The latex-lab-bib package
Changes and additions to the kernel related to tagging and links in citations and bibliography entries

LaTeX Project*

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Abstract

1 Introduction

The followings contains small changes to improve tagging of bibliography entries and citations.

The tagging of the bibliography is actually quite straightforward: A bibliography is typically a list with a heading and the sec and block tagging code handles that.

There are here only two problems:

- The structure number of the `LI` element create by a `\bibitem` must be recorded somehow to allow to reference it in a `\cite`.
- hyperref redefines the item command and so breaks the list structure see https://github.com/latex3/latex2e/discussions/1010#discussioncomment-5565418

Both problems are rather easy to resolve, but it must be checked if other packages interfere again by redefining the commands.

More difficult is the tagging of citation commands. Citations should be inside a Reference structure and contain a /Ref entry pointing to the relevant item in the bibliography. For simple citations like "[1]" or "Doody (2023)" this is easy, but it is not obvious how to handle combined citations like "Doody (2003,2018)" (or even compressed citations like "[1-3]"). The implementation follows here the links: whatever hyperref would link is set as the reference.

An additional problem are the various packages trying to improve citation commands which all should be checked. Currently only natbib has been tried.

The biblatex package isn't handled yet.

*Initial implementation done by Ulrike Fischer

2 Implementation

```
⟨*package⟩
⟨@@=tag⟩
\ProvidesExplPackage {latex-lab-testphase-bib} {2023-05-18} {0.8}
  {Code related to the tagging of bibliography and cite command}
```

We need at least the block tagging code.

```
\RequirePackage{latex-lab-testphase-block-tagging}
```

At first we suppress the patches from hyperref. This will only work with the next hyperref!

```
\def\hyper@nopatch@bib{}
```

`\@extra@binfo` `\@extra@b@citeb` These are taken from hyperref, they are for chapterbib compability (and also signal to chapterbib not to change the citation commands)

```
\providecommand*\@extra@binfo{}%
\providecommand\@extra@b@citeb{}
```

(*End definition for* `\@extra@binfo` *and* `\@extra@b@citeb`*. These functions are documented on page* **??**.)

`\l__tag_bib_target_tl` Items should add a target, to avoid that user code interferes we don't rely on `\@currentHref`

```
\tl_new:N\l__tag_bib_target_tl
```

2.1 Handling the bibliography

`\lbibitem` The item command if an optional argument is use.

We only prepend some code. If we had already generic hooks with arguments we could probably use them ...

```
\def\@lbibitem[#1]#2{%
```

we store the target name for the following code.

```
  \tl_set:Nx\l__tag_bib_target_tl{cite.#2\@extra@b@citeb}
```

The target is added at the begin of the paragraph.

```
  \AddToHookNext{para/begin}{\makebox[0pt][r]{\MakeLinkTarget*{\l__tag_bib_target_tl}\hspace{
  \item[\@biblabel{#1}\hfill]\if@filesw
      {\let\protect\noexpand
       \immediate
       \write\@auxout{\string\bibcite{#2}{#1}}}\fi\ignorespaces}
```

we make a copy to be able to reinstate the definition. This is e.g. currently needed with hyperref.

```
\let\@kernel@copy@lbibitem\@lbibitem
```

(*End definition for* `\lbibitem`*. This function is documented on page* **??**.)

`\@bibitem` Similar for bibitem. TODO: If hyperref is loaded we will get a second target from the refstepcounter, but this is ignored for now.

```
\def\@bibitem#1{
  \tl_set:Nx\l__tag_bib_target_tl{cite.#1\@extra@b@citeb}%
  \AddToHookNext{para/begin}{\makebox[0pt][r]{\MakeLinkTarget*{\l__tag_bib_target_tl}\hspace{
  \item\if@filesw \immediate\write\@auxout
```

```
      {\string\bibcite{#1}{\the\value{\@listctr}}}\fi\ignorespaces}
\let\@kernel@copy@bibitem\@bibitem
```

(*End definition for* `\@bibitem`. *This function is documented on page* **??**.)

TODO The LI-structure should set a label, we redefine the internal command locally for now, but perhaps this need a receipe?

```
\AddToHook{env/thebibliography/begin}
  {\cs_set:Npn \__block_list_item_begin:
    { \tagstructbegin{tag=\LItag,label=\l__tag_bib_target_tl}}
  }
```

2.2 Handling citation commands

We redefine similar to hyperref the `\bibcite` command to inject link and structure. Even if it looks a bit odd it is now used for many years and so hopefully compatible with various packages. But differently to hyperref we use the new hooks with arguments. TODO: consider name. Perhaps use the generic names?

```
\NewMirroredHookPairWithArguments{bibcite/before}{bibcite/after}{2}
\def\bibcite#1#2{%
   \@newl@bel{b}{#1\@extra@binfo}{%
      \UseHookWithArguments{bibcite/before}{2}{#1}{#2}
       #2
      \UseHookWithArguments{bibcite/after}{2}{#1}{#2}
       }%
     }%
\let\@kernel@copy@bibcite\bibcite
```

Now we add the tagging structure. TODO: the ref key should expand its argument directly!

```
\AddToHookWithArguments{bibcite/before}
  {
    \tag_mc_end_push:
    \exp_args:Nx\tagstructbegin{tag=Reference,ref=cite.#1\@extra@b@citeb}
    \tagmcbegin{}
  }
\AddToHookWithArguments{bibcite/after}[tag]
  {
    \tag_mc_end:
    \tagstructend
    \tag_mc_begin_pop:n{}
  }
```

At last the code for hyperref, the link will be inside the reference, but this can be changed with a rule.

```
\AddToHook{package/hyperref/after}
 {
```

the next hyperref will allow to suppress the bib patches, but with older versions we muss reinstated them.

```
   \@ifpackagelater{hyperref}{2023-05-01}{}
    {
      \@ifpackageloaded{natbib}{}
       {\let\@lbibitem\@kernel@copy@lbibitem
        \let\@bibitem\@kernel@copy@bibitem
```

```
      \let\bibcite\@kernel@copy@bibcite}
   }
  \AddToHookWithArguments{bibcite/before}{\hyper@linkstart{cite}{cite.#1\@extra@b@citeb}}
  \AddToHookWithArguments{bibcite/after}{\hyper@linkend}
}
```

2.3 Natbib support

natbib offers various hooks that can be used. The main problem is to coordinate with the hyperref use of the same hooks. We also have to add something at the begin of `\@lbibitem`. As generic hooks with arguments aren't available yet, we have to copy the definition

```
\AddToHook{package/natbib/after}
 {
   \def\hyper@natanchorstart#1{\MakeLinkTarget*{#1}}
   \def\@lbibitem[#1]#2{%
     \tl_set:Nx\l__tag_bib_target_tl{cite.#2\@extra@b@citeb}
     \if\relax\@extra@b@citeb\relax\else
       \@ifundefined{br@#2\@extra@b@citeb}{}{%
        \@namedef{br@#2}{\@nameuse{br@#2\@extra@b@citeb}}%
       }%
     \fi
     \@ifundefined{b@#2\@extra@b@citeb}{%
      \def\NAT@num{}%
     }{%
      \NAT@parse{#2}%
     }%
     \def\NAT@tmp{#1}%
     \expandafter\let\expandafter\bibitemOpen\csname NAT@b@open@#2\endcsname
     \expandafter\let\expandafter\bibitemShut\csname NAT@b@shut@#2\endcsname
     \@ifnum{\NAT@merge>\@ne}{%
      \NAT@bibitem@first@sw{%
       \@firstoftwo
      }{%
       \@ifundefined{NAT@b*@#2}{%
        \@firstoftwo
       }{%
        \expandafter\def\expandafter\NAT@num\expandafter{\the\c@NAT@ctr}%
        \@secondoftwo
       }%
      }%
     }{%
      \@firstoftwo
     }%
     {%
      \global\advance\c@NAT@ctr\@ne
      \@ifx{\NAT@tmp\@empty}{\@firstoftwo}{%
       \@secondoftwo
      }%
      {%
       \expandafter\def\expandafter\NAT@num\expandafter{\the\c@NAT@ctr}%
       \global\NAT@stdbsttrue
      }{}%
```

```
      \bibitem@fin
      \item[\hfil\NAT@anchor{#2}{\NAT@num}]%
      \global\let\NAT@bibitem@first@sw\@secondoftwo
      \NAT@bibitem@init
    }%
    {%
      \NAT@anchor{#2}{}%
      \NAT@bibitem@cont
      \bibitem@fin
    }%
    \@ifx{\NAT@tmp\@empty}{%
      \NAT@wrout{\the\c@NAT@ctr}{}{}{}{#2}%
    }{%
      \expandafter\NAT@ifcmd\NAT@tmp(@)(@)\@nil{#2}%
    }%
  }%
```

we redefine the hook to use latex hooks.

```
  \NewMirroredHookPairWithArguments{natbib/linkstart}{natbib/linkend}{1}
  \renewcommand\hyper@natlinkstart[1]{\UseHookWithArguments{natbib/linkstart}{1}{#1}}
  \renewcommand\hyper@natlinkend{\UseHookWithArguments{natbib/linkend}{1}{}}
  \AddToHookWithArguments{natbib/linkstart}
    {
       \leavevmode
       \tag_mc_end_push:
       \exp_args:Nx\tagstructbegin{tag=Reference,ref=cite.#1\@extra@b@citeb}
       \tagmcbegin{}
    }
  \AddToHook{natbib/linkend}
    {
     \tag_mc_end:
     \tagstructend
     \tag_mc_begin_pop:n{}
    }
}
```

if hyperref is loaded we have to repeat the definition

```
\AddToHook{package/hyperref/after}
{
  \renewcommand\hyper@natlinkstart[1]{\UseHookWithArguments{natbib/linkstart}{1}{#1}}
  \renewcommand\hyper@natlinkend{\UseHookWithArguments{natbib/linkend}{1}{}}
  \AddToHookWithArguments{natbib/linkstart}
    {
       \Hy@backout{#1}%
       \hyper@linkstart{cite}{cite.#1}%
       \def\hyper@nat@current{#1}
    }
  \AddToHook{natbib/linkend}
    {
     \hyper@linkend
    }
}
```

⟨/package⟩

```
⟨*latex-lab⟩
\ProvidesFile{bib-latex-lab-testphase.ltx}
        [2023-05-18 v0.8 code related to the tagging of bib and citations]

\RequirePackage{latex-lab-testphase-bib}

⟨/latex-lab⟩
```