The Here Applies LATEX Package

September 3, 2022

Abstract

A LATEX package for referencing groups of pages that share something in common.

1 Overview

Here Applies is a LATEX package that allows to collect groups of labels and reference them altogether. It can be used for creating informal glossaries that cross-link concepts to their applications, or simply mentioning multiple pages that share something in common.

The package offers two commands: \hereapplies and \whereapplies (plus their "starred" versions \hereapplies* and \whereapplies*). In both cases an identifier is passed as argument – and this can be any string invented in the moment (\hereapplies additionally supports more than one identifier in the form of a comma-separated list).

Every time \hereapplies is invoked with known identifiers, the document is made aware that the place shares some kind of connection with other places in which the same identifiers were used. And so, every time the \whereapplies command is invoked with a known identifier, all the occurrences of the latter within the entire document will be printed in the form of a linkable page list (e.g. "pp. 1, 5, 8–9, 14–20...").

As \hereapplies is designed to be invoked in the middle of a chapter or a section and that location must be made linkable, the \phantomsection directive is invoked by default before a label is added. To avoid calling \phantomsection, the "starred" command \hereapplies* is available.

Finally, like \whereapplies resembles a pluralizable version of \pageref, its "starred" version \whereapplies* will resemble a pluralizable version of \pageref*.

If you use LyX, the package ships a LyX module as well (please check the lyx-module subdirectory).

2 Example usage

The following LATEX manuscript

```
\documentclass { article }
3
   \usepackage{hereapplies}
4
5
   \begin {document}
6
   \title {Some title}
7
   \author{Some author}
10
11
   \ maketitle
12
   This is concept one. To find this concept applied, please
14
   see \whereapplies {conceptOne }.
15
   This is concept two. To find this concept applied, please
16
17
   18
   \hereapplies {conceptOne} This is page \thepage. As you can see,
19
   "concept one" applies here. \newpage
20
21
   \hereapplies{conceptTwo} This is page \thepage. As you can see,
22
23
   "concept two" applies here. \newpage
24
   \verb|\hereapplies{conceptOne, conceptTwo}| This is page \verb|\hereapplies|| As you
25
   can see, both "concept one" and "concept two" apply here. \newpage
26
27
   \hereapplies{conceptTwo} This is page \thepage. As you can see,
   "concept two", applies here. newpage
29
30
   \hereapplies[myref]{conceptOne} This is page \thepage. As you can
31
   see, "concept one" applies here. This point in the document is
   labeled \texttt{myref}.
33
34
   \end{document}
```

will generate the hereapplies-example.pdf document attached.

3 A minimal tutorial

\hereapplies Syntax:

```
\label{label} $$ \end{area} $$ \end{area} $$ \end{area} $$ $$ \end{area} $$ \end{are
```

The \hereapplies command notifies the document that one or more identifiers apply to a particular point and adds a label to it.

If the optional argument is passed the label created will be named accordingly, otherwise an opaque name will be chosen for it. This argument may contain only what is legal for \pageref.

The *identifiers* argument must be a comma-separated list of identifiers (leading and trailing spaces around each member will be ignored). Each of these strings will remain confined within the internal scope of the package and will not create conflicts with possible macros or labels of the same names.

After storing some internal values, $\ensuremath{\verb|}$ will expand exactly to $\ensuremath{\verb|}$ phantomsection $\ensuremath{\verb|}$ label $\{\dots\}$

Its "starred" version (\hereapplies*) will not invoke the \phantomsection directive.

\whereapplies Syntax:

```
\whereapplies \{\langle identifier \rangle\} \whereapplies* \{\langle identifier \rangle\}
```

The \whereapplies command prints all the occurrences of an identifier, in the form "p. ..." or "pp. ..." (with page range support).

The *identifier* argument will remain confined within the internal scope of the package and will not create conflicts with possible commands or labels of the same name. Leading and trailing spaces around this string will be ignored.

If the same *identifier* is not passed to \hereapplies at least once throughout the document, \whereapplies will print "??".

The "starred" version of this command (\whereapplies*) will use \pageref* instead of \pageref for generating the page list.

4 Internationalization

Currently the localization of **Here Applies** is not automatic. It is possible however to control the strings generated by overwriting the four macros \hapage, \hapages, \hadelimiter and \halastdelimiter. For example, writing at the beginning of a document

will translate "pp. 2, 4 and 6" into "S. 2, 4 und 6".

5 Get involved

If you wish to get involved, please do not hesitate to send merge requests or participate in the discussion. The package is also available on **CTAN** under macros/latex/contrib/hereapplies/. For any issue, please drop a message.

6 Free software

Here Applies is free software. You can redistribute it and/or modify it under the terms of the **AGPL** license version 3 or any later version. See COPYING for details.

Code appendix

```
1 \quad \% \ -*- \ Mode: \ latex; \ indent-tabs-mode: \ nil; \ c-basic-offset: \ 4; \ tab-width: \ 4 \ -*-
2 %
3 %
4 % hereapplies.sty
6 % A LaTeX package for referencing groups of pages that share something in
8 %
9 \% https://github.com/madmurphy/hereapplies.sty
10 %
11 % Version 0.8.0
12 %
13 % Copyright (C) 2022 madmurphy <madmurphy 333@gmail.com>
15 % **Here Applies ** is free software: you can redistribute it and/or modify it
16 % under the terms of the GNU Affero General Public License as published by the
17 % Free Software Foundation, either version 3 of the License, or (at your
18 % option) any later version.
19 %
20~\% **Here Applies** is distributed in the hope that it will be useful, but
21 % WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or
   % FITNESS FOR A PARTICULAR PURPOSE. See the GNU Affero General Public License
23 % for more details.
24 %
25 % You should have received a copy of the GNU Affero General Public License
26\ \%\ along\ with\ this\ program.\ If\ not,\ see\ < http://www.gnu.org/licenses/>.
27 %
28 %
29 %
30~\%~Example~usage:
31 %
32
   %
         \setminus document class \{ article \}
33
   %
34 %
         35 %
36 %
         \setminus begin\{document\}
37 %
38 %
         \title{Some title}
39 %
         \author{Some author}
40 %
   %
41
   %
42
         43 %
44 %
         This is concept one. To find this concept applied, please
45 %
         46 %
47 %
         This is concept two. To find this concept applied, please
48 %
         see \quad | \ where applies \{ concept Two \}. \ | \ new page
49 %
50 %
         \hereapplies{conceptOne} This is page \thepage. As you can see,
  %
          ``concept one", applies here.\ \ newpage
51
52 %
53 %
```

```
``concept\ two"'\ applies\ here.\ \ newpage
54
   %
55
    %
56
   %
          \hereapplies \{conceptOne, conceptTwo\} This is page \thepage. As you
    %
          can see, both ''concept one'' and ''concept two'' apply here. \newpage
57
58 %
59 %
          60 %
          ''concept two'' applies here. | newpage
61 %
62 %
          \hereapplies[myref]{conceptOne} This is page \thepage. As you can
63 %
          see, "concept one" applies here. This point in the document is
64 %
          labeled \setminus texttt\{myref\}.
65
    %
    %
          \ensuremath{\mid} end \{document\}
66
67 %
68 %
69
   \ProvidesPackage{hereapplies}[2022/09/03 Here Applies]
70
   \RequirePackage { hyperref }
71
   \RequirePackage { refcount }
72 %
73 %
74 %
75 %
             TRANSLATABLE STRINGS
76 %
77 %
78 %
79 % The abbreviation of one single page
80 \operatorname{providecommand} \{ \operatorname{hapage} \{ p. \} \}
81~\%~The~abbreviation~of~two~or~more~pages
   \operatorname{providecommand} \{ \operatorname{hapages} \{ \operatorname{pp.} \setminus \} \}
82
83 \quad \% \ The \ delimiter \ between \ page \ numbers
    \providecommand *{\hadelimiter}{,\}
85
   % The delimiter before the last page number
    86
87 %
88 %
89 %
90 %
             ABSTRACT UTILITIES
91 %
92
93
   % These macros are not strictly related to this package, but are required.
94
95
96 % Macro: '\@ha@ifcomma text to check,\@then{if yes}{if no}'
99 % Check if a string contains a comma
100 %
    % This macro is mainly for internal purposes (but nothing forbids invoking it
101
102
    % directly). When invoked it checks whether a comma is present in 'text to
    \% check', then expands to 'if yes' or 'if no' accordingly.
103
104
   % Please do not put curly brackets around the text to check. The comma at the
105
106 % end of the text is mandatory.
107 %
```

```
109
                           \ \ if\ relax\ detokenize \{\#2\}\ relax \#4\ else \#3\ fi\%
110 }
111 %
112 %
113 % Macro: '\ha@trim{text}'
115 %
116 % Trim leading and trailing spaces from a string
117 %
118 % This macro is mainly for internal purposes (but nothing forbids invoking it
119 \% directly).
120
            %
121
              \ begingroup
122 % Temporarily change the categories of '<' and '>', for trimming safely
124 % Helper macro
             \log \gdef \gdef
125
126
                           \label{linear_condition} \\ \ |\ \mathbf{ifcase} \setminus \mathbf{numexpr2}\#3\#8 \\ \ \mathbf{relax} \setminus \mathbf{or}\#2 \\ \ \mathbf{or}\#7 \\ \ \mathbf{or}\#5 \\ \ \mathbf{or}\#1 \\ \ \mathbf{fi}\%
127
128 % Usable macro
             129
130
                           \mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0$}}\mbox{\ensuremath{$0
131 }
132 \endgroup
133 %
134 %
135 %
136 %
                                             PRIVATE ENVIRONMENT
137 %
138
             % These macros regulate the internal functioning of the package and should not
140 % be invoked directly.
141 %
142 %
143 % Assign a unique number to each unlabeled occurrence of an identifier
144 \newcounter{@ha@unlabeled@counter}
145 %
146 %
147
            \% Macro '\@ha@makepagelist{hypermacro}{labels}'
148
             149
150 % Generate the list of page numbers (with page range support)
151 %
152 % This macro is for internal purposes only. When invoked, it scans the
153 % comma-separated list of labels provided ('labels'), checks which labels refer
154 % to duplicate page numbers and which page numbers can be grouped together, and
155 % finally prints a list.
156
            0%
157
             % The 'hypermacro' argument is the macro (usually from the 'hyperref' package)
158
             % that will process the label name.
159
160 % The 'labels' argument must be a comma-separated list of labels.
161 %
162 \gdef\@ha@makepagelist\#1\#2\{\%
163
                           \begin{center} \mathbf{begingroup}\% \end{center}
```

```
164
                        % Reset the current page number
                         165
166
                        % Reset the current range offset
                         \def \ensuremath{$\def$} \align{align*} \def \ensuremath{$\def$} \align{align*} \def \ensuremath{$\def$} \align{align*} \def \ensuremath{\def} \
167
168
                        % Ensure no comma before the first page number
                        169
170
                        % Ensure no text before the last number if it is also the first one
                         171
172
                        % Iterate through the 'labels' argument
173
                        \ensuremath{\mbox{\@for}\mbox{\@ha@tmp@@thislabel:=$$\#2$\do}{\%}
                                    % Store the page number associated with this label
174
                                    175
176
                                    % Check that we are not on the same page as in the last iteration
                                    177
                                               \% This is not the same page as in the last iteration
178
179
                                               % Is this the first page in which this identifier appears?
                                               180
181
                                                          \% We have already met pages in which this identifiers appears
                                                          % Does this page follow immediately the previous page?
182
                                                           \verb| ifnum | numexpr | @ha@tmp@@currp+1 = | @ha@tmp@@nextp\%| |
183
184
                                                                      % This page follows immediately the previous page
185
                                                                      % Are these the first two contiguous pages of the range?
                                                                       \ifnum\@ha@tmp@@prangeoffs=-1%
186
                                                                                  \% These are the first two contiguous pages of the range
187
                                                                                  % Store the first page number of the pair
188
189
                                                                                  190
                                                                                  % Store the first label of the pair
                                                                                  \verb|\ let \ | \ @ha@tmp@@currangelbl \ | \ @ha@tmp@@currlbl\%|
191
192
                                                                      \ fi%
193
                                                           \backslash else\%
                                                                      % This page is far from the previous label's page
194
195
                                                                      % Was the previous page part of a contiguous range?
                                                                       \ifnum\@ha@tmp@@prangeoffs=-1%
196
197
                                                                                  % The previous page was a standalone page
198
                                                                                  % Print "[, ]  "
                                                                                  {\@ha@tmp@@psep\csname
199
                                                                                             #1\expandafter\endcsname%
200
201
                                                                                              \expandafter{\@ha@tmp@@currlbl}}%
202
                                                                       \backslash else\%
203
                                                                                  % The previous page was part of a contiguous range
204
                                                                                  % Print "[, ]  "
205
                                                                                  206
                                                                                             \#1\ensuremath{\backslash} expandafter\endcsname\%
207
                                                                                             \expandafter{\@ha@tmp@@currrangelbl}--\csname
                                                                                             #1\ensuremath{\mbox{expandafter}\mbox{\ensuremath{\mbox{endcsname}}\%}}
208
209
                                                                                              \expandafter{\@ha@tmp@@currlbl}}%
210
                                                                                  \% Reset the current range offset
211
                                                                                  \def \ensuremath{$\def$} \align{align*} \def \ensuremath{$\def$} \align{align*} \def \ensuremath{$\def$} \align{align*} \def \ensuremath{\def} \
212
                                                                      \ fi %
213
                                                                      % Ensure a comma before the next page number
214
                                                                       \let\@ha@tmp@@psep\hadelimiter%
                                                                      \%\ Ensure " and " before the last page number
215
                                                                       \let\@ha@tmp@@lastpsep\halastdelimiter%
216
217
                                                           \ f i %
218
                                               \ fi%
```

```
219
                                                         % Prepare the next page number
220
                                                          \let\@ha@tmp@@currp\@ha@tmp@@nextp%
221
                                                          % Prepare the next label
                                                          222
                                            \ fi%
223
                              }%
224
225
                             % Print the last page number
226
                             % Is there at least one page to print?
227
                              \ifnum\@ha@tmp@@currp>-1%
                                           % There is at least one page to print
228
                                            % Was the previous page part of a contiguous range?
229
230
                                            231
                                                          % The previous page was a standalone page
                                                         % Print "[ and ]  "
232
233
                                                          {\tt \{\@ha@tmp@@lastpsep\csname\\}
234
                                                                        #1\end{expandafter}\end{endesname}
235
                                                                        \operatorname{\mathbf{After}} \ 
                                            \backslash \mathbf{else}\%
236
237
                                                          % The previous page was part of a contiguous range
                                                          % Print " | and | < p-q>"
238
239
                                                          240
                                                                        #1\ensuremath{\ensuremath{\mathsf{endcsname}}}\%
                                                                         \expandafter{\@ha@tmp@@currrangelbl}--\csname
241
242
                                                                        #1 \rightarrow 1 
                                                                        \expandafter{\@ha@tmp@@currlbl}}%
243
244
                                           \ fi%
245
                              \ f i %
246
                              \ensuremath{\setminus} \mathbf{endgroup}\%
247
               }
248
               %
249
               %
250
               % Macro '\@ha@makeoutputstrings{identifier}{preamble}{labels}'
251
               252
              %
253
              % Generate the output strings of '\whereapplies' and '\whereapplies*'
254
              \% This macro is for internal purposes only. When invoked, it updates the two
255
              \%\ macros\ `@ha@prop@@soutput@\dots`\ and\ `@ha@prop@@doutput@\dots`.
256
257
258
               % The 'identifier' argument remains confined within the internal scope of the
259
               \% package and does not create conflicts with possible macros or labels of the
260
               \% same name. Leading and trailing spaces around this string will **not** be
261
            \% ignored.
262
             %
              % The 'preamble' argument is the text that will be expanded before the page
263
264
             % list (usually "p." or "pp.").
265
              \% The 'labels' argument must be a comma-separated list of labels.
266
267
               %
268
                \gdef\@ha@makeoutputstrings#1#2#3{%
269
                             \% Write "p./pp. \pageref..." to the output
                              \label{lem:condition} $$ \operatorname{\mathbf{Qdef}} \subset \mathbf{Sname} $$ @ha@prop@@doutput@\#1\endcsname{\%} $$
270
271
                                            \% '\ T@pageref' is a synonym of '\ pageref'
272
                                            \#2\ @ha@makepagelist { T@pageref} { #3}%
273
                             }%
```

```
\% Write "p./pp. \pageref*..." to the starred output
274
275
                \ensuremath{\mbox{expandafter}\gdef\csname} @ha@prop@@soutput@#1\endcsname{%
276
                        \% '\@pagerefstar' is a synonym of '\pageref*'
277
                        \#2\ @ha@makepagelist { @pagerefstar} \#3}%
                }%
278
                \% Make the list of labels available to the API (via '\get@hainfo')
279
280
                \ensuremath{\verb|expandafter|gdef|} \csname @ha@prop@@labels@#1\endcsname{#3}%
281
282
283
       %
        % Macro '\@ha@newidentifier{identifier}'
284
285
        % *************
286
287
        % Initialize a new identifier
288 %
289
       % This macro is for internal purposes only. When invoked, it sets up the helper
       % macros, counters and auxiliary files needed for keeping track of an
        % identifier. If the identifier was already initialized the macro will be no
292
       % op.
       %
293
294
        % The 'identifier' argument remains confined within the internal scope of the
        % package and does not create conflicts with possible macros or labels of the
        % same name. Leading and trailing spaces around this string will **not** be
296
297
       % ignored.
298
      %
299
        \gdef\@ha@newidentifier#1{%
300
                % Was this identifier already initialized?
301
                \ifcsname @ha@iter@@preamble@#1\endcsname\else%
302
                        % The identifier was never initialized
303
                        % Was the .hax input already initialized during this run?
                        \label{lem:commons_alpha} \\ \ | \ if \ defined \ | \ @ha@commons@@haxcontent \ | \ \ \textbf{else}\% \\
304
305
                                % The .hax input was never initialized
306
                                % Previous versions created unwanted whitespaces; I am thankful to
                                \% David Carlisle for suggesting '\endlinechar=\m@ne'
307
308
                                309
                                % Initialize the content to export to the .hax file
                                \gdef\@ha@commons@@haxcontent{}%
310
                                % Export the content when the document reaches the end
311
312
                                \AtEndDocument{%
313
                                        314
                                }%
                        \ fi%
315
                        \% Was a .hax file already exported during a previous run?
316
317
                        \ifcsname @ha@prop@@labels@#1\endcsname\else%
                               % This is the first run
318
319
                                % Set the output to "??" - to be updated by the .hax file
320
                                \ensuremath{\mbox{\sc variation}}\ensuremath{\mbox{\sc variation
                                       @ha@prop@@doutput@#1\endcsname{\textbf{??}}}%
321
322
                                \% Set the starred output to "??" - to be updated by the .hax file
323
                                \expandafter\gdef\csname
324
                                        @ha@prop@@soutput@#1\endcsname{\textbf{??}}%
                                % Set the list of labels to an empty value
325
326
                                \ensuremath{\mbox{expandafter}\gdef\csname} \ensuremath{\mbox{@ha@prop@@labels@#1}\endcsname} \
327
                        \ fi%
328
                        \% Use "p." for the preamble when there is only one occurrence
```

```
329
             \global\expandafter\let\csname @ha@iter@@preamble@#1\endcsname\hapage%
330
             % Generate the output strings
331
             \g@addto@macro\@ha@commons@@haxcontent{%
332
                 % Make sure that there are occurrences
                 \ifcsname @ha@iter@@labels@#1\endcsname%
333
                     % There are occurrences
334
335
                     % Generate the output strings
336
                     \protect\@ha@makeoutputstrings{#1}{\csname}
337
                         @ha@iter@@preamble@#1\endcsname}{\csname
338
                         @ha@iter@@labels@#1\endcsname}%
                 \ fi%
339
340
             }%
         \ fi%
341
342
343
    %
344
   %
345
   %
346
    %
               LIBRARY ENVIRONMENT
347
    %
348
    %
349
    % These macros are not directly available to the user, but are callable by
350
    % other packages, if needed.
351
    %
    %
352
    % Macro: '\starred@nochecks@hereapplies{label}{identifiers}'
353
    354
355
356
    % Similar to '\hereapplies*', but without checks and with two mandatory
357
    % arguments
358
    % This macro is mainly for internal purposes (but nothing forbids invoking it
359
360
    % directly). Here the two arguments are both mandatory and there will be no
    \% checks that first argument does not contain a comma. See the documentation of
361
362
    % '\hereapplies' for more information.
363
    %
    \newcommand*{\starred@nochecks@hereapplies}[2]{%
364
365
        % Assign a label to this occurrence
366
         % Iterate through the comma-separated list 'identifiers'
367
368
         \ensuremath{\mbox{\@for\@ha@tmp@@litem:=\#2\do\{\%\)}}
369
             % Remove trailing and leading spaces
370
             371
             \%\ Make\ sure\ that\ the\ identifier\ is\ initialized
372
             \expandafter\@ha@newidentifier\expandafter{\@ha@tmp@@id}%
             % Is this the first time this identifier is mentioned?
373
374
             \ifcsname @ha@iter@@labels@\@ha@tmp@@id\endcsname%
                 % This is *not* the first time this identifier is mentioned
375
                 % Add this label to the list
376
377
                 \ensuremath{\setminus} \mathbf{expandafter} \ensuremath{\setminus} \mathbf{g@addto@macro} \ensuremath{\setminus} \mathbf{csname}
                     @ha@iter@@labels@\@ha@tmp@@id\endcsname{,#1}%
378
379
                 % Use "pp." for the preamble when there are multiple occurrences
380
                 \global\ensuremath{\mbox{\sc variable}}
381
                     @ha@iter@@preamble@\\ \\ @ha@tmp@@id\\ \\ endcsname\\ \\ hapages\%
382
             \else%
383
                 % This is the first time this identifier is mentioned
```

```
384
                                                           % Set up the list with this label as value
385
                                                           \expandafter\gdef\csname
386
                                                                          @ha@iter@@labels@\\ \\ @ha@tmp@@id\\ \\ \textbf{endcsname}\{\#1\}\%
387
                                             \ fi%
                              }%
388
                              \% Clean the environment
389
390
                              \let\@ha@tmp@@id\undefined%
391
392
393
              %
               % Macro: '\starred@hereapplies[label]{identifiers}'
394
395
                        *************
396
              % Identical to '\hereapplies*'
397
398
              %
399
               % This macro is mainly for internal purposes (but nothing forbids invoking it
              \% directly). See the documentation of 'hereapplies' for more information.
400
401
                \verb|\newcommand*{\normaline}| arred@hereapplies | [2][] { % }
402
403
                              % Check whether the macro has been called with one or two arguments
404
                              \if\relax\detokenize{#1}\relax%
405
                                             % The macro has been called with only one argument
406
                                            % Assign a unique number to the unnamed occurrence
407
                                             \stepcounter{@ha@unlabeled@counter}%
408
                                            % Create an opaque label
409
                                             \label{lem:def} $$ \end{thm} 
410
                              \else%
411
                                            \% The macro has been called with two arguments
                                            \% Expand the first argument for checking properly
412
413
                                             \ensuremath{\setminus} \mathbf{edef} \ensuremath{\setminus} \mathbf{@ha@tmp@@lbl} \{\#1\}\%
                                             % Make sure that there are no commas in the 'label' argument
414
415
                                             \ensuremath{\mbox{\sc expandafter}}\ensuremath{\mbox{\sc ha@ifcomma}}\ensuremath{\mbox{\sc @ha@tmp@@lbl}}, \ensuremath{\mbox{\sc when}}\ensuremath{\mbox{\sc %}}
                                                           416
417
                                                                          It is possible to assign only one single label. %
418
                                                           }%
                                             }{}%
419
420
                              \ fi%
421
                              \% \ \ Call \ \ `\ |\ starred@nochecks@hereapplies'
422
                               \\ \textbf{(and after } \\ \textbf{(blacks@hereapplies } \\ \textbf{(and after } \\ \textbf{(blacktop@@lbl)} \\ \textbf{(#2)} \\ \textbf{(blacktop)} \\
423
                              % Clean the environment
424
                              \let\@ha@tmp@@lbl\undefined%
425
426 %
427
            % Macro: '\get@hainfo[property]{identifier}'
428
429
            % ***********************
430
              %
431
              % Get the value of an identifier's property
432
433
               % This macro is mainly for internal purposes (but nothing forbids invoking it
434
              % directly). If the identifier was never initialized the macro will initialize
435 \% it.
436 %
437 % Possible values for the 'property' argument are: 'doutput', 'labels' and
438 % 'soutput'. When omitted it defaults to 'labels'.
```

```
439
440
                 % The 'identifier' argument remains confined within the internal scope of the
                  % package and does not create conflicts with possible macros or labels of the
442
                 % same name. Leading and trailing spaces around this string will be ignored.
443
                  \label{lem:lemmand*} $$\operatorname{\ensuremath{\mbox{$\setminus$}} newcommand*{\ensuremath{\mbox{$\setminus$}} get@hainfo} }[2][labels]{\%}
444
445
                                  % Trim leading and trailing spaces from the identifier
                                    \ensuremath{\ }\ensuremath{\ }\ens
446
447
                                  % Make sure that there are no commas
448
                                   \ensuremath{\mbox{\sc expandafter}}\ensuremath{\mbox{\sc @ha@ifcomma}}\ensuremath{\mbox{\sc @ha@tmp@@id}}, \ensuremath{\mbox{\sc @ha@ifcomma}}\ensuremath{\mbox{\sc @ha@tmp@@id}}, \ensuremath{\mbox{\sc @ha}}\ensuremath{\mbox{\sc @ha}}\e
                                                   \PackageError{hereapplies}{Comma detected in "\@ha@tmp@@id"}{%
449
450
                                                                     It is possible to query only one single identifier at a time. %
451
                                                   }%
452
                                   }{}%
                                  \%\ \mathit{Make}\ \mathit{sure}\ \mathit{that}\ \mathit{the}\ \mathit{identifier}\ \mathit{is}\ \mathit{initialized}
453
454
                                   \ensuremath{\mbox{\sc expandafter}}\ensuremath{\mbox{\sc widentifier}}\ensuremath{\mbox{\sc expandafter}}\ensuremath{\mbox{\sc expandafter}}\ensuremath{\m
                                  % Print the identifier's property
455
456
                                   \label{lem:csname} $$ \csname @ha@prop@@#1@\@ha@tmp@@id\endcsname\% $$
457
                                  % Clean the environment
                                   \let\@ha@tmp@@id\undefined%
458
459
460
                 %
461
                 %
462 %
                                                           USER ENVIRONMENT
463 %
464 %
465
466
               % These macros are directly available to the user.
467
               %
468
                 % Macro: '\hereapplies[label]{identifiers}'
469
470
471
472 % Notify the document that one or more identifiers apply to a particular point
473 % and add a label to it
474 %
475
               % If the optional argument is passed the label created will be named
               % accordingly, otherwise an opaque name will be chosen. This argument may
476
477
                 % contain only what is legal for '\pageref'.
478
479
                 % The 'identifiers' argument must be a comma-separated list of identifiers
                 % (leading and trailing spaces around each member will be ignored). Each of
481 % these strings will remain confined within the internal scope of the package
482 % and will not create conflicts with possible macros or labels of the same
483 % names.
484 %
                 % The starred version of this command ('\hereapplies*') will not invoke the
485
                 % '\ phantomsection ' directive.
486
487
                  %
488
                  \newcommand*{\hereapplies}{%
                                   \% Check if a star is present in the invocation of the command
489
490
                                   491
492 %
493 %
```

```
494 \quad \% \ Macro: \ `\ \ \ whereapplies \{identifier\}'
496 %
   \% Print all the occurrences of an identifier in the form "p. ..." or "pp. ..."
497
498 % (with page range support)
499 %
500 % The 'identifier' argument remains confined within the internal scope of the
501 % package and does not create conflicts with possible macros or labels of the
502 % same name. Leading and trailing spaces around this string will be ignored.
503 %
504~\% If the same 'identifier' is not passed to '\hereapplies' at least once
    % throughout the document, '\whereapplies' will print "??".
505
506
507
    \textit{\% The starred version of this command (`|whereapplies*') will use `|pageref*' } \\
508 % instead of '\pageref' for generating the page list.
509 %
510
   \newcommand*{\whereapplies}{\%}
       \% Check if a star is present in the invocation of the command
511
512
       513 }%
514 % EOF
```