

The **toc-kernel-changes** package

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

L^AT_EX Project*

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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 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:

```
1 <*kernelchange>
2 \def\hyper@nopatch@counter{}
3 \def\@definecounter#1{\expandafter\newcount\csname c@#1\endcsname
4   \setcounter{#1}\z@
5   \global\expandafter\let\csname cl@#1\endcsname\@empty
6   \@addtoreset{#1}{@ckpt}%
7   \global\expandafter\let\csname p@#1\endcsname\@empty
8   \expandafter\gdef\csname theH#1\endcsname{\the\value{#1}}%new
```

*Initial implementation done by Ulrike Fischer

```

9      \expandafter
10     \gdef\csname the#1\expandafter\endcsname\expandafter
11         {\expandafter\@arabic\csname c@#1\endcsname}}
12 \def\@addtoreset#1#2{\expandafter\@cons\csname cl@#2\endcsname {{#1}}}%
13 \expandafter\gdef\csname theH#1\endcsname{\csname theH#2\endcsname.\the\value{#1}}%
14 }

```

The following counters are defined in the kernel

```

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

```

2.2 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.

```

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

```

2.3 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.

```

30 \def\toclevel@part{-1}
31 \def\toclevel@chapter{0}
32 \def\toclevel@section{1}
33 \def\toclevel@subsection{2}
34 \def\toclevel@subsubsection{3}
35 \def\toclevel@paragraph{4}
36 \def\toclevel@subparagraph{5}

```

```

37 \def\toclevel@figure{1}
38 \def\toclevel@table{1}
39 \kernelchange

```

2.4 load kernel changes

```

40 <*package>
41 \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. We set it up as config point for now.

```

42 \def\@contentsline@cfgpoint@before#1#2#3#4{}
43 \def\@contentsline@cfgpoint@after#1#2#3#4{}
44 \def\@contentsline@arg@one{}%level
45 \def\@contentsline@arg@two{}%text
46 \def\@contentsline@arg@three{}%page
47 \def\@contentsline@arg@four{}%destination
48 \def\@contentsline#1#2#3#4%
49   {%
50     \def\@contentsline@arg@one{#1}%level
51     \def\@contentsline@arg@two{#2}%text
52     \def\@contentsline@arg@three{#3}%page
53     \def\@contentsline@arg@four{#4}%destination
54     \@contentsline@cfgpoint@before{#1}{#2}{#3}{#4}%
55     %\gdef\@contentsline@destination{#4}%
56     \csname l@#1\endcsname{#2}{#3}%
57     \@contentsline@cfgpoint@after{#1}{#2}{#3}{#4}%
58   }

```

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 would be ok, but we need the arguments, so we store them first.

```

59 \NewHook{cmd/addcontentsline/before}
60 \def\addcontentsline#1#2#3{% toc extension, type, tag
61   \def\addcontentsline@arg@one{#1}% name??
62   \def\addcontentsline@arg@two{#2}%
63   \def\addcontentsline@arg@three{#3}%
64   \UseHook{cmd/addcontentsline/before}%
65   \addtocontents{#1}{%
66     \protect\contentsline{#2}{#3}{\thepage}{\@currentHref}\protected@file@percent
67   }}

```

2.7 \@starttoc

[kernel?]

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

```

68 \def\@starttoc@cfgpoint@before#1{}

```

```

69 \def\@starttoc@cfgpoint@after#1{}
70 \def\@starttoc#1{%
71   \begingroup
72     \makeatletter
73     \@starttoc@cfgpoint@before{#1}%
74     \@input{\jobname.#1}%
75     \@starttoc@cfgpoint@after{#1}
76     \if@filesw
77       \expandafter\newwrite\csname tf@#1\endcsname
78       \immediate\openout \csname tf@#1\endcsname \jobname.#1\relax
79     \fi
80     \@nobeckfalse
81   \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.

```

82 \NewMirroredHookPair{contentsline/number/before}{contentsline/number/after}%
83 \NewMirroredHookPair{contentsline/text/before}{contentsline/text/after}%
84 \NewMirroredHookPair{contentsline/page/before}{contentsline/page/after}%

```

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.

```

85 \def\@dottedtocline@cfgpoint@leaders#1{#1}
86
87 \def\@dottedtocline#1#2#3#4#5{%
88   \ifnum #1>\c@tocdepth \else
89     \vskip \z@ \@plus.2\p@
90     {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
91     \parindent #2\relax\@afterindenttrue
92     \interlinepenalty\@M
93     \leavevmode
94     \@tempdima #3\relax
95     \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
96     \UseHook{contentsline/text/before}%
97     \csname contentsline@text@#1\format\endcsname{#4}%
98     \UseHook{contentsline/text/after}%
99     \nobreak
100    \@dottedtocline@cfgpoint@leaders{%
101      \leaders\hbox{$\m@th
102        \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
103        mu$}\hfill}%
104    \nobreak
105    \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor
106    \UseHook{contentsline/page/before}%
107    #5%
108    \UseHook{contentsline/page/after}%

```

```

109             \kern-\p@\kern\p@}%
110     \par}%
111 \fi}

```

2.8.2 \numberline

[kernel?] Inside or outside the box?

```

112 \def\numberline#1{\hb@xt@\@tempdima{%
113   \UseHook{contentsline/number/before}%
114   #1\hfil
115   \UseHook{contentsline/number/after}%
116 }}

```

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.

```

117 \AddToHook{class/article/after}
118 {
119   \renewcommand*\l@part[2]{%
120     \ifnum \c@tocdepth >-2\relax
121       \addpenalty\@secpenalty
122       \addvspace{2.25em \@plus\p@}%
123       \setlength\@tempdima{3em}%
124       \begingroup
125         \parindent \z@ \rightskip \@pnumwidth
126         \parfillskip -\@pnumwidth
127         {\leavevmode
128           \large \bfseries
129           \UseHook{contentsline/text/before}%
130           \csname contentsline@text@-1@format\endcsname{#1}%
131           \UseHook{contentsline/text/after}%
132           \hfil
133           \hb@xt@\@pnumwidth{\hss
134             \UseHook{contentsline/page/before}%
135             #2%
136             \UseHook{contentsline/page/after}%
137             \kern-\p@\kern\p@}}\par
138         \nobreak
139       \endgroup
140     \fi}
141 \renewcommand*\l@section[2]{%
142   \ifnum \c@tocdepth >\z@
143     \addpenalty\@secpenalty
144     \addvspace{1.0em \@plus\p@}%
145     \setlength\@tempdima{1.5em}%
146     \begingroup
147       \parindent \z@ \rightskip \@pnumwidth
148       \parfillskip -\@pnumwidth
149       \leavevmode \bfseries
150       \advance\leftskip\@tempdima
151       \hskip -\leftskip
152       \UseHook{contentsline/text/before}%

```

```

153      \csname contentsline@text@1@format\endcsname{#1}%
154      \UseHook{contentsline/text/after}%
155      \nobreak\hfil
156      \nobreak\hb@xt@\@pnumwidth{\hss
157      \UseHook{contentsline/page/before}%
158      #2%
159      \UseHook{contentsline/page/after}%
160      \kern-\p@\kern\p@}\par
161    \endgroup
162  \fi}
163 }
164 \AddToHook{class/report/after}
165 {
166   \renewcommand*\l@part[2]{%
167     \ifnum \c@tocdepth >-2\relax
168       \addpenalty{-\@highpenalty}%
169       \addvspace{2.25em \@plus\p@}%
170       \setlength\@tempdima{3em}%
171       \begingroup
172         \parindent \z@ \rightskip \@pnumwidth
173         \parfillskip -\@pnumwidth
174         {\leavevmode
175           \large \bfseries
176           \UseHook{contentsline/text/before}%
177           \csname contentsline@text@-1@format\endcsname{#1}%
178           \UseHook{contentsline/text/after}%
179           \hfil
180           \hb@xt@\@pnumwidth{\hss
181           \UseHook{contentsline/page/before}%
182           #2%
183           \UseHook{contentsline/page/after}%
184           \kern-\p@\kern\p@}}\par
185       \nobreak
186     \endgroup
187   \fi}
188 \renewcommand*\l@chapter[2]{%
189   \ifnum \c@tocdepth >\m@ne
190     \addpenalty{-\@highpenalty}%
191     \vskip 1.0em \@plus\p@
192     \setlength\@tempdima{1.5em}%
193     \begingroup
194       \parindent \z@ \rightskip \@pnumwidth
195       \parfillskip -\@pnumwidth
196       \leavevmode \bfseries
197       \advance\leftskip\@tempdima
198       \hskip -\leftskip
199       \UseHook{contentsline/text/before}%
200       \csname contentsline@text@0@format\endcsname
201       {#1}%
202       \UseHook{contentsline/text/after}%
203       \nobreak\hfil
204       \nobreak\hb@xt@\@pnumwidth{\hss
205       \UseHook{contentsline/page/before}%
206       #2%

```

```

207         \UseHook{contentsline/page/after}%
208                                     \kern-\p@\kern\p@}\par
209     \penalty\@highpenalty
210 \endgroup
211 \fi}
212 }
213 \AddToHook{class/book/after}
214 {
215     \renewcommand*\l@part[2]{%
216     \ifnum \c@tocdepth >-2\relax
217         \addpenalty{-\@highpenalty}%
218         \addvspace{2.25em \@plus\p@}%
219         \setlength\@tempdima{3em}%
220         \begingroup
221             \parindent \z@ \rightskip \@pnumwidth
222             \parfillskip -\@pnumwidth
223             {\leavevmode
224             \large \bfseries
225             \UseHook{contentsline/text/before}%
226             \csname contentsline@text@-1@format\endcsname{#1}%
227             \UseHook{contentsline/text/after}%
228             \hfil
229             \hb@xt@\@pnumwidth{\hss
230             \UseHook{contentsline/page/before}%
231             #2%
232             \UseHook{contentsline/page/after}%
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             \UseHook{contentsline/text/before}%
249             \csname contentsline@text@0@format\endcsname
250             {#1}%
251             \UseHook{contentsline/text/after}%
252             \nobreak\hfil
253             \nobreak\hb@xt@\@pnumwidth{\hss
254             \UseHook{contentsline/page/before}%
255             #2%
256             \UseHook{contentsline/page/after}%
257             \kern-\p@\kern\p@}\par
258         \penalty\@highpenalty
259     \endgroup
260 \fi}

```

```

261 }
262 \end{package}
263 \end{latex-lab}
264 \ProvidesFile{toc-tagging-latex-lab-testphase.ltx}
265 [2022-10-26 v0.8 code related to the tagging of toc and similar lists]
266
267 \RequirePackage{latex-lab-testphase-toc-tagging}
268
269 \end{latex-lab}

```