

The `latex-lab-toc-kernel-changes` package

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

L^AT_EX Project*

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     [\ltlabkerneldate\space v\ltlabkernelversion\space
4     General kernel and class changes]
```

2.2 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.

*Initial implementation done by Ulrike Fischer

```

5 \def\toclevel@document{-10}
6 \def\toclevel@part{-1}
7 \def\toclevel@chapter{0}
8 \def\toclevel@section{1}
9 \def\toclevel@subsection{2}
10 \def\toclevel@subsubsection{3}
11 \def\toclevel@paragraph{4}
12 \def\toclevel@subparagraph{5}
13 \def\toclevel@figure{1}
14 \def\toclevel@table{1}

```

2.3 Storing relationship between target and structure

Most of this is now in the kernel, but the definition of `\MakeLinkTarget` in `hyperref` misses the socket. Until it is there, we add it through a hook:

```

15 \ExplSyntaxOn
16 \AddToHook{package/hyperref/after}
17 {
18   \RenewDocumentCommand\MakeLinkTarget {s O{} m}
19   {
20     \bool_if:NT \l__hyp_target_create_bool
21     {
22       \group_begin:
23       \hook_use:n { makelinktarget }
24       \IfBooleanTF {#1}
25       {
26         \__hyp_target_manual:nn {#2}{#3}
27       }
28       {
29         \__hyp_target_counter:nn {#2}{#3}
30       }
31       \group_end:
32       \UseTaggingSocket{recordtarget}
33     }
34   }
35 }
36 \ExplSyntaxOff
37 </kernelchange>

```

2.4 load kernel changes

```

38 <*package>
39 \RequirePackage{latex-lab-kernel-changes}

```

2.5 \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. They are passed together in tagging socket which are declared in `ltagging`. 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 two many problems we should pass the destination through a command name ...

```

40 \def\contentsline#1#2#3#4%
41   {%
42     \UseTaggingSocket{toc/contentsline/before}{#1}{#2}{#3}{#4}}%
43     \gdef\@contentsline@destination{#4}%
44     \csname l@#1\endcsname{#2}{#3}%
45     \UseTaggingSocket{toc/contentsline/after}{#1}{#2}{#3}{#4}}%
46   }

```

2.6 \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.

```

47 \def\addcontentsline#1#2#3{% #1=toc extension, #2= heading type, tag
48   \addtocontents{#1}{%
49     \protect\contentsline{#2}{#3}{\thepage}{\@currentHref}\protected@file@percent
50   }}

```

2.7 \@starttoc

[kernel?]

```

51 \def\@starttoc#1{%
52   \begingroup
53     \makeatletter
54     \UseTaggingSocket{toc/starttoc/before}{#1}%
55     \input{\jobname.#1}%
56     \UseTaggingSocket{toc/starttoc/after}{#1}%
57     \if@files
58       \expandafter\newwrite\csname tf@#1\endcsname
59       \immediate\openout \csname tf@#1\endcsname \jobname.#1\relax
60     \fi
61     \@nobreakfalse
62   \endgroup}

```

2.8 Formatting of the toc entries

2.8.1 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

```
63 \NewMirroredHookPairWithArguments{contentsline/number/before}{contentsline/number/after}{1}%
64 \NewMirroredHookPairWithArguments{contentsline/text/before}{contentsline/text/after}{4}%
65 \NewMirroredHookPairWithArguments{contentsline/page/before}{contentsline/page/after}{4}%
```

The dots in the leader must be set as artifact. But luatex requires that the mc are set outside the leaders. So we need sockets.

\@dottedtocline needs hooks and formatting commands. To make the leaders into artifact we use tagging sockets.

The destination is accessed through \@contentsline@destination.

```
66 \def\@dottedtocline#1#2#3#4#5{%
67   \ifnum #1>\c@tocdepth \else
68     \vskip \z@ \@plus.2\p@
69     {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
70     \parindent #2\relax\@afterindenttrue
71     \interlinepenalty\@M
72     \leavevmode
73     \@tempdima #3\relax
74     \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
75     \UseHookWithArguments{contentsline/text/before}{4}{#1}{#4}{#5}{\@contentsline@destination}%
76     \csname contentsline@text@#1@format\endcsname{#4}%
77     \UseHookWithArguments{contentsline/text/after}{4}{#1}{#4}{#5}{\@contentsline@destination}%
78     \nobreak
79     \UseTaggingSocket{toc/leaders/before}\SuspendTagging{toc/leaders}%
80     \leaders\hbox{$\m@th
81       \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
82       mu$}\hfill
83     \ResumeTagging{toc/leaders}\UseTaggingSocket{toc/leaders/after}%
84     \nobreak
85     \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor
86     \UseHookWithArguments{contentsline/page/before}{4}{#1}{#4}{#5}{\@contentsline@destination}%
87     #5%
88     \UseHookWithArguments{contentsline/page/after}{4}{#1}{#4}{#5}{\@contentsline@destination}%
89     \kern-\p@\kern\p@}%
90     \par}%
91   \fi}
```

2.8.2 \numberline

[kernel?] Inside or outside the box?

```
92 \def\numberline#1{\hb@xt@\@tempdima{%
93   \UseHookWithArguments{contentsline/number/before}{1}{#1}%
94   #1\hfil
95   \UseHookWithArguments{contentsline/number/after}{1}{#1}%
96   }}
```

2.8.3 \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.

```

97 \AddToHook{class/article/after}
98 {
99   \renewcommand*\l@part[2]{% as in contentsline: content, page
100   \ifnum \c@tocdepth >-2\relax
101     \addpenalty\@secpenalty
102     \addvspace{2.25em \@plus\p@}%
103     \setlength\@tempdima{3em}%
104     \begingroup
105       \parindent \z@ \rightskip \@pnumwidth
106       \parfillskip -\@pnumwidth
107       {\leavevmode
108         \large \bfseries
109         \UseHookWithArguments{contentsline/text/before}{4}
110         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
111         \csname contentsline@text@-1@format\endcsname{#1}%
112         \UseHookWithArguments{contentsline/text/after}{4}
113         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
114         \hfil
115         \hb@xt@\@pnumwidth{\hss
116         \UseHookWithArguments{contentsline/page/before}{4}
117         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
118         #2%
119         \UseHookWithArguments{contentsline/page/after}{4}
120         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
121         \kern-\p@\kern\p@}}\par
122       \nobreak
123     \endgroup
124   \fi}
125 \renewcommand*\l@section[2]{%
126   \ifnum \c@tocdepth >\z@
127     \addpenalty\@secpenalty
128     \addvspace{1.0em \@plus\p@}%
129     \setlength\@tempdima{1.5em}%
130     \begingroup
131       \parindent \z@ \rightskip \@pnumwidth
132       \parfillskip -\@pnumwidth
133       \leavevmode \bfseries
134       \advance\leftskip\@tempdima
135       \hskip -\leftskip
136       \UseHookWithArguments{contentsline/text/before}{4}
137       {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
138       \csname contentsline@text@1@format\endcsname{#1}%
139       \UseHookWithArguments{contentsline/text/after}{4}
140       {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
141       \nobreak\hfil
142       \nobreak\hb@xt@\@pnumwidth{\hss
143       \UseHookWithArguments{contentsline/page/before}{4}
144       {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
145       #2%
146       \UseHookWithArguments{contentsline/page/after}{4}
147       {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
148       \kern-\p@\kern\p@}\par
149     \endgroup
150   \fi}

```

```

151 }
152 \AddToHook{class/report/after}
153 {
154     \renewcommand*\l@part[2]{%
155         \ifnum \c@tocdepth >-2\relax
156             \addpenalty{-\@highpenalty}%
157             \addvspace{2.25em \@plus\p@}%
158             \setlength\@tempdima{3em}%
159             \begingroup
160                 \parindent \z@ \rightskip \@pnumwidth
161                 \parfillskip -\@pnumwidth
162                 {\leavevmode
163                     \large \bfseries
164                     \UseHookWithArguments{contentsline/text/before}{4}
165                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
166                     \csname contentsline@text@-1@format\endcsname{#1}%
167                     \UseHookWithArguments{contentsline/text/after}{4}
168                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
169                     \hfil
170                     \hb@xt@\@pnumwidth{\hss
171                     \UseHookWithArguments{contentsline/page/before}{4}
172                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
173                     #2%
174                     \UseHookWithArguments{contentsline/page/after}{4}
175                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
176                     \kern-\p@\kern\p@}\par
177                 \nobreak
178             \endgroup
179         \fi}
180     \renewcommand*\l@chapter[2]{%
181         \ifnum \c@tocdepth >\m@ne
182             \addpenalty{-\@highpenalty}%
183             \vskip 1.0em \@plus\p@
184             \setlength\@tempdima{1.5em}%
185             \begingroup
186                 \parindent \z@ \rightskip \@pnumwidth
187                 \parfillskip -\@pnumwidth
188                 \leavevmode \bfseries
189                 \advance\leftskip\@tempdima
190                 \hskip -\leftskip
191                 \UseHookWithArguments{contentsline/text/before}{4}
192                 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
193                 \csname contentsline@text@0@format\endcsname
194                 {#1}%
195                 \UseHookWithArguments{contentsline/text/after}{4}
196                 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
197                 \nobreak\hfil
198                 \nobreak\hb@xt@\@pnumwidth{\hss
199                 \UseHookWithArguments{contentsline/page/before}{4}
200                 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
201                 #2%
202                 \UseHookWithArguments{contentsline/page/after}{4}
203                 {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
204                 \kern-\p@\kern\p@}\par

```

```

205         \penalty\@highpenalty
206     \endgroup
207     \fi}
208 }
209 \AddToHook{class/book/after}
210 {
211     \renewcommand*\l@part[2]{%
212         \ifnum \c@tocdepth >-2\relax
213             \addpenalty{-\@highpenalty}%
214             \addvspace{2.25em \@plus\p@}%
215             \setlength\@tempdima{3em}%
216             \begingroup
217                 \parindent \z@ \rightskip \@pnumwidth
218                 \parfillskip -\@pnumwidth
219                 {\leavevmode
220                     \large \bfseries
221                     \UseHookWithArguments{contentsline/text/before}{4}
222                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
223                     \csname contentsline@text@-1@format\endcsname{#1}%
224                     \UseHookWithArguments{contentsline/text/after}{4}
225                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
226                     \hfil
227                     \hb@xt@\@pnumwidth{\hss
228                     \UseHookWithArguments{contentsline/page/before}{4}
229                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
230                     #2%
231                     \UseHookWithArguments{contentsline/page/after}{4}
232                     {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
233                     \kern-\p@\kern\p@}}\par
234             \nobreak
235         \endgroup
236     \fi}
237 \renewcommand*\l@chapter[2]{%
238     \ifnum \c@tocdepth >\m@ne
239         \addpenalty{-\@highpenalty}%
240         \vskip 1.0em \@plus\p@
241         \setlength\@tempdima{1.5em}%
242         \begingroup
243             \parindent \z@ \rightskip \@pnumwidth
244             \parfillskip -\@pnumwidth
245             \leavevmode \bfseries
246             \advance\leftskip\@tempdima
247             \hskip -\leftskip
248             \UseHookWithArguments{contentsline/text/before}{4}
249             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
250             \csname contentsline@text@0@format\endcsname
251             {#1}%
252             \UseHookWithArguments{contentsline/text/after}{4}
253             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
254             \nobreak\hfil
255             \nobreak\hb@xt@\@pnumwidth{\hss
256             \UseHookWithArguments{contentsline/page/before}{4}
257             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
258             #2%

```

```

259         \UseHookWithArguments{contentsline/page/after}{4}
260         {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
261         \kern-\p@\kern\p@}\par
262     \penalty\@highpenalty
263 \endgroup
264 \fi}
265 }
266 \end{package}

```