The latex-lab-toc-kernel-changes package
Changes and additions to the kernel related to tagging and links in toc entries

LaTeX Project*

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Abstract

The following module contains various changes to kernel commands and commands of the standard classes needed for the tagging of table of contents and similar lists.

1 Package declaration

```
⟨*kernelchange⟩
\ProvidesPackage{latex-lab-kernel-changes}
        [\ltlabkerneldate\space v\ltlabkernelversion\space
         General kernel and class changes]
```

2 Assigning the headings level numbers

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.

[**TODO:** once that heading stuff is turned into template instances the template should set that number.]

```
\def\toclevel@document{-10}
\def\toclevel@part{-1}
\def\toclevel@chapter{0}
\def\toclevel@section{1}
\def\toclevel@subsection{2}
\def\toclevel@subsubsection{3}
\def\toclevel@paragraph{4}
\def\toclevel@subparagraph{5}
\def\toclevel@figure{1}
\def\toclevel@table{1}
```

*Initial implementation done by Ulrike Fischer

3 Storing relationship between target and structure

This is done in the kernel in a socket of `\MakeLinkTarget`

⟨/kernelchange⟩

4 `\contentsline` extension

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 `lttagging`. The name of destination is forward through a command name to avoid problem with definitions of `\l@XX` which expect only two arguments.

```
⟨*package⟩
\def\contentsline#1#2#3#4%
  {%
    \UseTaggingSocket{toc/contentsline/before}{{#1}{#2}{#3}{#4}}%
    \gdef\@contentsline@destination{#4}%
    \csname l@#1\endcsname{#2}{#3}%
    \UseTaggingSocket{toc/contentsline/after}{{#1}{#2}{#3}{#4}}%
  }
```

5 `\addcontentsline` changes

`\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.

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

6 `\@starttoc`

```
\def\@starttoc#1{%
  \begingroup
    \makeatletter
    \UseTaggingSocket{toc/starttoc/before}{#1}%
    \@input{\jobname.#1}%
    \UseTaggingSocket{toc/starttoc/after}{#1}%
    \if@filesw
      \expandafter\newwrite\csname tf@#1\endcsname
      \immediate\openout \csname tf@#1\endcsname \jobname.#1\relax
    \fi
    \@nobreakfalse
  \endgroup}
```

7 Formatting of the toc entries

7.1 Kernel commands

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`)

#4 target (the fourth argument of a `\contentsline`)

```
\NewMirroredHookPairWithArguments{contentsline/number/before}{contentsline/number/after}{1}%
\NewMirroredHookPairWithArguments{contentsline/text/before}{contentsline/text/after}{4}%
\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`.

```
\def\@dottedtocline#1#2#3#4#5{%
  \ifnum #1>\c@tocdepth \else
    \vskip \z@ \@plus.2\p@
    {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
     \parindent #2\relax\@afterindenttrue
     \interlinepenalty\@M
     \leavevmode
     \@tempdima #3\relax
     \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
     \UseHookWithArguments{contentsline/text/before}{4}{#1}{#4}{#5}{\@contentsline@destinatio
     \csname contentsline@text@#1@format\endcsname{#4}%
     \UseHookWithArguments{contentsline/text/after}{4}{#1}{#4}{#5}{\@contentsline@destination
     \nobreak
     \UseTaggingSocket{toc/leaders/before}\SuspendTagging{toc/leaders}%
       \leaders\hbox{$\m@th
         \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
          mu$}\hfill
     \ResumeTagging{toc/leaders}\UseTaggingSocket{toc/leaders/after}%
     \nobreak
     \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor
     \UseHookWithArguments{contentsline/page/before}{4}{#1}{#4}{#5}{\@contentsline@destinatio
     #5%
     \UseHookWithArguments{contentsline/page/after}{4}{#1}{#4}{#5}{\@contentsline@destination
                          \kern-\p@\kern\p@}%
     \par}%
  \fi}
```

7.2 \numberline

Inside or outside the box?

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

7.3 \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.

```
\AddToHook{class/article/after}
 {
  \renewcommand*\l@part[2]{% as in contentsline: content, page
  \ifnum \c@tocdepth >-2\relax
    \addpenalty\@secpenalty
    \addvspace{2.25em \@plus\p@}%
    \setlength\@tempdima{3em}%
    \begingroup
      \parindent \z@ \rightskip \@pnumwidth
      \parfillskip -\@pnumwidth
      {\leavevmode
       \large \bfseries
       \UseHookWithArguments{contentsline/text/before}{4}
         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
       \csname contentsline@text@-1@format\endcsname{#1}%
       \UseHookWithArguments{contentsline/text/after}{4}
         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
       \hfil
       \hb@xt@\@pnumwidth{\hss
       \UseHookWithArguments{contentsline/page/before}{4}
         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
       #2%
       \UseHookWithArguments{contentsline/page/after}{4}
         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
                        \kern-\p@\kern\p@}}\par
       \nobreak
    \endgroup
  \fi}
\renewcommand*\l@section[2]{%
  \ifnum \c@tocdepth >\z@
    \addpenalty\@secpenalty
    \addvspace{1.0em \@plus\p@}%
    \setlength\@tempdima{1.5em}%
    \begingroup
      \parindent \z@ \rightskip \@pnumwidth
      \parfillskip -\@pnumwidth
      \leavevmode \bfseries
      \advance\leftskip\@tempdima
      \hskip -\leftskip
       \UseHookWithArguments{contentsline/text/before}{4}
```

```
        {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
       \csname contentsline@text@1@format\endcsname{#1}%
       \UseHookWithArguments{contentsline/text/after}{4}
        {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
       \nobreak\hfil
      \nobreak\hb@xt@\@pnumwidth{\hss
      \UseHookWithArguments{contentsline/page/before}{4}
        {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
       #2%
      \UseHookWithArguments{contentsline/page/after}{4}
        {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
      \kern-\p@\kern\p@}\par
    \endgroup
  \fi}
 }
\AddToHook{class/report/after}
 {
    \renewcommand*\l@part[2]{%
     \ifnum \c@tocdepth >-2\relax
       \addpenalty{-\@highpenalty}%
       \addvspace{2.25em \@plus\p@}%
       \setlength\@tempdima{3em}%
       \begingroup
         \parindent \z@ \rightskip \@pnumwidth
         \parfillskip -\@pnumwidth
         {\leavevmode
          \large \bfseries
          \UseHookWithArguments{contentsline/text/before}{4}
            {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
          \csname contentsline@text@-1@format\endcsname{#1}%
          \UseHookWithArguments{contentsline/text/after}{4}
            {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
          \hfil
          \hb@xt@\@pnumwidth{\hss
          \UseHookWithArguments{contentsline/page/before}{4}
            {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
          #2%
          \UseHookWithArguments{contentsline/page/after}{4}
            {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
                          \kern-\p@\kern\p@}}\par
          \nobreak
       \endgroup
     \fi}
   \renewcommand*\l@chapter[2]{%
     \ifnum \c@tocdepth >\m@ne
       \addpenalty{-\@highpenalty}%
       \vskip 1.0em \@plus\p@
       \setlength\@tempdima{1.5em}%
       \begingroup
         \parindent \z@ \rightskip \@pnumwidth
         \parfillskip -\@pnumwidth
         \leavevmode \bfseries
         \advance\leftskip\@tempdima
         \hskip -\leftskip
```

```
        \UseHookWithArguments{contentsline/text/before}{4}
          {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
        \csname contentsline@text@0@format\endcsname
          {#1}%
        \UseHookWithArguments{contentsline/text/after}{4}
          {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
         \nobreak\hfil
        \nobreak\hb@xt@\@pnumwidth{\hss
         \UseHookWithArguments{contentsline/page/before}{4}
           {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%%
         #2%
         \UseHookWithArguments{contentsline/page/after}{4}
           {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%%
                                    \kern-\p@\kern\p@}\par
        \penalty\@highpenalty
      \endgroup
    \fi}
}
\AddToHook{class/book/after}
{
   \renewcommand*\l@part[2]{%
    \ifnum \c@tocdepth >-2\relax
      \addpenalty{-\@highpenalty}%
      \addvspace{2.25em \@plus\p@}%
      \setlength\@tempdima{3em}%
      \begingroup
        \parindent \z@ \rightskip \@pnumwidth
        \parfillskip -\@pnumwidth
        {\leavevmode
         \large \bfseries
         \UseHookWithArguments{contentsline/text/before}{4}
           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
         \csname contentsline@text@-1@format\endcsname{#1}%
         \UseHookWithArguments{contentsline/text/after}{4}
           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
         \hfil
         \hb@xt@\@pnumwidth{\hss
         \UseHookWithArguments{contentsline/page/before}{4}
           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
         #2%
         \UseHookWithArguments{contentsline/page/after}{4}
           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%%
                              \kern-\p@\kern\p@}}\par
         \nobreak
      \endgroup
    \fi}
  \renewcommand*\l@chapter[2]{%
    \ifnum \c@tocdepth >\m@ne
      \addpenalty{-\@highpenalty}%
      \vskip 1.0em \@plus\p@
      \setlength\@tempdima{1.5em}%
      \begingroup
        \parindent \z@ \rightskip \@pnumwidth
        \parfillskip -\@pnumwidth
```

```
          \leavevmode \bfseries
          \advance\leftskip\@tempdima
          \hskip -\leftskip
          \UseHookWithArguments{contentsline/text/before}{4}
           {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
          \csname contentsline@text@0@format\endcsname
            {#1}%
          \UseHookWithArguments{contentsline/text/after}{4}
           {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
           \nobreak\hfil
          \nobreak\hb@xt@\@pnumwidth{\hss
           \UseHookWithArguments{contentsline/page/before}{4}
            {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
           #2%
           \UseHookWithArguments{contentsline/page/after}{4}
            {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
                                      \kern-\p@\kern\p@}\par
          \penalty\@highpenalty
        \endgroup
      \fi}
 }
```

⟨/package⟩