 #2%
270 \UseHookWithArguments{contentsline/page/after}{4}
271 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
272 \kern-\p@\kern\p@}\par
273 \penalty\@highpenalty
274 \endgroup
275 \fi}
276 }
277 \end{package}

```