

keytheorems package

version 0.0.7 δ

github.com/mbertucci47/keytheorems

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Abstract

An `expl3`-implementation of a key-value interface to `amsthm`, implementing most of the functionality provided by `thmtools`. Very much not a finished product. Don't use it for anything important!

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1 Dependencies

Without using the `tcolorbox`^{P.6} or `tcolorbox-no-titlebar`^{P.7} options, the package loads the `aliascnt`, `amsthm`, `refcount`, and `translations` packages.

2 Global Options

`\keytheoremset{<options>}`

Every key in this section can be given as a package option with `\usepackage[<options>]{keytheorems}` or in `\keytheoremset{<options>}`, with the exception that `continues-code`^{P.2} can only be used in the latter.

overload (initially unset)

Redefines `\newtheorem` to internally use the `keytheorems` machinery. The syntax remains the same.

thmtools-compat (initially unset)

For compatibility with `thmtools` syntax. Currently defines the following commands:

thmtools command	keytheorems replacement
<code>\declaretheorem</code>	<code>\newkeytheorem</code>
<code>\declaretheoremstyle</code>	<code>\newkeytheoremstyle</code> ^{→ P. 7}
<code>\listoftheorems</code>	<code>\listofkeytheorems</code> ^{→ P. 9}
<code>\addtotheoremheadhook</code>	
<code>\addtotheoremheadhook</code>	
<code>\addtotheoremfoothook</code>	<code>\addtotheoremhook</code> ^{→ P. 11}
<code>\addtotheoremfoothook</code>	
<code>restatable</code> environment	<code>store</code> ^{→ P. 3} key

Also defined are the `shaded` and `thmbox` keys, implemented internally with `tcolorbox` rather than the `shadethm` and `thmbox` packages, respectively.

store-all (initially unset)

Tells `keytheorems` to grab the body of each theorem so it can later be printed with the `print-body`^{→ P. 10} option of `\listofkeytheorems`^{→ P. 9}. Note that this means a theorem body *cannot* contain verbatim material.

restate-counters= \langle *comma-list of counters* \rangle (initially `{equation}`)

Additional counters whose values are preserved when a theorem is restated. This key does not reset the list, so you don't need to include `equation` in \langle *comma-list* \rangle .

continues-code= \langle *code with #1* \rangle (initially `\GetTranslation{keythms_continues}\pageref{#1}`)

The code used to typeset the note produced by the `continues`^{→ P. 3} key. If English is used or an unknown language is used, defaults to `continuing from p.\, \pageref{#1}`. Currently (bad!) translations exist for French, German, and Spanish.

qed-symbol= \langle *symbol* \rangle (initially `\openbox`)

Redefines `\qedsymbol` to be \langle *symbol* \rangle .

3 Defining Theorems

`\newkeytheorem` $\{ \langle$ *env name* $\rangle \} [\langle$ *options* $\rangle]$

Defines a theorem environment \langle *env name* \rangle which itself takes a few options (see subsection 3.1). You can also declare multiple theorems at once by replacing \langle *env name* \rangle with a comma-list of names, e.g. `\newkeytheorem{theorem, lemma, proposition} [\langleoptions $\rangle]$.`

By default, the theorem's printed name is a title-cased \langle *env name* \rangle . This can be changed with the `name`^{→ P. 4} key. All \langle *options* \rangle are described in subsections 3.2 and 3.3.

```
% preamble
\newkeytheorem{theorem}

% document
\begin{theorem}
Some text
\end{theorem}
```

Theorem 1. *Some text*

3.1 Keys available to theorem environments

As in `amsthm`, theorems can take an optional argument that contains a note or heading.

```
\begin{theorem}[some heading]
Some text
\end{theorem}
```

Theorem 2 (some heading). *Some text*

Alternatively, the optional argument may contain any of the following keys.

`note=<text>` (initially unset)

Alias `name`. This is the key-value equivalent of the optional argument described above. This syntax, however, allows the argument to contain other keys.

```
\begin{theorem}[some heading]
Some text
\end{theorem}
\begin{theorem}[note=another heading]
Some more text
\end{theorem}
```

Theorem 3 (some heading). *Some text*

Theorem 4 (another heading). *Some more text*

`short-note=<text>` (initially unset)

Alias `short-name`. This replaces the value of `note` when displayed in `\listofkeytheorems`^{P.9}.

`label=<label name>` (initially unset)

This is the key-value equivalent of `\begin{theorem} \label{<label name>}`.

```
\begin{theorem}[label=foo]
Some text
\end{theorem}
\ref{foo}
```

Theorem 5. *Some text*

5

`continues*=<label name>` (initially unset)

Pick up a theorem where you left off. The theorem number remains the same. The printed text can be customized with the `continues-code`^{P.2} option. The starred version also copies the theorem note, if it exists.

```
\begin{theorem}[continues=foo]
\dots and some more text.
\end{theorem}
```

Theorem 5 (continuing from p. 3). *... and some more text.*

`store=<tag>` (initially unset)

Alias `restate`. Stores the the theorem to be restated at any point in the document with `\getkeytheorem`^{P.8}.

```
\begin{theorem}[store=blub]
A theorem worth restating.
\end{theorem}
More brilliant mathematics.
\getkeytheorem{blub}
```

Theorem 6. *A theorem worth restating.*

More brilliant mathematics.

Theorem 6. *A theorem worth restating.*

A theorem given this key *cannot* contain verbatim material or other unexpected catcodes, such as a `tikz-cd` diagram. The latter issue can be averted with the `ampersand-replacement` key.

```

% preamble
\usepackage{tikz}
\usetikzlibrary{cd}

% document
\begin{lemma}[store=diagram]
Some commutative diagram:
\[\begin{tikzcd}[ampersand
\rightarrow replacement=\&
X\times_S Y \ar[r] \ar[d] \& X \ar[d]
\rightarrow \& \\
Y \ar[r] \& S
\end{tikzcd}\]
\end{lemma}
\dots
\getkeytheorem{diagram}

```

Lemma 7. *Some commutative diagram:*

$$\begin{array}{ccc}
 X \times_S Y & \longrightarrow & X \\
 \downarrow & & \downarrow \\
 Y & \longrightarrow & S
 \end{array}$$

Lemma 7. *Some commutative diagram:*

$$\begin{array}{ccc}
 X \times_S Y & \longrightarrow & X \\
 \downarrow & & \downarrow \\
 Y & \longrightarrow & S
 \end{array}$$

`listhack=true|false`

(initially false)

Meant only to be used with the `break`^{P.8} style key for a theorem starting with a list. Compare:

```

% preamble
\newkeytheoremstyle{breaksty}{break}
\newkeytheorem{observation}[style=breaksty]

% document
\begin{observation}
\begin{enumerate}
\item First item
\end{enumerate}
\end{observation}

\begin{observation}[listhack=true]
\begin{enumerate}
\item First item
\end{enumerate}
\end{observation}

```

Observation 1. *1. First item*

Observation 2.

1. First item

Note that the value `true` must be explicitly set so that `listhack` is not interpreted as the note text.

`seq=<name>`

(initially unset)

Adds the theorem to a custom sequence `<name>` that can then be listed with `\listofkeytheorems[seq=<name>]`. See `seq`^{P.10} for more details.

3.2 Keys inherited from thmtools

These are the `[<options>]` available to `\newkeytheorem`. Except for `name` and `style`^{P.5}, each key below can also be used in `\newkeytheoremstyle`^{P.7}. For more description, see the `thmtools` package.

`name=<display name>`

(initially title-cased `<env name>`)

Aliases `title` and `heading`.

```

% preamble
\newkeytheorem{mythm}[name=Some Name]

% document
\begin{mythm}
Some text
\end{mythm}

```

Some Name 1. *Some text*

`numbered=true|false|unless-unique` (default `true`, initially `true`)

For compatibility with `thmtools`, also accepts the values `yes`, `no`, and `unless unique`.

```
% preamble
\newkeytheorem{theorem*}[
  name=Theorem, numbered=false
]

% document
\begin{theorem*}
An unnumbered theorem.
\end{theorem*}
```

Theorem. *An unnumbered theorem.*

`parent=<counter>` (initially unset)

Aliases `numberwithin` and `within`.

```
% preamble
\newkeytheorem{conjecture}[parent=section]

% document
\begin{conjecture}
The first number is the section.
\end{conjecture}
```

Conjecture 3.1. *The first number is the section.*

`sibling=<counter>` (initially unset)

Aliases `numberlike` and `sharenumber`.

```
% preamble
\newkeytheorem{lemma}[sibling=theorem]

% document
\begin{lemma}
This shares its counter with
\texttt{theorem}.
\end{lemma}
```

Lemma 8. *This shares its counter with theorem.*

`style=<style name>` (initially unset)

Accepts any `<style name>` defined by `\newkeytheoremstyle`^{P.7}, as well as any of the predefined `amsthm` styles: `plain`, `definition`, and `remark`.

```
% preamble
\newkeytheorem{remark}[style=remark]

% document
\begin{remark}
Some text
\end{remark}
```

Remark 1. Some text

`preheadhook=<code>` (initially unset)

`postheadhook=<code>` (initially unset)

`prefoothook=<code>` (initially unset)

`postfoothook=<code>` (initially unset)

Details in section 7.

<pre> % preamble \newkeytheorem{test}[preheadhook=PREHEAD, postheadhook=POSTHEAD, prefoothook=PREFOOT, postfoothook=POSTFOOT] % document \begin{test} Some text \end{test} </pre>	<pre> PREHEAD Test 1. <i>POSTHEAD</i>Some text <i>PREFOOT</i> POSTFOOT </pre>
--	--

refname= \langle ref name \rangle or $\{\langle$ singular name \rangle, \langle plural name $\rangle\}$ (initially \langle display name \rangle)

If a single string, then the name used by `hyperref`'s `\autoref` and `cleveref`'s `\cref`. If two strings separated by a comma, then the second string is the plural form used by `\cref`.

Refname= \langle ref name \rangle or $\{\langle$ singular name \rangle, \langle plural name $\rangle\}$ (initially \langle display name \rangle)

Same as **refname** but for `\Autoref` and `\Cref`.

<pre> % preamble \newkeytheorem{prop}[name=Proposition, refname={proposition,propositions}, Refname={Proposition,Propositions}] % document \begin{prop}[label=abc] Some text \end{prop} \begin{prop}[label=def] Some more text \end{prop} \begin{theorem} Consider \cref{abc,def}. \Autoref{abc} \dots \end{theorem} </pre>	<pre> Proposition 1. <i>Some text</i> Proposition 2. <i>Some more text</i> Theorem 9. <i>Consider propositions 1 and 2. Proposition 1 ...</i> </pre>
--	---

qed= \langle symbol \rangle (default `\openbox`, initially unset)

Adds \langle symbol \rangle to the end of the theorem body. If no value is given, the symbol \square is used.

<pre> % preamble \newkeytheorem{example}[qed] \newkeytheorem{solution}[qed=\$\clubsuit\$] % document \begin{example} Some text \end{example} \begin{solution} Some more text \end{solution} </pre>	<pre> Example 1. <i>Some text</i> \square Solution 1. <i>Some more text</i> \clubsuit </pre>
---	---

3.3 Keys added by keytheorems

tcolorbox= $\{\langle$ tcolorbox options $\rangle\}$ (initially unset)

This key specifies that the theorem be placed inside a `tcolorbox` environment with \langle options \rangle . The theorem head is typeset as a `tcolorbox` title; to avoid this see `tcolorbox-no-titlebar` ^{P. 7}.

```

% preamble
\tcbset{
  defstyle/.style={
    arc=0mm,
    colback=blue!5!white,
    colframe=blue!75!black
  },
}
\newkeytheorem{corollary}[tcolorbox]
\newkeytheorem{definition}[
  style=definition,
  tcolorbox={defstyle}
]

% document
\begin{corollary}
Some text
\end{corollary}
\begin{definition}
Some more text
\end{definition}

```

Corollary 1.

Some text

Definition 1.

Some more text

`tcolorbox-no-titlebar={\langle tcolorbox options \rangle}`

(initially unset)

Same usage as `tcolorbox`^{P.6} but the theorem head is typeset as usual, not as a `tcolorbox` title.

```

% preamble
\newkeytheorem{boxcor}[
  tcolorbox-no-titlebar={
    colback=red!10
  },
  name=Corollary,sibling=corollary
]

% document
\begin{boxcor}
Some text
\end{boxcor}

```

Corollary 2. *Some text*

4 Theorem Styles

`\newkeytheoremstyle{\langle name \rangle}{\langle options \rangle}`

This is `keytheorems`' version of `thmtools`' `\declaretheoremstyle[\langle options \rangle]{\langle name \rangle}`. Since it makes little sense to define a style with no keys, we've made the `\langle options \rangle` argument mandatory. Note that unlike `amsthm`'s `\newtheoremstyle`, this command will error if a style has already been defined. To overwrite an existing style, there is the analogous `\renewkeytheoremstyle`. For completeness, there is also `\declarekeytheoremstyle` and `\providekeytheoremstyle`.



For the AMS classes `amsart`, `amsbook`, and `amsproc`, as well as the `amsart`-based `acmart`, the initial key values are slightly different than what's below in order to match those class's defaults.

4.1 Keys inherited from `thmtools`

The following keys have the same meaning and syntax as the corresponding `thmtools` keys. In addition to the list below, most of the keys available to `\newkeytheorem`^{P.2} can be used in `\newkeytheoremstyle`.

`spaceabove=\langle length \rangle` (initially `\topsep`)

`spacebelow=\langle length \rangle` (initially `\topsep`)

`bodyfont`= $\langle font\ declarations \rangle$ (initially `\itshape`)

`headindent`= $\langle length \rangle$ (initially 0pt)

`headfont`= $\langle font\ declarations \rangle$ (initially `\bfseries`)

`headpunct`= $\langle code \rangle$ (initially `\{.\}`)

`postheadspace`= $\langle length \rangle$ (initially 5pt plus 1pt minus 1pt)
Do not use this with the `break` key.

`break` (initially unset)
Do not use this with the `postheadspace` key.

`notefont`= $\langle font\ declarations \rangle$ (initially `\fontseries\mddefault\upshape`)

`notebraces`= $\{\langle left\ brace \rangle\}\{\langle right\ brace \rangle\}$ (initially `\{()\}`)

`headstyle`=`margin`|`swapnumber`| $\langle code\ using\ \backslash NAME, \backslash NUMBER, and \backslash NOTE \rangle$
Alias `headstyle`. Within $\langle code \rangle$, the commands `\NAME`, `\NUMBER`, and `\NOTE` correspond to the formatted parts of the theorem head.

4.2 Keys added by keytheorems

`inherit-style`= $\langle style\ name \rangle$ (initially unset)
Inherit the keys of any style declared with `\newkeytheoremstyle`^{P.7}. Additionally, the three styles predefined by `amsthm` are possible values: `plain`, `definition`, and `remark`.

5 Restating Theorems

When a theorem is given the `store`^{P.3} key, the contents of the theorem are saved and written to a `.thlist` file. At the start of the next run, this file is input at the beginning of the document and allows you to retrieve the stored theorems at any point, before or after the original theorem.

`\getkeytheorem`[$\langle property \rangle$]{ $\langle tag \rangle$ }

Retrieves the theorem given the key `store`= $\langle tag \rangle$. An optional $\langle property \rangle$ can be given to retrieve only the corresponding part of the theorem. Currently only the property `body` is implemented, which retrieves the (unformatted) body of the theorem.

```
\getkeytheorem{mytag}
```

```
\begin{example}[store=mytag]
```

```
Fascinating example.
```

```
\end{example}
```

```
\getkeytheorem[body]{mytag}
```

Example 2. *Fascinating example.* ☐

Example 2. *Fascinating example.* ☐

Fascinating example.

`\IfRestatingTF`{ $\langle true\ code \rangle$ }{ $\langle false\ code \rangle$ }

Executes $\langle true\ code \rangle$ if being retrieved with `\getkeytheorem` and $\langle false\ code \rangle$ if in the original theorem.

```
\begin{example}[store=hmm]
```

```
I am the
```

```
\IfRestatingTF{restated}{original}
```

```
example!
```

```
\end{example}
```

```
\getkeytheorem{hmm}
```

Example 3. *I am the original example!* ☐

Example 3. *I am the restated example!* ☐

6 Listing Theorems

`\listofkeytheorems[<options>]`

`\keytheoremset{<options>}`

	List of Theorems
<code>\listofkeytheorems</code>	1 Theorem 2
	2 Theorem (some heading) 2
	3 Theorem (some heading) 3
	4 Theorem (another heading) . . 3
	5 Theorem 3
	5 Theorem (continuing from p. 3) 3
	6 Theorem 3
	7 Lemma 3
	1 Observation 4
	2 Observation 4
	1 Some Name 4
	Theorem 4
	3.1 Conjecture 5
	8 Lemma 5
	1 Remark 5
	1 Test 5
	1 Proposition 6
	2 Proposition 6
	9 Theorem 6
	1 Example 6
	1 Solution 6
	1 Corollary 6
	1 Definition 6
	2 Corollary 7
	2 Example 8
	3 Example 8

6.1 Keys inherited from thmtools

`numwidth=<length>` (initially 2.3em)

`ignore={<comma-list of env names>}` (initially unset)

`show={<comma-list of env names>}` (initially all theorems)

`onlynamed={<comma-list of env names>}` (initially unset)

`ignoreall` (initially unset)

<pre> \listofkeytheorems[ignoreall,show=theorem] \listofkeytheorems[ignoreall, show=conjecture, title=List of Conjectures] </pre>	<div> <div>List of Theorems</div> <div> <div>1</div> <div>Theorem</div> <div>2</div> </div> <div>2</div> <div>Theorem (some heading) . . .</div> <div>2</div> <div>3</div> <div>Theorem (some heading) . . .</div> <div>3</div> <div>4</div> <div>Theorem (another heading) .</div> <div>3</div> <div>5</div> <div>Theorem</div> <div>3</div> <div>5</div> <div>Theorem (continuing from</div> <div>p. 3)</div> <div>3</div> <div>6</div> <div>Theorem</div> <div>3</div> <div>9</div> <div>Theorem</div> <div>6</div> </div> <div> <div>List of Conjectures</div> <div> <div>3.1</div> <div>Conjecture</div> <div>5</div> </div> </div>
---	--

`showall` (initially set)

`title=⟨text⟩` (initially `\GetTranslation{keythms_listof_title}`)
 Defaults to “List of Theorems” if English or an unknown language is used. Currently French, German, and Spanish have (probably bad!) translations. A translation can be added with a Github pull request or manually with `\DeclareTranslation{⟨lang⟩}{keythms_listof_title}{⟨text⟩}`.

`swapnumber=true|false` (initially false)

6.2 Keys added by keytheorems

`onlynumbered={⟨comma-list of env names⟩}` (initially unset)

Similar to `onlynamed`^{→P.9}, but lists only those theorems which are numbered. This is useful if you’d like to exclude things like unnumbered definitions and remarks from the list of theorems.

`seq=⟨name⟩` (initially unset)

Used to list only the theorems added to the custom sequence `⟨name⟩` with the `seq`^{→P.4} theorem key. This is the only way to fully customize which theorems appear in the list of theorems.

`title-code=⟨code with #1⟩` (initially `\section*{#1}`)

If `\chapter` is defined, then initially this is instead `\chapter*{#1}`.

`no-title` (initially unset)

Suppresses the title of the list of theorems. Useful for custom ordering of the list.

<pre> \keytheoremset{ignoreall} \listofkeytheorems[show=example] \listofkeytheorems[show=solution,no-title] </pre>	<div> <div>List of Theorems</div> <div> <div>1</div> <div>Example</div> <div>6</div> </div> <div>2</div> <div>Example</div> <div>8</div> <div>3</div> <div>Example</div> <div>8</div> <div>1</div> <div>Solution</div> <div>6</div> </div>
--	--

`note-code=⟨code with #1⟩` (initially `{ (#1) }`)

Formats the optional note in the list of theorems.

`print-body` (initially unset)

Instead of listing the theorem headings, the theorems are restated with their body text. Not very useful without the `store-all`^{→P.2} load-time option.

`no-continues=true|false` (initially false)

Suppresses the printing of theorems given the `continues`^{→P.3} key in the list of theorems.

`no-chapter-skip=true|false` (initially `false`)

By default a small vertical space is inserted between each chapter’s chunk of theorems. Setting this key to `true` removes this space.

`chapter-skip-length=<dimension>` (initially 10pt)

Controls the amount of space inserted between chunks.

6.3 Adding code to list of theorems

There are analogous commands to `\addcontentsline` and `\addtocontents` for adding entries or arbitrary code to the list of theorems.



You *must* use these commands rather than the aforementioned because the `.thlist` file is also used to define restated theorems and cannot contain unexpected code.

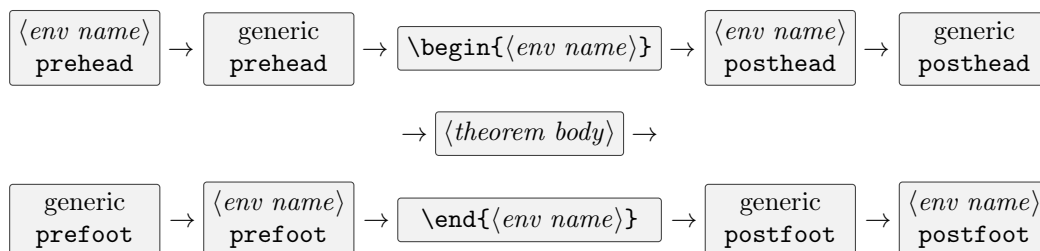
`\addtheoremcontentsline{<level>}{<text>}`

`\addtotheoremcontents{<code>}`

7 Theorem Hooks

`\addtotheoremhook[<env name>]{<hook name>}{<code>}`

`<hook name>` can be `prehead`, `posthead`, `prefoot`, `postfoot`, or `restated`. If no `<env name>` is given, the `<code>` is added to the “generic” hook, i.e. applied to all theorems. As in `thmtools`, the order of hooks is as follows:



The `restated` hook is applied at the start of theorems retrieved with `\getkeytheorem`, before the `prehead` hook. This can be useful for disabling commands such as `\footnote` in the restated theorems, e.g.

```

\addtotheoremhook{restated}{%
  \renewcommand\footnote[2][]{}%
}

```

By default, `keytheorems` disables the `\label` and `\RecordProperties` commands in restated theorems.

In `thmtools`, the `prefoot` and `postfoot` hooks always prepend code, i.e. the code

```

\addtotheoremhook{postfoot}{A}
\addtotheoremhook{postfoot}{B}

```

results in BA after the theorem. With `keytheorems`, code is added in the order declared, meaning

```

\addtotheoremhook{postfoot}{A}
\addtotheoremhook{postfoot}{B}

```

results in AB after the theorem. This is the behavior of the L^AT_EX kernel hooks that `keytheorems` uses under the hood.

Right now, code added using the hook keys `preheadhook`^{P.5}, etc. is outermost, meaning executed first in `prehead` and `posthead` and last in `prefoot` and `postfoot`. This may change if I think of good reasons to do so...

8 Implementation

```

1  \ProvidesExplPackage{keytheorems}{2024-02-05}{0.0.7delta}{13keys interface to amsthm}
2
3  %% TESTING
4  % \debug_on:n { all }
5  %% END TESTING
6
7  \RequirePackage{aliascnt} % for sibling theorems
8  \RequirePackage{amsthm}
9  % ~ams classes have way of ignoring this so don't need to check if they're loaded
10 \RequirePackage{refcount} % for \getrefnumber
11 \RequirePackage{translations} % for translating "List of Theorems"
12
13 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
14 %% Error Messages %%
15 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
16
17 \msg_new:nnn { keytheorems } { thmtools-before }
18 {
19     keytheorems~is~not~compatible~with~thmtools.~
20     Try~replacing~\protect\usepackage{thmtools}~with~
21     \protect\usepackage[thmtools-compat]{keytheorems}.
22 }
23 \msg_new:nnn { keytheorems } { thmtools-after }
24 {
25     keytheorems~is~not~compatible~with~thmtools.~
26     This~will~not~work~as~you~think!~
27     Try~replacing~\protect\usepackage{thmtools}~with~
28     \protect\usepackage[thmtools-compat]{keytheorems}.
29 }
30 \msg_new:nnn { keytheorems } { no-stored-theorem }
31 {
32     No~stored~theorem~'#1'~found!~
33     Try~compiling~again.~If~that~doesn't~work,~
34     check~the~spelling~of~'#1'.
35 }
36 \msg_new:nnn { keytheorems } { undefined-thm-hook }
37 {
38     No~theorem~hook~'#1'.~Check~the~spelling.~
39     Should~be~one~of~'prehead',~'posthead',~'prefoot',~'postfoot',~or~'restated'.
40 }
41 \msg_new:nnn { keytheorems } { no-Autorefname }
42 {
43     No~Autorefname~name~for~'#1'.
44 }
45 \msg_new:nnn { keytheorems } { thmstyle-undefined }
46 {
47     Theorem~style~'#1'~undefined.~
48     Use~\protect\newkeytheoremstyle\space instead.
49 }
50 \msg_new:nnn { keytheorems } { thmstyle-defined }
51 {
52     Theorem~style~'#1'~already~defined.~
53     Use~\protect\renewkeytheoremstyle\space instead.
54 }
55
56 % Error if thmtools loaded since compilation hangs.

```

```

57 % If loaded thmtools loaded after, produce warning.
58 \IfPackageLoadedTF { thmtools }
59 {
60   \msg_fatal:nn { keytheorems } { thmtools-before }
61 }
62 {
63   \hook_gput_code:nnn { package/thmtools/before } { . }
64   {
65     \msg_warning:nn { keytheorems } { thmtools-after }
66   }
67 }
68
69 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
70 %%% Declare Variables %%%
71 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
72
73 \tl_new:N \l__keythms_tmpa_tl
74
75 \bool_new:N \g__keythms_listof_writefile_bool
76 \bool_gset_false:N \g__keythms_listof_writefile_bool
77 \bool_new:N \l__keythms_thm_numbered_bool
78 \bool_new:N \l__keythms_thm_unlessunique_bool
79 \bool_new:N \l__keythms_thmuse_listhack_bool
80 \bool_new:N \l__keythms_thmuse_restateing_bool
81 \clist_new:N \g__keythms_restatecounters_clist
82 \clist_new:N \l__keythms_thmstyle_savedkeys_clist
83 \iow_new:N \g__keythms_listof_stream
84 \prop_new:N \g__keythms_thmnames_prop
85 \prop_new:N \g__keythms_thmuse_othercounters_prop
86 \prop_new:N \l__keythms_restate_counters_prop
87 \tl_new:N \l__keythms_thm_currentthmstyle_tl
88 \tl_new:N \l__keythms_thm_defaultkeys_tl
89 \tl_new:N \l__keythms_thm_envname_tl
90 \tl_new:N \l__keythms_thmstyle_defaultkeys_tl
91 \tl_new:N \l__keythms_thmstyle_lnotebrace_tl
92 \tl_new:N \l__keythms_thmstyle_rnotebrace_tl
93 \tl_new:N \l__keythms_thmuse_envname_tl
94 \tl_new:N \g__keythms_thmuse_temprestatedata_tl
95
96 \newcounter{keythms_restate_dummyctr}
97 \cs_gset:Npn \theHkeythms_restate_dummyctr
98   { restate.\arabic{keythms_restate_dummyctr} }
99 \cs_gset:Npn \thekeythms_restate_dummyctr { }
100 \newcounter{keythms_continues_dummyctr}
101 \cs_gset:Npn \theHkeythms_continues_dummyctr
102   { continues.\arabic{keythms_continues_dummyctr} }
103 \cs_gset:Npn \thekeythms_continues_dummyctr { }
104 \newcounter{keythms_unnumbered_dummyctr}
105 \cs_gset:Npn \theHkeythms_unnumbered_dummyctr
106   { unnumbered.\arabic{keythms_unnumbered_dummyctr} }
107 \cs_gset:Npn \thekeythms_unnumbered_dummyctr { }
108
109 \cs_generate_variant:Nn \hook_gput_code:nnn { nnV }
110 \cs_generate_variant:Nn \keys_precompile:nnN { nv, nVc }
111
112 % for detecting ams classes
113 \prg_new_conditional:Npnn \keythms_if_amsclass: { T, TF }
114 {

```

```

115     \IfClassLoadedTF { amsart } { \prg_return_true: }
116     {
117         \IfClassLoadedTF { amsbook } { \prg_return_true: }
118         {
119             \IfClassLoadedTF { amsproc } { \prg_return_true: }
120             { \prg_return_false: }
121         }
122     }
123 }
124
125 %%%%%%%%%%%
126 %% Styles %%
127 %%%%%%%%%%%
128
129 % \_keythms_thmstyle_setbraces:nn { <left brace> } { <right brace> }
130 \cs_new_protected:Npn \_keythms_thmstyle_setbraces:nn #1#2
131 {
132     \tl_set:Nn \l__keythms_thmstyle_lnotebrace_tl { #1 }
133     \tl_set:Nn \l__keythms_thmstyle_rnotebrace_tl { #2 }
134 }
135 \cs_new:Npn \keythms_thmstyle_savethmkey_reqval:n #1
136 {
137     \clist_put_right:No \l__keythms_thmstyle_savedkeys_clist
138     { \l_keys_key_str = { #1 } }
139 }
140 \cs_new:Npn \keythms_thmstyle_savethmkey_optval:n #1
141 {
142     \tl_if_empty:NTF \l_keys_value_tl
143     {
144         \clist_put_right:No \l__keythms_thmstyle_savedkeys_clist
145         { \l_keys_key_str }
146     }
147     {
148         \clist_put_right:No \l__keythms_thmstyle_savedkeys_clist
149         { \l_keys_key_str = { #1 } }
150     }
151 }
152
153 \keys_define:nn { keytheorems/thmstyle }
154 {
155     spaceabove .tl_set:N = \l__keythms_thmstyle_spaceabove_tl,
156     spacebelow .tl_set:N = \l__keythms_thmstyle_spacebelow_tl,
157     bodyfont .tl_set:N = \l__keythms_thmstyle_bodyfont_tl,
158     headindent .tl_set:N = \l__keythms_thmstyle_headindent_tl,
159     headfont .tl_set:N = \l__keythms_thmstyle_headfont_tl,
160     headpunct .tl_set:N = \l__keythms_thmstyle_headpunct_tl,
161     postheadspace .tl_set:N = \l__keythms_thmstyle_postheadspace_tl,
162     break .meta:n = { postheadspace = \newline }, % add error if postheadspace set
163     break .value_forbidden:n = true,
164     notefont .tl_set:N = \l__keythms_thmstyle_notefont_tl,
165     notebraces .code:n = \exp_after:wN \_keythms_thmstyle_setbraces:nn #1,
166     headstyle .choice:,
167     headstyle / margin .code:n =
168     {
169         \cs_set:Nn \keythms_thmstyle_headcmd:nnn
170         { \makebox[Opt][r]{\NUMBER\ }\NAME\NOTE }
171     },
172     headstyle / swapnumber .code:n =

```

```

173     {
174         \cs_set:Nn \keythms_thmstyle_headcmd:nnn { \NUMBER\ \NAME\NOTE }
175     },
176     headstyle / unknown .cs_set:Np = \keythms_thmstyle_headcmd:nnn #1#2#3,
177     headformat .meta:n = { headstyle = #1 },
178     inherit-style .choice:,
179     inherit-style / plain .meta:n = {},
180     inherit-style / definition .meta:n = { bodyfont = \normalfont },
181     inherit-style / remark .meta:n =
182     {
183         headfont = \itshape,
184         bodyfont = \normalfont,
185         spaceabove = 0.5\topsep,
186         spacebelow = 0.5\topsep,
187     },
188     % thm keys that are saved for later
189     numbered .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
190     parent .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
191     numberwithin .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
192     within .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
193     sibling .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
194     numberlike .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
195     sharenumber .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
196     preheadhook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
197     postheadhook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
198     prefoothook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
199     postfoothook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
200     qed .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
201     tcolorbox .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
202     tcolorbox-no-titlebar .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
203 }
204
205 \cs_new_protected:Nn \keythms_thmstyle_thmname:n { \thmname{#1} }
206 \cs_new_protected:Nn \keythms_thmstyle_thmnumber:n { \thmnumber{#1} }
207 \cs_new_protected:Nn \keythms_thmstyle_thmnote:n { \thmnote{#1} }
208
209 %% NOTE: if these are used, user is in charge of spacing with \NAME and \NUMBER
210 %% QUESTION: should these be moved into def of \newkeytheoremstyle?
211 \cs_new:Npn \NAME { \keythms_thmstyle_thmname:n { ##1 } }
212 \cs_new:Npn \NUMBER
213 {
214     \keythms_thmstyle_thmnumber:n { \textup { ##2 } }
215 }
216 \cs_new:Npn \NOTE
217 {
218     \keythms_thmstyle_thmnote:n
219     { ~ \group_begin: % group so notefont doesn't affect headpunct
220         \exp_not:V \l__keythms_thmstyle_notefont_tl
221         \l__keythms_thmstyle_lnotebrace_tl ##3 \l__keythms_thmstyle_rnotebrace_tl
222         \group_end:
223     }
224 }
225
226 \cs_new:Npn \keythms_thmstyle_headcmd_default:nnn #1#2#3
227 {
228     \keythms_thmstyle_thmname:n { #1 }
229     \keythms_thmstyle_thmnumber:n
230     { \tl_if_empty:nF{#1}{~} \exp_not:N \textup{#2} }

```

```

231      % ~ this \tl_if_empty has no effect...
232      \keythms_thmstyle_thmnote:n
233      { ~ \group_begin: % group so notefont doesn't affect headpunct
234        \exp_not:V \l__keythms_thmstyle_notefont_tl
235        \l__keythms_thmstyle_lnotebrace_tl #3 \l__keythms_thmstyle_rnotebrace_tl
236        \group_end:
237      }
238    }
239
240    %%% <SURELY A BETTER WAY>
241    \cs_new_protected:Npn \__keythms_thmstyle_definekeylist:nn #1#2
242    {
243      \clist_const:cn { c__keythms_thmstyle_defaultkeys_ #1 _clist } { #2 }
244    }
245
246    \cs_new_protected:Npn \__keythms_thmstyle_setdefaultkeys:n #1
247    {
248      \keys_precompile:nvN { keytheorems/thmstyle }
249      { c__keythms_thmstyle_defaultkeys_ #1 _clist }
250      \l__keythms_thmstyle_defaultkeys_tl
251    }
252
253    \__keythms_thmstyle_definekeylist:nn { default }
254    {
255      spaceabove    = \topsep,
256      spacebelow    = \topsep,
257      bodyfont      = \itshape,
258      headindent    = 0pt,
259      headfont      = \bfseries,
260      headpunct     = {.},
261      postheadspace = 5pt plus 1pt minus 1pt,
262      notefont      = \fontseries\mddefault\upshape,
263      notebraces    = {({}{})},
264      headstyle     = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
265    }
266    \__keythms_thmstyle_definekeylist:nn { amsart }
267    {
268      spaceabove    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
269      spacebelow    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
270      bodyfont      = \itshape,
271      headindent    = 0pt,
272      headfont      = \bfseries,
273      headpunct     = {.},
274      postheadspace = 5pt plus 1pt minus 1pt,
275      notefont      = \fontseries\mddefault\upshape,
276      notebraces    = {({}{})},
277      headstyle     = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
278    }
279    \__keythms_thmstyle_definekeylist:nn { amsproc }
280    {
281      spaceabove    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
282      spacebelow    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
283      bodyfont      = \itshape,
284      headindent    = \parindent,
285      headfont      = \scshape,
286      headpunct     = {.},
287      postheadspace = 5pt plus 1pt minus 1pt,
288      notefont      = \fontseries\mddefault\upshape,

```



```

289     notebraces      = {\}{},
290     headstyle       = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
291 }
292 \__keythms_thmstyle_definekeylist:nn { amsbook }
293 {
294     spaceabove      = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
295     spacebelow      = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
296     bodyfont        = \itshape,
297     headindent      = \parindent,
298     headfont        = \scshape,
299     headpunct       = {\.},
300     postheadspace   = 5pt plus 1pt minus 1pt,
301     notefont        = \fontseries\mddefault\upshape,
302     notebraces      = {\}{},
303     headstyle       = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
304 }
305 \__keythms_thmstyle_definekeylist:nn { acmart }
306 {
307     spaceabove      = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
308     spacebelow      = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
309     bodyfont        = \@acmplainbodyfont,
310     headindent      = \@acmplainindent,
311     headfont        = \@acmplainheadfont,
312     headpunct       = {\.},
313     postheadspace   = .5em,
314     notefont        = \@acmplainnotefont,
315     notebraces      = {\}{},
316     headstyle       = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
317 }
318
319 \IfClassLoadedTF { amsart }
320 {
321     \IfClassLoadedTF { acmart } % acmart loads amsart
322     {
323         \__keythms_thmstyle_setdefaultkeys:n { acmart }
324     }
325     {
326         \__keythms_thmstyle_setdefaultkeys:n { amsart }
327         \keys_define:nn { keytheorems/thmstyle }
328         {
329             inherit-style / remark .meta:n =
330             {
331                 headfont = \itshape,
332                 bodyfont = \normalfont,
333             }
334         }
335     }
336 }
337 {
338     \IfClassLoadedTF { amsbook }
339     {
340         \__keythms_thmstyle_setdefaultkeys:n { amsbook }
341         \keys_define:nn { keytheorems/thmstyle }
342         {
343             inherit-style / remark .meta:n =
344             {
345                 bodyfont = \normalfont,
346             },

```

```

347     }
348   }
349   {
350     \IfClassLoadedTF { amsproc }
351     {
352       \__keythms_thmstyle_setdefaultkeys:n { amsproc }
353       \keys_define:nn { keytheorems/thmstyle }
354       {
355         inherit-style / remark .meta:n =
356         {
357           bodyfont = \normalfont,
358         },
359       }
360     }
361     { \__keythms_thmstyle_setdefaultkeys:n { default } }
362   }
363 }
364 %%% </SURELY A BETTER WAY>
365
366 \NewDocumentCommand \newkeytheoremstyle { m m }
367 {
368   \cs_if_free:cTF { th@ #1 }
369   { \keythms_thmstyle_declarestyle:nn { #1 } { #2 } }
370   { \msg_error:nnn { keytheorems } { thmstyle-defined } { #1 } }
371 }
372 \NewDocumentCommand \renewkeytheoremstyle { m m }
373 {
374   \cs_if_free:cTF { th@ #1 }
375   { \msg_error:nnn { keytheorems } { thmstyle-undefined } { #1 } }
376   { \keythms_thmstyle_declarestyle:nn { #1 } { #2 } }
377 }
378 \NewDocumentCommand \providekeytheoremstyle { m m }
379 {
380   \cs_if_free:cT { th@ #1 }
381   { \keythms_thmstyle_declarestyle:nn { #1 } { #2 } }
382 }
383 \NewDocumentCommand \declarekeytheoremstyle { m m }
384 {
385   \keythms_thmstyle_declarestyle:nn { #1 } { #2 }
386 }
387
388 \@onlypreamble \newkeytheoremstyle
389 \@onlypreamble \renewkeytheoremstyle
390 \@onlypreamble \providekeytheoremstyle
391 \@onlypreamble \declarekeytheoremstyle
392
393 \cs_new_eq:NN \keythms_thmstyle_new:nnnnnnnn \newtheoremstyle
394 \cs_generate_variant:Nn \keythms_thmstyle_new:nnnnnnnn { nVVVVVVVe }
395
396 \cs_new_protected:Npn \keythms_thmstyle_declarestyle:nn #1#2
397 {
398   \clist_clear:N \l__keythms_thmstyle_savedkeys_clist
399   \tl_use:N \l__keythms_thmstyle_defaultkeys_tl
400   \keys_set:nn { keytheorems/thmstyle } { #2 }
401   \keythms_thmstyle_new:nVVVVVVVe { #1 }
402   \l__keythms_thmstyle_spaceabove_tl
403   \l__keythms_thmstyle_spacebelow_tl
404   \l__keythms_thmstyle_bodyfont_tl

```

```

405     \l__keythms_thmstyle_headindent_tl
406     \l__keythms_thmstyle_headfont_tl
407     \l__keythms_thmstyle_headpunct_tl
408     \l__keythms_thmstyle_postheadspace_tl
409     { \text_expand:n { \keythms_thmstyle_headcmd:nnn{##1}{##2}{##3} } }
410     % Define new inherit-style key
411     \keys_define:nn { keytheorems/thmstyle }
412     { inherit-style / #1 .meta:n = { #2 } }
413     \tl_if_exist:cF { l__keythms_thmstyle_ #1 _savedkeys_tl }
414     { \tl_new:c { l__keythms_thmstyle_ #1 _savedkeys_tl } }
415     \keys_precompile:nVc { keytheorems/thm }
416     \l__keythms_thmstyle_savedkeys_clist
417     { l__keythms_thmstyle_ #1 _savedkeys_tl }
418 }
419
420 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
421 %%% Defining Theorems %%%
422 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
423
424 % FIX: reimplement these without \NewDocumentCommand and \SplitArgument
425
426 % \keythms_thm_setrefnames:n { <envname> } { <refname> or <sing,plural> }
427 \NewDocumentCommand \keythms_thm_setrefnames:nn
428 { m >{\SplitArgument{1}{,}} m }
429 { \__keythms_thm_setrefnames_aux:nnn{#1}#2 }
430 \cs_new_protected:Npn \__keythms_thm_setrefnames_aux:nnn #1#2#3
431 {
432     \cs_set:cpn { #1 autorefname } { #2 }
433     \IfPackageLoadedTF { cleveref }
434     {
435         \tl_if_novalue:nTF { #3 }
436         { \crefname{#1}{#2}{\textbf{??~(pl.~#2)}} }
437         { \crefname{#1}{#2}{#3} }
438     }
439     { }
440 }
441 \cs_generate_variant:Nn \keythms_thm_setrefnames:nn { nV }
442
443 % \keythms_thm_setRefnames:n { <envname> } { <refname> or <sing,plural> }
444 \NewDocumentCommand \keythms_thm_setRefnames:nn
445 { m >{\SplitArgument{1}{,}} m }
446 { \__keythms_thm_setRefnames_aux:nnn{#1}#2 }
447 \cs_new_protected:Npn \__keythms_thm_setRefnames_aux:nnn #1#2#3
448 {
449     \cs_set:cpn { #1 Autorefname } { #2 }
450     \IfPackageLoadedTF { cleveref }
451     {
452         \tl_if_novalue:nTF { #3 }
453         { \Crefname{#1}{#2}{\textbf{??~(pl.~#2)}} }
454         { \Crefname{#1}{#2}{#3} }
455     }
456     { }
457 }
458 \cs_generate_variant:Nn \keythms_thm_setRefnames:nn { nV }
459
460 \keys_define:nn { keytheorems/thm }
461 {
462     name .tl_set:N = \l__keythms_thm_name_tl,

```

```

463 title .meta:n = { name = #1 },
464 heading .meta:n = { name = #1 },
465 refname .tl_set:N = \l__keythms_thm_refname_tl,
466 Refname .tl_set:N = \l__keythms_thm_Refname_tl,
467 numbered .choice:,
468 numbered / true .code:n = \bool_set_true:N \l__keythms_thm_numbered_bool,
469 numbered / false .code:n = \bool_set_false:N \l__keythms_thm_numbered_bool,
470 numbered / yes .meta:n = { numbered = true },
471 numbered / no .meta:n = { numbered = false },
472 numbered / unless-unique .code:n =
473 {
474 \bool_set_true:N \l__keythms_thm_unlessunique_bool
475 },
476 numbered / unless-unique .meta:n = { numbered = unless-unique },
477 numbered .default:n = true,
478 parent .tl_set:N = \l__keythms_thm_parent_tl,
479 numberwithin .meta:n = { parent = #1 },
480 within .meta:n = { parent = #1 },
481 sibling .tl_set:N = \l__keythms_thm_sibling_tl,
482 numberlike .meta:n = { sibling = #1 },
483 sharenumber .meta:n = { sibling = #1 },
484 style .tl_set:N = \l__keythms_thm_style_tl,
485 style .groups:n = { style-comes-first },
486 preheadhook .tl_set:N = \l__keythms_thm_preheadhook_tl,
487 postheadhook .tl_set:N = \l__keythms_thm_postheadhook_tl,
488 prefoothook .tl_set:N = \l__keythms_thm_prefoothook_tl,
489 postfoothook .tl_set:N = \l__keythms_thm_postfoothook_tl,
490 qed .tl_set:N = \l__keythms_thm_qed_tl,
491 qed .default:n = \c_novalue_tl,
492 % ~ distinguish between 'qed' and 'qed={}'
493 tcolorbox .tl_set:N = \l__keythms_thm_tcbkeys_tl,
494 tcolorbox .default:n = {},
495 tcolorbox-no-titlebar .meta:n =
496 {
497 tcolorbox={
498 notitle,
499 before~upper={
500 \group_begin:
501 \__keythms_thm_tcbxtemphead:
502 \group_end:
503 },
504 #1
505 }
506 },
507 tcolorbox-no-titlebar .default:n = {},
508 }
509
510 % what below is unnecessary? Commenting everything but \def causes spaceabove,
511 % etc. to not work
512 \cs_new:Npn \__keythms_thm_storedeferredthmhead:n #1
513 {
514 % \if@inlabel \indent \par \fi % eject a section head if one is pending
515 % \if@nobreak
516 % \adjust@parskip@nobreak
517 % \else
518 % \addpenalty\@beginparpenalty
519 \addvspace\@topsep
520 \addvspace{-\parskip}

```

```

521 % \fi
522 % \global\@inlabeltrue
523 % \everypar\dtth@everypar
524 \cs_set:Npn \__keythms_thm_tcboxtemphead: { \normalfont #1 }
525 \ignorespaces
526 }
527
528 \keys_precompile:nnN { keytheorems/thm }
529 {
530     name          = \q_no_value,
531     refname       = \q_no_value,
532     Refname       = \q_no_value,
533     numbered      = true,
534     parent        = {},
535     sibling        = {},
536     style         = {},
537     preheadhook   = {},
538     postheadhook  = {},
539     prefoothook   = {},
540     postfoothook  = {},
541     qed           = \q_no_value,
542     tcolorbox     = \q_no_value,
543 }
544 \l__keythms_thm_defaultkeys_tl
545
546 \cs_new_protected:Npn \__keythms_thm_makethmhooks:n #1
547 {
548     \hook_new:n { keytheorems/#1/prehead }
549     \hook_new:n { keytheorems/#1/posthead }
550     \hook_new_reversed:n { keytheorems/#1/prefoot }
551     \hook_new_reversed:n { keytheorems/#1/postfoot }
552     \hook_new:n { keytheorems/#1/restated }
553 }
554
555 % Make generic theorem hooks
556 \__keythms_thm_makethmhooks:n { allthms }
557
558 % \newkeytheorem{<name>}{<keys>}
559 \NewDocumentCommand \newkeytheorem { m O{} }
560 {
561     \clist_map_inline:nn { #1 } % define multiple theorems at once
562     { \keythms_thm_newkeythm:nn { ##1 } { #2 } }
563 }
564
565 \@onlypreamble \newkeytheorem
566
567 % to prevent error when plain, remark, or definition style used
568 \tl_new:N \l__keythms_thmstyle_plain_savedkeys_tl
569 \tl_new:N \l__keythms_thmstyle_remark_savedkeys_tl
570 \tl_new:N \l__keythms_thmstyle_definition_savedkeys_tl
571
572 % \keythms_thm_newkeythm:nn { <envname> } { <keys> }
573 \cs_new_protected:Npn \keythms_thm_newkeythm:nn #1#2
574 {
575     % Store envname
576     \tl_set:Nn \l__keythms_thm_envname_tl { #1 }
577     % Make unless-unique false by default (can't precompile this)
578     \bool_set_false:N \l__keythms_thm_unlessunique_bool

```

```

579 % Set default keys
580 \tl_use:N \l__keythms_thm_defaultkeys_tl
581 % First set style so we can pick up additional thm keys, then overwrite if necessary
582 \keys_set:groups:n { keytheorems/thm } { style-comes-first } { #2 }
583 \tl_if_empty:NF \l__keythms_thm_style_tl
584 {
585   % Store theorem style
586   \tl_set:Ne \l__keythms_thm_currentthmstyle_tl { \the\thm@style }
587   % Temporarily set theorem style
588   \__keythms_theoremstyle:n { \l__keythms_thm_style_tl }
589   % If thm keys given in style, call now (possibly overwritten in next step)
590   % but don't error if user uses a style defined with just \newtheoremstyle
591   \tl_if_exist:cT { l__keythms_thmstyle_ \l__keythms_thm_style_tl _savedkeys_tl }
592     { \tl_use:c { l__keythms_thmstyle_ \l__keythms_thm_style_tl _savedkeys_tl } }
593 }
594 % Set env-specific keys
595 \keys_set:nn { keytheorems/thm } { #2 }
596 % Set up env-specific hooks
597 \__keythms_thm_makethmhooks:n { #1 }
598 % Add to env-specific hooks (use label so code given in keys is outermost)
599 % NOTE: faster to check if empty than add empty code to hook
600 \tl_if_empty:NF \l__keythms_thm_preheadhook_tl
601 {
602   \hook_gput_code:nnV { keytheorems/#1/prehead }
603     { keythms_hook_keys } \l__keythms_thm_preheadhook_tl
604 }
605 \tl_if_empty:NF \l__keythms_thm_postheadhook_tl
606 {
607   \hook_gput_code:nnV { keytheorems/#1/posthead }
608     { keythms_hook_keys } \l__keythms_thm_postheadhook_tl
609 }
610 \tl_if_empty:NF \l__keythms_thm_prefoothook_tl
611 {
612   \hook_gput_code:nnV { keytheorems/#1/prefoot }
613     { keythms_hook_keys } \l__keythms_thm_prefoothook_tl
614 }
615 \tl_if_empty:NF \l__keythms_thm_postfoothook_tl
616 {
617   \hook_gput_code:nnV { keytheorems/#1/postfoot }
618     { keythms_hook_keys } \l__keythms_thm_postfoothook_tl
619 }
620 % Set name if none given
621 \quark_if_no_value:NT \l__keythms_thm_name_tl % use quark so name={} is valid
622 {
623   % use e so \text_titlecase called only once per theorem definition,
624   % not each time the theorem is used
625   \tl_set:Ne \l__keythms_thm_name_tl
626     { \text_titlecase_first:n { #1 } }
627 }
628 % associate formatted name with envname in prop list
629 \prop_gput:NnV \g__keythms_thmnames_prop { #1 } \l__keythms_thm_name_tl
630 % Call correct \newtheorem variant
631 \bool_if:NTF \l__keythms_thm_unlessunique_bool
632 {
633   % [unq] is required since aux is read at begindocument
634   % (technically right before) which is after theorem is defined
635   \RequirePackage[unq]{unique}
636   \tl_if_empty:NTF \l__keythms_thm_parent_tl

```

```

637 {
638   \hook_gput_code:nnn { keytheorems/#1/prehead }
639   { keythms_hook_keys } { \setuniqmark { #1 } }
640   \ifuniq{ #1 }
641     { \bool_set_false:N \l__keythms_thm_numbered_bool }
642     { \bool_set_true:N \l__keythms_thm_numbered_bool }
643   \bool_if:NTF \l__keythms_thm_numbered_bool
644     {
645       \tl_if_empty:NTF \l__keythms_thm_sibling_tl
646       {
647         \__keythms_thm_new:nV { #1 } \l__keythms_thm_name_tl
648       }
649       {
650         \exp_args:NnV \newaliascnt { #1 } \l__keythms_thm_sibling_tl
651         \__keythms_thm_new_sibling:nVn { #1 }
652         \l__keythms_thm_name_tl { #1 }
653         \aliascntresetthe { #1 }
654       }
655     }
656     {
657       \__keythms_thm_new_nonnumber:nV { #1 } \l__keythms_thm_name_tl
658       \hook_gput_code:nnn { keytheorems/#1/prehead } { keythms_hook_keys }
659       {
660         \keythms_if_restating:F
661         { \refstepcounter{ keythms_unnumbered_dummyctr } }
662       }
663     }
664   }
665   {
666     \__keythms_thm_new_uuwithparent:nVV { #1 }
667     \l__keythms_thm_name_tl \l__keythms_thm_parent_tl
668   }
669 }
670 {
671   \bool_if:NTF \l__keythms_thm_numbered_bool
672   {
673     \tl_if_empty:NTF \l__keythms_thm_parent_tl
674     {
675       \tl_if_empty:NTF \l__keythms_thm_sibling_tl
676       {
677         \__keythms_thm_new:nV { #1 } \l__keythms_thm_name_tl
678       }
679       {
680         \exp_args:NnV \newaliascnt { #1 } \l__keythms_thm_sibling_tl
681         \__keythms_thm_new_sibling:nVn { #1 }
682         \l__keythms_thm_name_tl { #1 }
683         \aliascntresetthe { #1 }
684       }
685     }
686     {
687       \__keythms_thm_new_parent:nVV { #1 }
688       \l__keythms_thm_name_tl \l__keythms_thm_parent_tl
689     }
690   }
691   {
692     \__keythms_thm_new_nonnumber:nV { #1 } \l__keythms_thm_name_tl
693     \hook_gput_code:nnn { keytheorems/#1/prehead } { keythms_hook_keys }
694     {

```

```

695         \keythms_if_restating:F
696         { \refstepcounter{ keythms_unnumbered_dummyctr } }
697     }
698 }
699 }
700 % Store theorem def and redefine it with keys
701 \keythms_keyify_theorem:n { #1 }
702 % define \<env>autorefname and \<env>Autorefname, might be redefined next
703 \exp_args:NnV \cs_set:cpn { #1 autorefname } \l__keythms_thm_name_tl
704 \exp_args:NnV \cs_set:cpn { #1 Autorefname } \l__keythms_thm_name_tl
705 % Set ref names
706 \quark_if_no_value:NF \l__keythms_thm_refname_tl
707 { \keythms_thm_setrefnames:nV { #1 } \l__keythms_thm_refname_tl }
708 \quark_if_no_value:NF \l__keythms_thm_Refname_tl
709 { \keythms_thm_setRefnames:nV { #1 } \l__keythms_thm_Refname_tl }
710 % Set up qed if needed
711 \quark_if_no_value:NF \l__keythms_thm_qed_tl
712 {
713     \exp_args:Nno \__keythms_thm_qedcode:nn { #1 } { \l__keythms_thm_qed_tl }
714 }
715 % Set up tcolorbox if needed
716 \quark_if_no_value:NF \l__keythms_thm_tcbkeys_tl
717 {
718     \exp_args:Nno \__keythms_thm_tcboxcode:nn { #1 }
719     { \l__keythms_thm_tcbkeys_tl }
720 }
721 % Set default list-of display command
722 \__keythms_listof_show_aux:n { #1 }
723 % Set theorem style back to original state if needed
724 \tl_if_empty:NF \l__keythms_thm_style_tl
725 {
726     \__keythms_theoremstyle:V \l__keythms_thm_currentthmstyle_tl
727 }
728 }
729
730 \cs_new_protected:Npn \__keythms_thm_tcboxcode:nn #1#2
731 {
732     \RequirePackage{tcolorbox}
733     \hook_gput_code:nnn { keytheorems/#1/prehead }
734     { keythms_tcbox }
735     {
736         \cs_set_eq:NN \deferred@thm@head \__keythms_thm_storedeferredthmhead:n
737         \cs_set_eq:NN \Hy@theorem@makelinktarget \use_none:n
738         % ^ don't like playing with hyperref internals... but don't see around
739         % it because hyperref tries to add to para hook which doesn't work
740         % when title set up the way we do it
741         \cs_set:Npn \thm@space@setup { \thm@preskip=Opt \thm@postskip=Opt }
742         % ^ to match tcolorbox defaults; shouldn't interfere with user styles
743     }
744     \hook_gset_rule:nnnn { keytheorems/#1/posthead }
745     { keythms_tcbox } { before } { keythms_hook_keys }
746     \hook_gset_rule:nnnn { keytheorems/#1/prefoot }
747     { keythms_tcbox } { after } { keythms_hook_keys }
748     \hook_gset_rule:nnnn { keytheorems/#1/prefoot }
749     { keythms_tcbox } { after } { keythms_qed }
750     \bool_if:NTF \l__keythms_thm_numbered_bool
751     {
752         \hook_gput_code:nnn { begindocument } { . }

```



```

753 {
754   \IfPackageLoadedTF{cleveref}
755   { % hyperref doesn't patch \@thm if cleveref loaded
756     \hook_gput_code:nnn { keytheorems/#1/posthead }
757       { keythms_tcbox }
758       {
759         \begin{tcolorbox}[
760           savedelimiter=#1,
761           title={ \_keythms_thm_tcboxtemphead: },
762           #2]
763       }
764     }
765   {
766     \hook_gput_code:nnn { keytheorems/#1/posthead }
767       { keythms_tcbox }
768       {
769         \begin{tcolorbox}[
770           savedelimiter=#1,
771           title={ \_keythms_thm_tcboxtemphead: },
772           phantom={ \MakeLinkTarget*{\@currentHref} }, % fix hyperlinking
773           #2]
774       }
775     }
776   }
777 }
778 {
779   \hook_gput_code:nnn { keytheorems/#1/posthead }
780     { keythms_tcbox }
781     {
782       \begin{tcolorbox}[
783         savedelimiter=#1,
784         title={ \_keythms_thm_tcboxtemphead: },
785         #2]
786     }
787   }
788   \hook_gput_code:nnn { keytheorems/#1/prefoot }
789     { keythms_tcbox } { \end{tcolorbox} }
790 }
791 \cs_new_protected:Npn \_keythms_thm_qedcode:nn #1#2
792 {
793   \hook_gput_code:nnn { keytheorems/#1/posthead }
794     { keythms_qed }
795     {
796       \exp_args:No \tl_if_novalue:nF { #2 } { \protected@edef\qedsymbol{#2} }
797       \pushQED{\qed}
798     }
799   \hook_gput_code:nnn { keytheorems/#1/prefoot }
800     { keythms_qed }
801     {
802       \exp_args:No \tl_if_novalue:nF { #2 } { \protected@edef\qedsymbol{#2} }
803       \popQED
804     }
805 }
806
807 \cs_new_eq:NN \_keythms_theoremstyle:n \theoremstyle
808 \cs_generate_variant:Nn \_keythms_theoremstyle:n { V }
809
810 % newtheorem variants

```

```

811 \cs_new_eq:NN \__keythms_thm_new:nn \newtheorem
812 \cs_generate_variant:Nn \__keythms_thm_new:nn { nV }
813
814 \cs_new_protected:Npn \__keythms_thm_new_nonnumber:nn #1#2
815 { \__keythms_thm_new:nn*{#1}{#2} }
816 \cs_generate_variant:Nn \__keythms_thm_new_nonnumber:nn { nV }
817
818 \cs_new_protected:Npn \__keythms_thm_new_parent:nnn #1#2#3
819 { \__keythms_thm_new:nn{#1}{#2}[#3] }
820 \cs_generate_variant:Nn \__keythms_thm_new_parent:nnn { nVV }
821
822 \cs_new_protected:Npn \__keythms_thm_new_sibling:nnn #1#2#3
823 { \__keythms_thm_new:nn{#1}[#3]{#2} }
824 \cs_generate_variant:Nn \__keythms_thm_new_sibling:nnn { nV }
825
826 \cs_new_protected:Npn \__keythms_thm_new_uuwithparent:nnn #1#2#3
827 {
828   \cs_undefine:c { keythms_orig_nonnumber_#1 } % for renew, declare
829   \__keythms_thm_new_nonnumber:nn { keythms_orig_nonnumber_#1 } { #2 }
830   \__keythms_thm_new_parent:nnn { #1 } { #2 } { #3 }
831   \DeclareEnvironmentCopy { keythms_orig_withparent_#1 } { #1 }
832   \renewenvironment { #1 } % opt arg is implicit
833   {
834     \setuniqmark{ #1. \use:c {the #3} }
835     \ifuniq{ #1. \use:c {the #3} }
836     {
837       \keythms_if_restating:F
838       { \refstepcounter{ keythms_unnumbered_dummyctr } }
839       \begin{keythms_orig_nonnumber_#1}
840     }
841     {
842       \begin{keythms_orig_withparent_#1}
843     }
844   }
845   {
846     \ifuniq{ #1. \use:c {the #3} }
847     { \end{keythms_orig_nonnumber_#1} }
848     { \end{keythms_orig_withparent_#1} }
849   }
850 }
851 \cs_generate_variant:Nn \__keythms_thm_new_uuwithparent:nnn { nVV }
852
853 % for getting notes with continues*, use nameref if available, otherwise ltproperties
854 \hook_gput_code:nnn { begindocument } { . }
855 {
856   \IfPackageLoadedTF { nameref }
857   {
858     \cs_new:Npn \__keythms_thmuse_recordnote: { } % nameref takes care of this
859     \cs_new:Npn \__keythms_getrecordednote:n #1
860     {
861       \getrefbykeydefault{ #1 }{ name }{ }
862     }
863   }
864   { % needs https://github.com/latex3/latex2e/issues/1200 fixed
865     \property_new:nnnn { keytheorems/recordednote } { now } { }
866     { \l__keythms_thmuse_note_tl }
867     \cs_new:Npn \__keythms_getrecordednote:n #1
868     {

```

```

869         \property_ref:nn { keythms_recordednote_#1 }
870         { keytheorems/recordednote }
871     }
872     \cs_new:Npn \__keythms_thmuse_recordnote:
873     {
874         \tl_if_empty:NF \l__keythms_thmuse_note_tl
875         {
876             \RecordProperties
877             { keythms_recordednote_\l__keythms_thmuse_label_tl }
878             { keytheorems/recordednote }
879         }
880     }
881 }
882 }
883
884 \keys_define:nn { keytheorems/thmuse }
885 {
886     label      .tl_set:N = \l__keythms_thmuse_label_tl,
887     note       .tl_set:N = \l__keythms_thmuse_note_tl,
888     name       .meta:n   = { note = #1 },
889     % ^ for compatibility. "name" is ambiguous and doesn't match amsthm language
890     short-note .code:n   = {}, % these do nothing at point of use
891     short-name .code:n   = {}, % ^ worthwhile compatibility?
892     continues  .tl_set:N = \l__keythms_thmuse_contlabel_tl,
893     continues* .code:n   =
894     {
895         \keys_set:nn { keytheorems/thmuse } { continues = #1 }
896         \protected@edef \l__keythms_tmpa_tl { \__keythms_getrecordednote:n{#1} }
897         \tl_if_empty:NF \l__keythms_tmpa_tl
898         {
899             \keys_set:nn { keytheorems/thmuse }
900             { note = \l__keythms_tmpa_tl }
901         }
902     },
903     store      .tl_set:N = \l__keythms_thmuse_store_tl,
904     %store      .default:n = \q_no_value, % ={name} causes issues
905     restate    .meta:n   = { store = #1 },
906     % ^ thmtools compatibility
907     listhack    .choice:, % need equals sign
908     listhack / true .code:n = \bool_set_true:N \l__keythms_thmuse_listhack_bool,
909     listhack / false .code:n = \bool_set_false:N \l__keythms_thmuse_listhack_bool,
910     listhack    .initial:n = false,
911     seq        .code:n   = {},
912 }
913
914 \cs_new_protected:Npn \keythms_keyify_theorem:n #1
915 { % #1 = theorem name
916     \DeclareEnvironmentCopy { keythms_orig_#1 } { #1 }
917     \DeclareDocumentEnvironment { keythms_grab_#1 } { m O{} +b }
918     { % ##1 = keys, ##2 = note, ##3 = theorem body
919         \__keythms_thm_prehead_code:n { #1 }
920         \begin{keythms_orig_#1}[{##2}]
921         \clist_map_inline:Nn \g__keythms_restatecounters_clist
922         {
923             \prop_gput:Nne \g__keythms_thmuse_othercounters_prop { ####1 }
924             { \the\value{####1} }
925         }
926         \__keythms_thm_posthead_code:n { #1 }

```

```

927 % below needs to come after posthead so that correct \@currentHref
928 % is stored for tcolorbox theorems
929 \__keythms_thm_addcontentsdata:nnnn { #1 }
930 { \prop_to_keyval:N \g__keythms_thmuse_othercounters_prop }
931 { ##1 } { ##3 }
932 \__keythms_thm_tempstorerebasedata:nnn { #1 } { ##1 } { ##3 }
933 ##3
934 \__keythms_thm_prefoot_code:n { #1 }
935 \end{keythms_orig_#1}
936 \__keythms_thm_postfoot_code:n { #1 }
937 }
938 {}
939 % NOTE: have to do a lot of shenanigans to make sure the begin/end of grabbed
940 % theorem env captures only the body and no package code.
941 % This is the price of on-the-fly redefining the env to grab body
942 \RenewDocumentEnvironment { #1 } { = {note} 0 {} }
943 {
944 \keys_set:nn { keytheorems/thmuse } { ##1 }
945 \tl_if_empty:NF \l__keythms_thmuse_store_tl
946 {
947 \bool_gset_true:N \g__keythms_listof_writefile_bool
948 \cs_set_eq:NN \__keythms_withhooks_begin:nn \__keythms_grab_begin:nn
949 \cs_set_eq:NN \__keythms_withhooks_begin:nnn \__keythms_grab_begin:nnn
950 \cs_set_eq:NN \__keythms_withhooks_begin:nnV \__keythms_grab_begin:nnV
951 \cs_set_eq:NN \__keythms_withhooks_end:n \__keythms_grab_end:n
952 }
953 \__keythms_thm_prehead_continues_code:n { #1 }
954 \tl_if_empty:NTF \l__keythms_thmuse_note_tl
955 { \__keythms_withhooks_begin:nn { #1 } { ##1 } }
956 {
957 \__keythms_withhooks_begin:nnV { #1 } { ##1 }
958 \l__keythms_thmuse_note_tl
959 }
960 }
961 {
962 \__keythms_withhooks_end:n { #1 }
963 \tl_if_empty:NF \l__keythms_thmuse_store_tl
964 {
965 \cs_if_exist:cF
966 { __keythms_getthm_ \l__keythms_thmuse_store_tl _theorem }
967 {
968 \cs_new:cpe
969 { __keythms_getthm_ \l__keythms_thmuse_store_tl _theorem }
970 {
971 \exp_not:N \__keythms_getthm_theorem:nnnnn
972 \exp_not:o { \g__keythms_thmuse_temprestatedata_tl }
973 }
974 \cs_new:cpe
975 { __keythms_getthm_ \l__keythms_thmuse_store_tl _body }
976 {
977 \exp_not:N \__keythms_getthm_body:nn
978 \exp_args:No \exp_not:o
979 {
980 \exp_after:wN \__keythms_use_iii_v_braced:nnnnn
981 \g__keythms_thmuse_temprestatedata_tl
982 }
983 }
984 }

```

```

985     }
986   }
987 }
988 \cs_new:Npn \__keythms_use_iii_v_braced:nnnnn #1#2#3#4#5 { {#3}-{#5} }
989
990 \cs_new_protected:Npn \__keythms_withhooks_begin:nn #1#2
991 { % #1 = theorem name, #2 = keys
992   \__keythms_thm_prehead_code:n { #1 }
993   \begin{keythms_orig_#1}
994   \__keythms_thm_posthead_code:n { #1 }
995   \__keythms_thm_addcontentsdata:nnnn { #1 } { } { #2 } { }
996   \ignorespaces % I hope this is alright
997 }
998 \cs_new_protected:Npn \__keythms_withhooks_begin:nnn #1#2#3
999 { % #1 = theorem name, #2 = keys, #3 = note
1000   \__keythms_thm_prehead_code:n { #1 }
1001   \begin{keythms_orig_#1}[{#3}]
1002   \__keythms_thm_posthead_code:n { #1 }
1003   \__keythms_thm_addcontentsdata:nnnn { #1 } { } { #2 } { }
1004   \ignorespaces % I hope this is alright
1005 }
1006 \cs_generate_variant:Nn \__keythms_withhooks_begin:nnn { nnV }
1007 \cs_new_protected:Npn \__keythms_withhooks_end:n #1
1008 {
1009   \__keythms_thm_prefoot_code:n { #1 }
1010   \end{keythms_orig_#1}
1011   \__keythms_thm_postfoot_code:n { #1 }
1012 }
1013 \cs_new_protected:Npn \__keythms_grab_begin:nn #1#2
1014 { % #1 = theorem name, #2 = keys
1015   \begin{keythms_grab_#1}{#2}
1016 }
1017 \cs_new_protected:Npn \__keythms_grab_begin:nnn #1#2#3
1018 { % #1 = theorem name, #2 = keys, #3 = note
1019   \begin{keythms_grab_#1}{#2}[{#3}]
1020 }
1021 \cs_generate_variant:Nn \__keythms_grab_begin:nnn { nnV }
1022 \cs_new_protected:Npn \__keythms_grab_end:n #1 { \end{keythms_grab_#1} }
1023
1024 \cs_new_protected:Npn \__keythms_orig_begin:n #1 { \begin{keythms_orig_#1} }
1025 \cs_new_protected:Npn \__keythms_orig_begin:nn #1#2
1026 { \begin{keythms_orig_#1}[{#2}] }
1027 \cs_generate_variant:Nn \__keythms_orig_begin:nn { nV }
1028 \cs_new_protected:Npn \__keythms_orig_end:n #1 { \end{keythms_orig_#1} }
1029
1030 \cs_new:Npn \__keythms_thm_prehead_code:n #1
1031 { % #1 = theorem name
1032   \tl_set:Nn \l__keythms_thmuse_envname_tl { #1 }
1033   \hook_use:n { keytheorems/#1/prehead }
1034   \hook_use:n { keytheorems/allthms/prehead }
1035 }
1036 %% this below has to be separate from prehead_code above since we need to add
1037 %% continues-code to note before retrieving it in \__keythms_withhooks_begin:nnV
1038 \cs_new:Npn \__keythms_thm_prehead_continues_code:n #1
1039 { % #1 = theorem name
1040   \tl_if_empty:NF \l__keythms_thmuse_contlabel_tl
1041   {
1042     \tl_if_empty:NF \l__keythms_thmuse_note_tl

```

```

1043     { \tl_put_right:Nn \l__keythms_thmuse_note_tl { , ~ } }
1044 \tl_put_right:Ne \l__keythms_thmuse_note_tl
1045     { \__keythms_thmuse_continues:V \l__keythms_thmuse_contlabel_tl }
1046 \cs_set:cpn { the #1 }
1047     {
1048         \getrefnumber { \l__keythms_thmuse_contlabel_tl }
1049     }
1050 \cs_set_eq:cN { c@ #1 } \c@keythms_continues_dummyctr
1051 \cs_set_eq:cN { theH #1 } \theHkeythms_continues_dummyctr
1052 %\cs_set_eq:NN \setunigmark \use_none:n % not the right fix
1053 }
1054 }
1055 \cs_new:Npn \__keythms_thm_posthead_code:n #1
1056 { % #1 = theorem name
1057     \hook_use:n { keytheorems/#1/posthead }
1058     \hook_use:n { keytheorems/allthms/posthead }
1059     \tl_if_empty:NF \l__keythms_thmuse_label_tl
1060     {
1061         \label{ \l__keythms_thmuse_label_tl }
1062         \__keythms_thmuse_recordnote:
1063     }
1064     \bool_if:NT \l__keythms_thmuse_listhack_bool
1065     { % straight from thm-amsthm.sty
1066         \leavevmode
1067         \vspace{-\baselineskip}%
1068         \par
1069         \everypar{\setbox\z@\lastbox\everypar{}}%
1070     }
1071 }
1072 \cs_new:Npn \__keythms_thm_prefoot_code:n #1
1073 { % #1 = theorem name
1074     \hook_use:n { keytheorems/allthms/prefoot }
1075     \hook_use:n { keytheorems/#1/prefoot }
1076 }
1077 \cs_new:Npn \__keythms_thm_postfoot_code:n #1
1078 { % #1 = theorem name
1079     \hook_use:n { keytheorems/allthms/postfoot }
1080     \hook_use:n { keytheorems/#1/postfoot }
1081 }
1082 \cs_new:Npn \__keythms_thm_addcontentsdata:nnnn #1#2#3#4
1083 { % #1 = theorem name, #2 = stored counters, #3 = keys, #4 = body
1084     \keythms_listof_chaptervspacehack:
1085     \iow_shipout:Ne \@auxout
1086     {
1087         \exp_not:N \@writefile { thlist }
1088         {
1089             \KeyThmsSavedTheorem{ #1 }
1090             { \@currentlabel }
1091             { \@currentHref }
1092             { \thepage }
1093             { #2 }
1094             { \exp_not:n { #3 } } % do we want any expansion here, perhaps
1095             { \exp_not:n { #4 } } % with \text_expand:n ?
1096         }
1097     }
1098 }
1099 \cs_new:Npn \__keythms_thm_tempstorerebasedata:nnn #1#2#3
1100 { % #1 = theorem name, #2 = keys, #3 = body

```

```

1101 \tl_gset:Nx \g__keythms_thmuse_temprestatedata_tl % needs to be global to get out of env
1102 {
1103   { #1 }
1104   { \@currentlabel }
1105   { \prop_to_keyval:N \g__keythms_thmuse_othercounters_prop }
1106   { \exp_not:n { #2 } } % do we want any expansion here, perhaps
1107   { \exp_not:n { #3 } } % with \text_expand:n ?
1108 }
1109 }
1110
1111 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1112 %%% Retrieving Theorem Data %%%
1113 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1114
1115 \cs_new_protected:Npn \KeyThmsSavedTheorem #1#2#3#4#5#6#7 % 7th arg is body
1116 { \use:c { __keythms_thmitem_#1:nnnnnn } {#2}{#3}{#4}{#5}{#6}{#7} }
1117
1118 \keys_define:nn { keytheorems/storeatbegin }
1119 {
1120   store .tl_set:N = \l__keythms_storeatbegin_store_tl,
1121   restate .meta:n = { store=#1 },
1122   unknown .code:n = { } % do nothing with unknown keys
1123 }
1124
1125 \cs_new_protected:Npn \KeyThmsContentsLine #1 { #1 }
1126 \NewDocumentCommand \addtheoremcontentsline { m m }
1127 {
1128   \addtocontents { thlist }
1129   {
1130     \KeyThmsContentsLine
1131     { % copied from def of \addcontentsline
1132       \protect\contentsline{#1}{#2}{\thepage}{ }
1133       \protected@file@percent
1134     }
1135   }
1136 }
1137 \NewDocumentCommand \addtotheoremcontents { m }
1138 {
1139   \addtocontents { thlist }
1140   {
1141     \KeyThmsContentsLine { #1 }
1142   }
1143 }
1144
1145 \hook_gput_code:nnn { begindocument } { . }
1146 {
1147   \group_begin:
1148   \cs_set_eq:NN \KeyThmsContentsLine \use_none:n
1149   \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1150   \cs_set_protected:Npn \KeyThmsSavedTheorem #1#2#3#4#5#6#7
1151   {
1152     \group_begin:
1153     \keys_set:nn { keytheorems/storeatbegin } { #6 }
1154     \tl_if_empty:NF \l__keythms_storeatbegin_store_tl
1155     {
1156       \cs_new:cpn
1157       { __keythms_getthm_ \l__keythms_storeatbegin_store_tl _theorem }
1158       {

```

```

1159         \__keythms_getthm_theorem:nnnnn
1160         {#1}{#2}{#5}{#6}{#7}
1161     }
1162     \cs_new:cpn
1163     { \__keythms_getthm_ \l__keythms_storeatbegin_store_tl _body }
1164     {
1165         \__keythms_getthm_body:nn {#5}{#7}
1166     }
1167 }
1168 \group_end:
1169 }
1170 \file_if_exist_input:n { \c_sys_jobname_str.thlist }
1171 \group_end:
1172 }
1173
1174 \prg_new_conditional:Npnn \keythms_if_restating: { T, F, TF }
1175 {
1176     \bool_if:NTF \l__keythms_thmuse_restating_bool
1177     { \prg_return_true: }
1178     { \prg_return_false: }
1179 }
1180 \NewDocumentCommand \IfRestatingTF { } { \keythms_if_restating:TF }
1181
1182 \cs_new_protected:Npn \__keythms_getthm_theorem:nnnnn #1#2#3#4#5
1183 { % #1 = name, #2 = number, #3 = restate counters, #4 = keys, #5 = theorem body
1184     \group_begin:
1185     \bool_set_true:N \l__keythms_thmuse_restating_bool
1186     \prop_set_from_keyval:Nn \l__keythms_restate_counters_prop { #3 }
1187     \prop_map_inline:Nn \l__keythms_restate_counters_prop
1188     {
1189         \tl_set:ce { l_keythms_restate_current_##1_tl } { \the\value{##1} }
1190         \setcounter { ##1 } { ##2 }
1191         % ^ FIX: what if eq's numbered by section, theorem, etc.? The
1192         %       thmtools code is opaque.... Or maybe should be up to the
1193         %       user to say "restate-counters={section,chapter,...}".
1194         \cs_set:cpn { theH ##1 } { \use:c { the ##1 } . \theHkeythms_restate_dummyctr }
1195     }
1196     \tl_if_empty:nTF { #2 }
1197     { \refstepcounter{keythms_restate_dummyctr} } % for unnumbered theorems
1198     {
1199         \cs_set:cpn { the #1 } { #2 }
1200         \cs_set_eq:cN { c@ #1 } \c@keythms_restate_dummyctr
1201         \cs_set_eq:cN { theH #1 } \theHkeythms_restate_dummyctr
1202         % ^ why are the last two line here? We shouldn't be referencing
1203         %   restated theorems. Think it's a remnant of thmtools
1204         % WRONG: needed to make numbering correct after restated theorem.
1205         % not sure about theH. <- this is needed to prevent duplicate anchors
1206     }
1207     \renewcommand\label[2][]{ } % disable \label (opt arg in case cleveref loaded)
1208     \cs_set_eq:NN \ltx@label \use_none:n % disable \ltx@label
1209     \cs_set_eq:NN \property_record:nn \use_none:nn % disable \RecordProperties
1210     \cs_set_eq:NN \setuniqmark \use_none:n % work with numbered=unless-unique
1211     % QUESTION: also disable \hyper@@anchor ? \MakeLinkTarget?
1212     \keys_set:nn { keytheorems/thmuse } { #4 }
1213     \hook_use:n { keytheorems/#1/restated }
1214     \hook_use:n { keytheorems/allthms/restated }
1215     \__keythms_thm_prehead_continues_code:n { #1 }
1216     \__keythms_thm_prehead_code:n { #1 }

```



```

1217 \tl_if_empty:NTF \l__keythms_thmuse_note_tl
1218 { \__keythms_orig_begin:n { #1 } }
1219 { \__keythms_orig_begin:nV { #1 } \l__keythms_thmuse_note_tl }
1220 \__keythms_thm_posthead_code:n { #1 }
1221 #5
1222 \__keythms_thm_prefoot_code:n { #1 }
1223 \__keythms_orig_end:n { #1 }
1224 \__keythms_thm_postfoot_code:n { #1 }
1225 \prop_map_inline:Nn \l__keythms_restate_counters_prop
1226 {
1227   \exp_args:Nnc \setcounter { ##1 }
1228   { l_keythms_restate_current_##1_tl }
1229 }
1230 \group_end:
1231 }
1232
1233 \cs_new_protected:Npn \__keythms_getthm_body:nn #1#2
1234 { % #1 = restate counters, #2 = theorem body
1235   \group_begin:
1236   \bool_set_true:N \l__keythms_thmuse_restating_bool
1237   \prop_set_from_keyval:Nn \l__keythms_restate_counters_prop { #1 }
1238   \prop_map_inline:Nn \l__keythms_restate_counters_prop
1239   {
1240     \tl_set:ce { l_keythms_restate_current_##1_tl } { \the\value{##1} }
1241     \setcounter { ##1 } { ##2 }
1242     % ^ FIX: what if eq's numbered by section, theorem, etc.? The
1243     %       thmtools code is opaque.... Or maybe should be up to the
1244     %       user to say "restate-counters={section,chapter,...}".
1245     \cs_set:cpn { theH ##1 } { \use:c { the ##1 } . \theHkeythms_restate_dummyctr }
1246   }
1247   \refstepcounter{keythms_restate_dummyctr}
1248   \renewcommand\label[2] [] {} % disable \label (opt arg in case cleveref loaded)
1249   \cs_set_eq:NN \ltx@label \use_none:n % disable \ltx@label
1250   \cs_set_eq:NN \property_record:nn \use_none:nn % disable \RecordProperties
1251   \hook_use:n { keytheorems/#1/restated }
1252   \hook_use:n { keytheorems/allthms/restated }
1253   #2
1254   \prop_map_inline:Nn \l__keythms_restate_counters_prop
1255   {
1256     \exp_args:Nnc \setcounter { ##1 }
1257     { l_keythms_restate_current_##1_tl }
1258   }
1259   \group_end:
1260 }
1261
1262 % \getkeytheorem[<property>]{<tag>}
1263 \NewDocumentCommand \getkeytheorem { o m }
1264 {
1265   \cs_if_exist:cTF { __keythms_getthm_#2_theorem }
1266   {
1267     \IfNoValueTF { #1 }
1268     { \use:c { __keythms_getthm_#2_theorem } }
1269     { \use:c { __keythms_getthm_#2_#1 } }
1270   }
1271   {
1272     \textbf{??}
1273     \msg_warning:nnn { keytheorems } { no-stored-theorem } { #2 }
1274   }

```

```

1275 }
1276
1277 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1278 %%% Theorem Hooks %%%
1279 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1280
1281 %%% \addtotheoremhook[<envname>]{<hook>}{<code>}
1282 \NewDocumentCommand \addtotheoremhook { o m +m }
1283 {
1284   \__hook_if_declared:nTF { keytheorems/allthms/#2 }
1285   {
1286     \IfNoValueTF { #1 } { % I think this really should use ".", not "keytheorems"
1287       { \hook_gput_code:nnn { keytheorems/allthms/#2 } { . } { #3 } }
1288       { \hook_gput_code:nnn { keytheorems/#1/#2 } { . } { #3 } }
1289     }
1290     {
1291       \msg_error:nnn { keytheorems } { undefined-thm-hook } { #2 }
1292     }
1293   }
1294
1295   % NOTE: I think it's OK we use the internal \__hook_if_declared:nTF above
1296   %       since we don't need to worry about the user creating new theorem hooks
1297   %       so, as we're only checking the existence of hooks created by us, it's OK.
1298
1299   %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1300   %%% List of Theorems %%%
1301   %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1302
1303   \NewTranslationFallback { keythms_listof_title } { List-of~Theorems }
1304   \NewTranslation { English } { keythms_listof_title } { List-of~Theorems }
1305   \NewTranslation { French } { keythms_listof_title } { Liste-des-théorèmes }
1306   \NewTranslation { German } { keythms_listof_title } { Liste-der-Theoreme }
1307   \NewTranslation { Spanish } { keythms_listof_title } { Lista-de-teoremas }
1308
1309   \keys_define:nn { keytheorems/listof }
1310   {
1311     numwidth .dim_set:N = \l__keythms_listof_numwidth_dim,
1312     numwidth .initial:n = 2.3em,
1313     ignore .code:n =
1314     {
1315       \hook_gput_code:nnn { begindocument/before } { keytheorems }
1316       { \keythms_listof_ignore:n { #1 } }
1317     },
1318     show .code:n =
1319     {
1320       \hook_gput_code:nnn { begindocument/before } { keytheorems }
1321       { \keythms_listof_show:n { #1 } }
1322     },
1323     onlynamed .code:n =
1324     {
1325       \hook_gput_code:nnn { begindocument/before } { keytheorems }
1326       { \keythms_listof_onlynamed:n { #1 } }
1327     },
1328     onlynamed .default:n = \q_no_value,
1329     onlynumbered .code:n =
1330     {
1331       \hook_gput_code:nnn { begindocument/before } { keytheorems }
1332       { \keythms_listof_onlynumbered:n { #1 } }

```

```

1333     },
1334     onlynumbered .default:n = \q_no_value,
1335     ignoreall .code:n =
1336     {
1337         \hook_gput_code:nnn { begindocument/before } { keytheorems } % in case called before theorem
1338         {
1339             \prop_map_inline:Nn \g__keythms_thmnames_prop
1340             { \__keythms_listof_ignore_aux:n { ##1 } }
1341         }
1342     },
1343     showall .code:n =
1344     {
1345         \hook_gput_code:nnn { begindocument/before } { keytheorems } % in case called before theorem
1346         {
1347             \prop_map_inline:Nn \g__keythms_thmnames_prop
1348             { \__keythms_listof_show_aux:n { ##1 } }
1349         }
1350     },
1351     title .tl_set:N = \l__keythms_listof_title_tl,
1352     title .initial:n = \GetTranslation{keythms_listof_title},
1353     swapnumber .bool_set:N = \l__keythms_listof_swapnumber_bool,
1354     swapnumber .initial:n = false,
1355     title-code .cs_set:Np = \__keythms_listof_titlecmd:n #1,
1356     no-title .bool_set:N = \l__keythms_listof_notitle_bool,
1357     no-title .initial:n = false,
1358     print-body .code:n =
1359     {
1360         \cs_set:Nn \keythms_listof_listcmd:nnnnnnn
1361         {
1362             \tl_if_empty:nF { ##7 }
1363             {
1364                 \__keythms_getthm_theorem:nnnnn
1365                 {##1}{##2}{##5}{##6}{##7}
1366             }
1367         }
1368         \cs_set_eq:NN \KeyThmsContentsLine \use_none:n
1369         % ^ I assume we want this?
1370         \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1371     },
1372     note-code .cs_set:Np = \__keythms_listof_notecmd:n #1,
1373     note-code .initial:n = { ~ (#1) },
1374     no-continues .bool_set:N = \l__keythms_listof_nocont_bool,
1375     no-continues .initial:n = false,
1376     no-chapter-skip .bool_set:N = \l__keythms_listof_nochapter_skip_bool,
1377     no-chapter-skip .initial:n = false,
1378     chapter-skip-length .dim_set:N = \keythms@listof@chapter_vspace@dim,
1379     chapter-skip-length .initial:n = 10pt,
1380 }
1381
1382 \hook_gput_code:nnn { begindocument } { . } % redefine these keys at begindocument
1383 {
1384     \keys_define:nn { keytheorems/listof }
1385     {
1386         ignore .code:n = \keythms_listof_ignore:n { #1 },
1387         show .code:n = \keythms_listof_show:n { #1 },
1388         onlynamed .code:n = \keythms_listof_onlynamed:n { #1 },
1389         onlynamed .default:n = \q_no_value,
1390         onlynumbered .code:n = \keythms_listof_onlynumbered:n { #1 },

```

```

1391     onlynumbered .default:n = \q_no_value,
1392     ignoreall .code:n      =
1393     {
1394         \prop_map_inline:Nn \g__keythms_thmnames_prop
1395         { \__keythms_listof_ignore_aux:n { ##1 } }
1396     },
1397     showall .code:n      =
1398     {
1399         \prop_map_inline:Nn \g__keythms_thmnames_prop
1400         { \__keythms_listof_show_aux:n { ##1 } }
1401     },
1402     seq .code:n = \keythms_listof_showseq:n { #1 },
1403 }
1404 }
1405
1406 \NewDocumentCommand \keytheoremset { m }
1407 {
1408     \keys_set:nn { keytheorems/listof } { #1 }
1409 }
1410
1411 \cs_new_protected:Npn \keythms_listof_ignore:n #1
1412 {
1413     \clist_map_inline:nn { #1 } { \__keythms_listof_ignore_aux:n { ##1 } }
1414 }
1415 \cs_new_protected:Npn \__keythms_listof_ignore_aux:n #1
1416 {
1417     \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1418     { }
1419 }
1420
1421 \cs_new_protected:Npn \keythms_listof_show:n #1
1422 {
1423     \clist_map_inline:nn { #1 } { \__keythms_listof_show_aux:n { ##1 } }
1424 }
1425 \cs_new_protected:Npn \__keythms_listof_show_aux:n #1
1426 {
1427     \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1428     {
1429         \__keythms_listof_listcmd_setup:nn { ##5 }
1430         {
1431             \keythms_listof_listcmd:nnnnnn
1432             {#1}{##1}{##2}{##3}{##4}{##5}{##6}
1433         }
1434     }
1435 }
1436
1437 \cs_new_protected:Npn \keythms_listof_onlynamed:n #1
1438 {
1439     \quark_if_no_value:nTF { #1 }
1440     {
1441         \prop_map_inline:Nn \g__keythms_thmnames_prop
1442         { \__keythms_listof_onlynamed_aux:n { ##1 } }
1443     }
1444     {
1445         \clist_map_inline:nn { #1 }
1446         { \__keythms_listof_onlynamed_aux:n { ##1 } }
1447     }
1448 }

```

```

1449 \cs_new_protected:Npn \__keythms_listof_onlynamed_aux:n #1
1450 {
1451   \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1452   {
1453     \__keythms_listof_listcmd_setup:nn { ##5 }
1454     {
1455       \tl_if_empty:NF \l__keythms_listofheading_note_tl
1456       {
1457         \keythms_listof_listcmd:nnnnnnn
1458         {#1}{##1}{##2}{##3}{##4}{##5}{##6}
1459       }
1460     }
1461   }
1462 }
1463
1464 \cs_new_protected:Npn \keythms_listof_onlynumbered:n #1
1465 {
1466   \quark_if_no_value:nTF { #1 }
1467   {
1468     \prop_map_inline:Nn \g__keythms_thmnames_prop
1469     { \__keythms_listof_onlynumbered_aux:n { ##1 } }
1470   }
1471   {
1472     \clist_map_inline:nn { #1 }
1473     { \__keythms_listof_onlynumbered_aux:n { ##1 } }
1474   }
1475 }
1476 \cs_new_protected:Npn \__keythms_listof_onlynumbered_aux:n #1
1477 {
1478   \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1479   {
1480     \__keythms_listof_listcmd_setup:nn { ##5 }
1481     {
1482       \tl_if_empty:NF { ##1 }
1483       {
1484         \keythms_listof_listcmd:nnnnnnn
1485         {#1}{##1}{##2}{##3}{##4}{##5}{##6}
1486       }
1487     }
1488   }
1489 }
1490 \cs_new_protected:Npn \keythms_listof_showseq:n #1
1491 {
1492   \prop_map_inline:Nn \g__keythms_thmnames_prop
1493   { \__keythms_listof_showseq_aux:nn { #1 } { ##1 } }
1494 }
1495 \cs_new_protected:Npn \__keythms_listof_showseq_aux:nn #1#2
1496 { % #1 = seq name, #2 = theorem name
1497   \cs_set_protected:cpn { __keythms_thmitem_#2:nnnnnn } ##1##2##3##4##5##6
1498   {
1499     \__keythms_listof_listcmd_setup:nn { ##5 }
1500     {
1501       \tl_if_eq:NnT \l__keythms_listofheading_seq_tl { #1 }
1502       {
1503         \keythms_listof_listcmd:nnnnnnn
1504         {#2}{##1}{##2}{##3}{##4}{##5}{##6}
1505       }
1506     }
1507   }

```

```

1507     }
1508 }
1509
1510 % Seems unnecessary to repeat all this for reading the keyvals from seq.
1511 % In thmtools they just hook the "thmitem" definition into the theorem declaration.
1512 %% NOTE ON ABOVE: this gives more flexibility to define different kinds of lists.
1513 %% Seeacro.sty for template idea.
1514 \keys_define:nn { keytheorems/listofheading }
1515 {
1516     note .tl_set:N = \l__keythms_listofheading_note_tl,
1517     name .meta:n = { note = #1 },
1518     short-note .tl_set:N = \l__keythms_listofheading_shortnote_tl,
1519     short-name .meta:n = { short-note = #1 },
1520     continues .tl_set:N = \l__keythms_listofheading_contlabel_tl,
1521     continues* .code:n =
1522     {
1523         \keys_set:nn { keytheorems/listofheading } { continues = #1 }
1524         \protected@edef \l__keythms_tmpa_tl { \__keythms_getrecordednote:n{#1} }
1525         \tl_if_empty:NF \l__keythms_tmpa_tl
1526         {
1527             \keys_set:nn { keytheorems/listofheading }
1528             { note = \l__keythms_tmpa_tl }
1529         }
1530     },
1531     seq .tl_set:N = \l__keythms_listofheading_seq_tl,
1532     unknown .code:n = { } % do nothing with unknown keys
1533     % ~ this is OK because we have total control over possible keys; if invalid
1534     % key is given to theorem then an error will be raised there
1535 }
1536
1537 \cs_new:Npn \__keythms_listof_printheading:
1538 {
1539     \tl_if_empty:NTF \l__keythms_listofheading_shortnote_tl
1540     {
1541         \tl_if_empty:NF \l__keythms_listofheading_note_tl
1542         { \__keythms_listof_notecmd:n { \l__keythms_listofheading_note_tl } }
1543     }
1544     {
1545         \__keythms_listof_notecmd:n { \l__keythms_listofheading_shortnote_tl }
1546     }
1547 }
1548
1549 \cs_new:Npn \__keythms_listof_default_listcmd:nnnnnnn #1#2#3#4#5#6#7
1550 {
1551     \contentsline{ #1 }
1552     {
1553         \bool_if:NTF \l__keythms_listof_swapnumber_bool
1554         {
1555             \prop_item:Nn \g__keythms_thmnames_prop { #1 } ~ #2
1556         }
1557         {
1558             \numberline{ #2 }
1559             \prop_item:Nn \g__keythms_thmnames_prop { #1 }
1560         }
1561         \__keythms_listof_printheading:
1562     }
1563     { #4 }{ #3 }
1564 }

```

```

1565
1566 % NOTE: We still need to do this setup for [print-body] so that onlynamed works
1567 \cs_new:Npn \__keythms_listof_listcmd_setup:nn #1#2
1568 { % #1 = keys, #2 = list command
1569   \group_begin:
1570   \keys_set:nn { keytheorems/listofheading } { #1 }
1571   \tl_if_empty:NTF \l__keythms_listofheading_contlabel_tl
1572   { #2 }
1573   {
1574     \bool_if:NF \l__keythms_listof_nocont_bool
1575     {
1576       \tl_if_empty:NF \l__keythms_listofheading_note_tl
1577       {
1578         \tl_put_right:Nn \l__keythms_listofheading_note_tl { , ~ }
1579       }
1580       \tl_put_right:Nn \l__keythms_listofheading_note_tl
1581       {
1582         \__keythms_thmuse_continues:V \l__keythms_listofheading_contlabel_tl
1583       }
1584       #2
1585     }
1586   }
1587   \group_end:
1588 }
1589
1590 % set default listcmd
1591 \cs_new_eq:NN \keythms_listof_listcmd:nnnnnnn
1592   \__keythms_listof_default_listcmd:nnnnnnn
1593
1594 \cs_if_exist:NTF \chapter
1595 { \cs_set:Npn \__keythms_listof_titlecmd:n #1 { \chapter*{#1} } }
1596 { \cs_set:Npn \__keythms_listof_titlecmd:n #1 { \section*{#1} } }
1597
1598 \hook_gput_code:nnn { begindocument } { . }
1599 { % try to detect ams classes
1600   \keythms_if_amsclass:TF
1601   {
1602     \prop_map_inline:Nn \g__keythms_thmnames_prop
1603     {
1604       \cs_set:cpn { l@ #1 }
1605       {
1606         \@tocline{ 0 }{ 3pt plus 2pt }{ 0pt }
1607         { \l__keythms_listof_numwidth_dim }{ }
1608       }
1609     }
1610   }
1611   {
1612     \prop_map_inline:Nn \g__keythms_thmnames_prop
1613     {
1614       \cs_set:cpn { l@ #1 }
1615       {
1616         \@dottedtocline{ 1 }{ 1.5em }
1617         { \l__keythms_listof_numwidth_dim }
1618       }
1619     }
1620   }
1621 }
1622

```

```

1623 \keythms_if_amsclass:TF
1624 {
1625     \keys_define:nn { keytheorems/listof } % adjust to class
1626     {
1627         numwidth .initial:n = 1.5pc,
1628     }
1629     \NewDocumentCommand \listofkeytheorems { 0{} }
1630     { % title command not customizable here
1631         \bool_gset_true:N \g__keythms_listof_writefile_bool
1632         \group_begin:
1633         \keys_set:nn { keytheorems/listof } { #1 }
1634         \bool_if:NT \l__keythms_listof_nochapskip_bool
1635         {
1636             \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1637         }
1638         \legacy_if_set_false:n { @files }
1639         \bool_if:NTF \l__keythms_listof_notitle_bool
1640         {
1641             \@starttoc{ thlist }{ }
1642         }
1643         { % ams classes don't expand title enough
1644             \protected@edef \l__keythms_tmpa_tl { \l__keythms_listof_title_tl }
1645             \@starttoc{ thlist }{ \l__keythms_tmpa_tl }
1646         }
1647         \group_end:
1648     }
1649 }
1650 {
1651     \NewDocumentCommand \listofkeytheorems { 0{} }
1652     {
1653         \bool_gset_true:N \g__keythms_listof_writefile_bool
1654         \group_begin:
1655         \keys_set:nn { keytheorems/listof } { #1 }
1656         \bool_if:NT \l__keythms_listof_nochapskip_bool
1657         {
1658             \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1659         }
1660         \bool_if:NF \l__keythms_listof_notitle_bool
1661         {
1662             \__keythms_listof_titlecmd:n { \l__keythms_listof_title_tl }
1663             \@mkboth % QUESTION: should this go in titlecmd ?
1664             { \MakeUppercase \l__keythms_listof_title_tl }
1665             { \MakeUppercase \l__keythms_listof_title_tl }
1666         }
1667         \legacy_if_set_false:n { @files }
1668         \@starttoc{ thlist }
1669         \group_end:
1670     }
1671 }
1672 % ~ unlike thmtools we don't use the class's style of \listoffigures because
1673 % we want control over title-code, no-title, etc. But this means we have to guess
1674 % things like marks, sectioning command, etc.
1675
1676 \hook_gput_code:nnn { enddocument } { . }
1677 {
1678     \bool_if:NTF \g__keythms_listof_writefile_bool
1679     {
1680         \legacy_if:nT { @files }

```



```

1681         {
1682             \iow_new:N \tf@thlist
1683             \iow_open:Nn \tf@thlist { \c_sys_jobname_str.thlist }
1684         }
1685     }
1686     { % if .thlist file left over from previous run but not needed, clear it
1687         \file_if_exist:nT { \c_sys_jobname_str.thlist }
1688         {
1689             \iow_open:Nn \g_tmpa_iow { \c_sys_jobname_str.thlist }
1690             \iow_close:N \g_tmpa_iow
1691         }
1692     }
1693 }
1694
1695 % chapterspacehack (code translated from thmtools)
1696 \cs_new_eq:NN \KeyThmsAddvspace \addvspace
1697 \int_new:N \g_keythms_listof_prevchapter_int
1698 \int_gset:Nn \g_keythms_listof_prevchapter_int { 1 }
1699 % ^ if this is zero, bad things happen if title-code is changed; anyways don't
1700 % need addvspace at top
1701 \cs_new:Npn \keythms_listof_chaptervspacehack: { }
1702 \cs_if_exist:cT { c@chapter }
1703 {
1704     \cs_if_eq:NnF \c@chapter \relax
1705     {
1706         \cs_set:Npn \keythms_listof_chaptervspacehack:
1707         {
1708             \int_compare:nNnF { \value{chapter} } = { \g_keythms_listof_prevchapter_int }
1709             {
1710                 \addtocontents{ thlist }
1711                 {
1712                     \protect\KeyThmsAddvspace
1713                     { \keythms@listof@chaptervspace@dim }
1714                 }
1715                 \int_gset:Nn \g_keythms_listof_prevchapter_int { \value{chapter} }
1716             }
1717         }
1718     }
1719 }
1720
1721 %%%%%%%%%%%%%%%
1722 %%% \Autoref %%
1723 %%%%%%%%%%%%%%%
1724
1725 \ProvideDocumentCommand { \Autoref } { s m }
1726 {
1727     \group_begin:
1728     \cs_set_eq:NN \HyRef@testreftype \__keythms_Autoref_testreftype:w
1729     \IfBooleanTF { #1 } { \autoref*{#2} } { \autoref{#2} }
1730     \group_end:
1731 }
1732
1733 \cs_new:Npn \__keythms_Autoref_testreftype:w #1.#2\
1734 {
1735     \cs_if_exist:cTF { #1 Autorefname }
1736     {
1737         \cs_set:Npe \HyRef@currentHtag
1738         {

```

```

1739         \exp_not:N \use:c { #1 Autorefname }
1740         \exp_not:N \c_space_token
1741     }
1742 }
1743 { \msg_warning:nnn { keytheorems } { no-Autorefname } { #1 } }
1744 }
1745
1746 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1747 %%% Global Keys %%%
1748 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1749
1750 % from DeepL; I don't know these languages!
1751 \NewTranslationFallback { keythms_continues } { continuing~from~p.\, }
1752 \NewTranslation { English } { keythms_continues } { continuing~from~p.\, }
1753 \NewTranslation { French } { keythms_continues } { suite~de~la~p.\, }
1754 \NewTranslation { German } { keythms_continues } { weiter~von~Seite~ }
1755 \NewTranslation { Spanish } { keythms_continues } { continúa~de~la~p.\, }
1756
1757 \keys_define:nn { keytheorems }
1758 {
1759     restate-counters .code:n =
1760     {
1761         \clist_map_inline:nn { #1 }
1762         { \tl_new:c { l_keythms_restate_current_##1_tl } }
1763         \clist_gput_right:Nn \g__keythms_restatecounters_clist { #1 }
1764     },
1765     restate-counters .initial:n = equation,
1766     continues-code .cs_set:Np = \__keythms_thmuse_continues:n #1,
1767     continues-code .initial:n =
1768     { % not sure how best to handle this translation
1769         \GetTranslation{keythms_continues}\pageref{#1}
1770     },
1771     qed-symbol .cs_set_protected:Np = \qedsymbol,
1772     overload .code:n = \__keythms_overload_code:,
1773     overload .value_forbidden:n = true,
1774     overload .usage:n = preamble,
1775     thmtools-compat .code:n = \__keythms_thmtoolscompat_code:,
1776     thmtools-compat .value_forbidden:n = true,
1777     thmtools-compat .usage:n = preamble,
1778     store-all .code:n = \__keythms_storeall_code:,
1779     store-all .value_forbidden:n = true,
1780     store-all .usage:n = preamble,
1781 }
1782
1783 \cs_generate_variant:Nn \__keythms_thmuse_continues:n { V }
1784
1785 % \keytheoremset{<options>}
1786 \NewDocumentCommand \keytheoremset { m }
1787 {
1788     \keys_set:nn { keytheorems } { #1 }
1789 }
1790
1791 \cs_new_protected:Npn \__keythms_overload_code:
1792 {
1793     \RenewDocumentCommand { \newtheorem } { smomo }
1794     {
1795         \IfBooleanTF { ##1 }
1796         { \keythms_thm_newkeythm:nn { ##2 } { name=##4, numbered=no } }

```

```

1797     {
1798         \IfNoValueTF { ##3 }
1799         {
1800             \IfNoValueTF { ##5 }
1801             { \keythms_thm_newkeythm:nn { ##2 } { name=##4 } }
1802             { \keythms_thm_newkeythm:nn { ##2 } { name=##4, parent=##5 } }
1803         }
1804         { \keythms_thm_newkeythm:nn { ##2 } { name=##4, sibling=##3 } }
1805     }
1806 }
1807 }
1808
1809 \cs_new_protected:Npn \__keythms_thmtoolscompat_code:
1810 {
1811     \ProvideDocumentCommand { \declaretheoremstyle } { 0{} m }
1812     {
1813         \declarekeytheoremstyle { ##2 } { ##1 }
1814     }
1815     \ProvideDocumentCommand { \declaretheorem } { 0{} m }
1816     {
1817         \newkeytheorem { ##2 } [ ##1 ]
1818     }
1819     \ProvideDocumentEnvironment { restatable } { 0{} m m }
1820     {
1821         \begin{##2}[##1,store=##3]
1822     }
1823     {
1824         \end{##2}
1825         \cs_new:cpn { ##3 }
1826         { % make \foo and \foo* identical
1827             \peek_meaning_remove:NTF *
1828             { \use:c { __keythms_getthm_ ##3 _theorem } }
1829             { \use:c { __keythms_getthm_ ##3 _theorem } }
1830         }
1831     }
1832     \ProvideDocumentCommand { \listoftheorems } { } { \listofkeytheorems }
1833     \ProvideDocumentCommand { \addtotheoremheadhook } { 0 m }
1834     {
1835         \IfNoValueTF { ##1 }
1836         { \addtotheoremhook { prehead } { ##2 } }
1837         { \addtotheoremhook [ ##1 ] { prehead } { ##2 } }
1838     }
1839     \ProvideDocumentCommand { \addtotheoremheadhook } { 0 m }
1840     {
1841         \IfNoValueTF { ##1 }
1842         { \addtotheoremhook { posthead } { ##2 } }
1843         { \addtotheoremhook [ ##1 ] { posthead } { ##2 } }
1844     }
1845     \ProvideDocumentCommand { \addtotheoremheadhook } { 0 m }
1846     {
1847         \IfNoValueTF { ##1 }
1848         { \addtotheoremhook { prefoot } { ##2 } }
1849         { \addtotheoremhook [ ##1 ] { prefoot } { ##2 } }
1850     }
1851     \ProvideDocumentCommand { \addtotheoremheadhook } { 0 m }
1852     {
1853         \IfNoValueTF { ##1 }
1854         { \addtotheoremhook { postfoot } { ##2 } }

```

```

1855     { \addtotheoremhook [ ##1 ] { postfoot } { ##2 } }
1856   }
1857   \clist_new:N \l__keythms_tcbshaded_keys_clist
1858   \clist_new:N \l__keythms_tcbthmbox_keys_clist
1859   \keys_define:nn { keytheorems/thm/shaded }
1860   {
1861     textwidth .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { width=##1 },
1862     bgcolor .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { colback=##1 },
1863     rulewidth .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { boxrule=##1 },
1864     rulecolor .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { colframe=##1 },
1865     margin .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { boxsep=##1 },
1866     padding .meta:n = { margin=##1 },
1867     leftmargin .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { left~skip=##1 },
1868     rightmargin .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { right~skip=##1 }
1869   }
1870   \keys_define:nn { keytheorems/thm/thmbox }
1871   {
1872     L .code:n =
1873     {
1874       \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1875       { keythms_tcbthmbox_L }
1876     },
1877     M .code:n =
1878     {
1879       \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1880       { keythms_tcbthmbox_M }
1881     },
1882     S .code:n =
1883     {
1884       \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1885       { keythms_tcbthmbox_S }
1886     },
1887     underline .choice:,
1888     underline / true .code:n = {},
1889     underline / false .code:n =
1890     {
1891       \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1892       { boxed~title~style={bottomrule=Opt} }
1893     },
1894     underline .default:n = true,
1895     nounderline .meta:n = { underline=false },
1896     cut .choice:,
1897     cut / true .code:n = {},
1898     cut / false .code:n =
1899     {
1900       \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist { unbreakable }
1901     },
1902     cut .default:n = true,
1903     nocut .meta:n = { cut=false },
1904     thickness .code:n = % could also add keys to clist with changed dims; which is better?
1905     {
1906       \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1907       { keythms_tcbbox }
1908       { \dim_set:Nn \l__keythms_tcbthmbox_thickness_dim { ##1 } }
1909     },
1910     leftmargin .code:n =
1911     {
1912       \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }

```

```

1913         { keythms_tcbox }
1914         { \dim_set:Nn \l_keythms_tcbthmbox_leftmargin_dim { ##1 } }
1915     },
1916     rightmargin .code:n =
1917     {
1918         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1919         { keythms_tcbox }
1920         { \dim_set:Nn \l_keythms_tcbthmbox_rightmargin_dim { ##1 } }
1921     },
1922     hskip .code:n =
1923     {
1924         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1925         { keythms_tcbox }
1926         { \dim_set:Nn \l_keythms_tcbthmbox_hskip_dim { ##1 } }
1927     },
1928     vskip .code:n =
1929     {
1930         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1931         { keythms_tcbox }
1932         { \dim_set:Nn \l_keythms_tcbthmbox_vskip_dim { ##1 } }
1933     },
1934 }
1935 \dim_new:N \l_keythms_tcbthmbox_thickness_dim
1936 \dim_set:Nn \l_keythms_tcbthmbox_thickness_dim { 0.6pt }
1937 \dim_new:N \l_keythms_tcbthmbox_leftmargin_dim
1938 \dim_set:Nn \l_keythms_tcbthmbox_leftmargin_dim { 0.7\parindent } % use \parindent? thmbox does
1939 \dim_new:N \l_keythms_tcbthmbox_rightmargin_dim
1940 \dim_set:Nn \l_keythms_tcbthmbox_rightmargin_dim { Opt }
1941 \dim_new:N \l_keythms_tcbthmbox_hskip_dim
1942 \dim_set:Nn \l_keythms_tcbthmbox_hskip_dim { 0.2em }
1943 \dim_new:N \l_keythms_tcbthmbox_vskip_dim
1944 \dim_set:Nn \l_keythms_tcbthmbox_vskip_dim { 0.2em }
1945 \keys_define:nn { keytheorems/thm }
1946 {
1947     shaded .code:n =
1948     {
1949         \clist_clear:N \l__keythms_tcbshaded_keys_clist
1950         \keys_set:nn { keytheorems/thm/shaded } { ##1 }
1951         % FIX: surely a better way to do this
1952         \RequirePackage{tcolorbox}
1953         \pgfkeysifdefined{/tcb/keythms_tcbshaded_default/.@cmd} % even worth it?
1954         {}
1955         {
1956             \tcbset % wish I could do this outside of key but can't assume tcb loaded
1957             {
1958                 keythms_tcbshaded_default/.style=
1959                 {
1960                     sharp~corners = all,
1961                     boxrule = Opt,
1962                     left = Opt, right = Opt,
1963                     top = Opt, bottom = Opt,
1964                     parbox = false,
1965                 }
1966             }
1967         }
1968         \keys_set:ne { keytheorems/thm }
1969         {
1970             tcolorbox-no-titlebar =

```

```

1971         {
1972             keythms_tcbshaded_default,
1973             \l__keythms_tcbshaded_keys_clist
1974         }
1975     }
1976 },
1977 thmbox .code:n = % adapted from https://tex.stackexchange.com/a/236230/208544
1978 {
1979     \clist_clear:N \l__keythms_tcbthmbox_keys_clist
1980     % \bool_set_true:N \l__keythms_tcbthmbox_underline_bool
1981     \keys_set:nn { keytheorems/thm/thmbox } { ##1 }
1982     % FIX: surely a better way to do this
1983     \RequirePackage{tcolorbox}
1984     \tcbuselibrary{skins,breakable}
1985     \pgfkeysifdefined{/tcb/keythms_tcbthmbox_default/.@cmd} % even worth it?
1986     {}
1987     {
1988         \tcbset{
1989             keythms_tcbthmbox_default/.style={
1990                 enhanced,
1991                 breakable,
1992                 sharp~corners=all,
1993                 right=\l_keythms_tcbthmbox_hskip_dim,
1994                 left=\l_keythms_tcbthmbox_hskip_dim,
1995                 top=\l_keythms_tcbthmbox_vskip_dim,
1996                 bottom=\l_keythms_tcbthmbox_vskip_dim,
1997                 coltitle=black,
1998                 frame~engine=empty,
1999                 interior~titled~engine=empty,
2000                 interior~engine=empty,
2001                 extras~broken={
2002                     frame~engine=empty,
2003                     interior~titled~engine=empty,
2004                     interior~engine=empty
2005                 },
2006                 parbox=false,
2007                 % even though frame isn't drawn, makes spacing correct
2008                 boxrule=0.5\l_keythms_tcbthmbox_thickness_dim,
2009                 attach~boxed~title~to~top~left={
2010                     xshift=-\l_keythms_tcbthmbox_leftmargin_dim,
2011                 },
2012                 boxed~title~style={
2013                     empty,
2014                     size=minimal,
2015                     bottom=0.7ex,
2016                     top=0ex,
2017                     % ditto
2018                     bottomrule=0.5\l_keythms_tcbthmbox_thickness_dim,
2019                 },
2020                 left~skip=\l_keythms_tcbthmbox_leftmargin_dim,
2021                 right~skip=\l_keythms_tcbthmbox_rightmargin_dim,
2022                 overlay~unbroken={
2023                     \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2024                         (title.south-west)
2025                         --
2026                         (title.south-east);
2027                     \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2028                         (frame.north-west)

```

```

2029         |-
2030         ([xshift=10mm]frame.south~west);
2031     },
2032     overlay~first={
2033         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2034             (title.south~west)
2035             --
2036             (title.south~east);
2037         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2038             (frame.north~west)
2039             --
2040             (frame.south~west);
2041     },
2042     overlay~middle={
2043         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2044             (frame.north~west)
2045             --
2046             (frame.south~west);
2047     },
2048     overlay~last={
2049         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2050             (frame.north~west)
2051             |-
2052             ([xshift=10mm]frame.south~west);
2053     }
2054 },
2055 keythms_tcbthmbox_L/.style={
2056     overlay~unbroken={
2057         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2058             (title.south~west)
2059             --
2060             (title.south~east);
2061         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2062             (frame.north~west)
2063             |-
2064             (frame.south~east)
2065             -|
2066             (frame.north~east);
2067     },
2068     overlay~first={
2069         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2070             (title.south~west)
2071             --
2072             (title.south~east);
2073         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2074             (frame.north~west)
2075             --
2076             (frame.south~west);
2077         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2078             (frame.north~east)
2079             --
2080             (frame.south~east);
2081     },
2082     overlay~middle={
2083         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2084             (frame.north~west)
2085             --
2086             (frame.south~west);

```

```

2087         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2088             (frame.north~east)
2089             --
2090             (frame.south~east);
2091     },
2092     overlay~last={
2093         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2094             (frame.north~west)
2095             |-
2096             (frame.south~east)
2097             -|
2098             (frame.north~east);
2099     }
2100 },
2101 keythms_tcbthmbox_M/.style={},
2102 keythms_tcbthmbox_S/.style={ % first and middle same as M
2103     overlay~unbroken={
2104         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2105             (title.south~west)
2106             --
2107             (title.south~east);
2108         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2109             (frame.north~west)
2110             --
2111             (frame.south~west);
2112     },
2113     overlay~last={
2114         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2115             (frame.north~west)
2116             --
2117             (frame.south~west);
2118     }
2119 },
2120 }
2121 }
2122 \keys_set:ne { keytheorems/thm }
2123 {
2124     tcolorbox =
2125     {
2126         keythms_tcbthmbox_default,
2127         \l__keythms_tcbthmbox_keys_clist
2128     }
2129 }
2130 },
2131 thmbox .default:n = M,
2132 }
2133 }
2134
2135 \cs_new_protected:Npn \__keythms_storeall_code:
2136 {
2137     \cs_set_eq:NN \__keythms_withhooks_begin:nn \__keythms_grab_begin:nn
2138     \cs_set_eq:NN \__keythms_withhooks_begin:nnn \__keythms_grab_begin:nnn
2139     \cs_set_eq:NN \__keythms_withhooks_begin:nnV \__keythms_grab_begin:nnV
2140     \cs_set_eq:NN \__keythms_withhooks_end:n \__keythms_grab_end:n
2141 }
2142
2143 \ProcessKeyOptions[keytheorems]
2144

```



```

2145 \file_input_stop:
2146
2147 %% Another idea: only print "up-to-now" theorems, or by section
2148 %%           This is complicated. See etoc. Andacro (\acbarrier).
2149
2150 %% Another: use style key for multiple theorems, like
2151 %   \keytheoremset{style={<keys>}}
2152 %   \newkeytheorem{thm1}
2153 %   \newkeytheorem{thm2}...
2154 % Well maybe not. Because should these style keys also be applied to a called
2155 % \newkeytheoremstyle? Or only used for that? Question is: should user be able to style theorems
2156 % without an explicit call to \newkeytheorem{<thm>}[style=<style>]?
2157
2158 %% Another: link theorem to restated (see TeX.sx)
2159
2160 %% Ideas/Issues:
2161 % -- Fix equation, etc. numbering in restated theorems when numbered by
2162 %   chapter, section, etc. Or leave it up to user to add these counters
2163 %   with restate-counters?
2164 % ✓✓ (done) listhack
2165 % -- Proof hooks? Other proof customization? New proof-like envs? feature creep...
2166 % -✓ (partial) \newtheoremstyle overwrites existing styles. Should \newkeytheoremstyle check
2167 %   if style exists? Relevant for plain, remark, definition. Could provide
2168 %   \renewkeytheoremstyle. Further, if there is use for (re)defining theorems
2169 %   mid-document, could make cmds usable after preamble by removing package loading
2170 %   in keys
2171 %   Slightly more complicated than anticipated, need to deal with hooks
2172 % -- Currently numbered=unless-unique + parent is incompatible with restate, but this is
2173 %   true also with thmtools.
2174 % ✓✓ (fixed) Idea for qed, tcolorbox in style: in thm, just check if already set and adjust accordingly
2175 % ✓✓ (done) What about \zlabel and other "label" commands in restated theorem? Should
2176 %   there be an interface for disabling them?
2177 % -- unless-unique more general: https://tex.stackexchange.com/a/705572/208544
2178 % -- Rename "preheadhook" etc. to "prehead"?
2179 % -- \listofkeytheorems does not print restated theorems. Should an option be added
2180 %   to do this? No, right?
2181 % ✓✓ (done) Language support? At least for list of theorems title
2182 % ✓✓ (done) Interface for adding entries to list of theorems. In fact, should
2183 %   benchmark the "add to seq then write at end of file" approach vs.
2184 %   traditional \addcontentsline approach
2185 % -✓ (partial) "short name" key for theorems to replace thmtools'
2186 %   "name=[short name]name". Should we also support this syntax?
2187 %   Progress: key implemented but not yet compat with continues
2188 % -- And what about "restate=[options]foo" syntax? How useful is this?
2189 % ✓✓ (done) Should "continues(*)" theorems appear in list of theorems? Decide and add option to
2190 %   change default.
2191 % ✓✓ (done) Add "shaded" and "thmbox" keys that use tcolorbox under the hood.
2192 %   In thmtools-compatible or available always? Or as "library"?
2193 %   Currently thmbox has white background, want transparent but has issue:
2194 %   https://tex.stackexchange.com/a/706216/208544
2195 % ✓✓ (done) Should more hook operations be available in user commands, like labels and removing?
2196 %   Answer: no, I don't think so. \addtotheoremhook is for simple things.
2197 %   Programmers can use the usual hook interface with more verbose labels
2198 % ✓✓ (done) Document how to disable things like footnotes in restated theorems.
2199 % ✓✓ (done) Should indent be suppressed after tcolorbox theorems? It is for thmtools' shaded and th
2200 %   Just setting \tcbsset{after=\par\@endpetrue} doesn't work since there is code in between but
2201 %   \AddToHook{keytheorems/<env>/postfoot}[keythms_hook_keys]{\par\@endpetrue} seems to work
2202 %   Answer: I say no, since it's not suppressed after regular theorems.

```

```

2203 % -✓ (partial) break + tcolorbox-no-titlebar adds too much space if theorem starts with list
2204 %      listhack fixes this.
2205 % ✓✓ (done) rename package to "keytheorems"?
2206 % ✓✓ (done) should all code added to hooks have the "keytheorems" label as opposed to "."?
2207 % ✓✓ (fixed) seq approach doesn't work well with \includeonly
2208 % ✓✓ (done) chapterspacehack
2209 % -- Should there be a way to add content lines to \listofkeytheorems with print-body?
2210 %      Currently we disable code added with \addtotheoremcontents
2211 % ✓✓ (done) hyperref does not jump to correct location for tcolorbox theorems
2212 % -- use \MakeLinkTarget instead of dummy counter?
2213 % ✓✓ (done) should default theorem style be changed if ams class is loaded? Yes,
2214 %      and need general mechanism for setting up class defaults
2215 % ✓✓ need to clear .thlist file if no restate or list of
2216 % -- Beamer issues:
2217 %      - tcolorbox theorems not compatible with beamer
2218 %      - cannot give action spec to theorems
2219 % -- Idea: delay making hooks until begindocument to avoid using internal cmd
2220 % ✓✓ (done) fix acmart defaults
2221 % ✓✓ (done) use different dummy counters for unnumbered, continues, and restate
2222 % ✓✓ (done) seq for custom lists of theorems
2223 % ✓✓ make code more modular
2224 % -- option to restate without writing to file
2225 % ✓✓ (done) code with brackets fail in note key, e.g. \cite[bla]{ref}
2226 % ✓✓ (done) with tcolorbox theorems, spaceabove and spacebelow should always be set to Opt
2227 % -- no-auto-translate or something like that

```

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