theorem-keys package

version $0.0.1\alpha$

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Abstract

An expl3-implementation of a key-value interface to amsthm, implementing most of the functionality provided by thmtools. Full of bugs and incomplete. Don't use it for anything important!

> **Warning!** In addition to being a completely unreliable package, the documentation is just a skeleton! For full details look at the package code.

1 Load-time Options

overload (initially unset)

Redefines `\newtheorem` to internally use the theorem-keys machinery. The syntax remains the same.

thmtools-compat (initially unset)

For compatibility with thmtools syntax. Currently defines the `\declaretheoremstyle`, `\declaretheorem`, and `\listoftheorems` commands and the `restatable` environment.

store-all (initially unset)

Tells theorem-keys to grab the body of each theorem so it can later be printed with `\ListOfThms[print-body]`. Note that this means a theorem body *cannot* contain verbatim material.

2 Global Options

`\ThmKeysSet{⟨options⟩}`

restate-counters={⟨*comma-list of counters*⟩} (initially {equation})

The counters whose values are preserved when a theorem is restated.

continues-code=⟨*code with* #1⟩ (initially `continuing from p.\,\pageref{#1}`)

qed-symbol=⟨*symbol*⟩ (initially `\openbox`)

Redefines `\qedsymbol` to be ⟨*symbol*⟩.

3 Theorem Styles

`\NewThmStyle{⟨name⟩}{⟨options⟩}`

This is theorem-keys' version of thmtools' `\declaretheoremstyle[⟨options⟩]{⟨name⟩}`. Since it makes little sense to define a style with no keys, we've made the ⟨*options*⟩ argument mandatory.

3.1   Keys inherited from **thmtools**

The following keys have the same meaning and syntax as the corresponding thmtools keys.

spaceabove=⟨*length*⟩   (initially \topsep)

spacebelow=⟨*length*⟩   (initially \topsep)

bodyfont=⟨*font declarations*⟩   (initially \itshape)

headindent=⟨*length*⟩   (initially 0pt)

headfont=⟨*font declarations*⟩   (initially \bfseries)

headpunct=⟨*code*⟩   (initially {.})

postheadspace=⟨*length*⟩   (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=⟨*font declarations*⟩   (initially \fontseries\mddefault\upshape)

notebraces={⟨*left brace*⟩}{⟨*right brace*⟩}   (initially {(}{)})

headstyle=margin|swapnumber|⟨*code using* \NAME, \NUMBER, *and* \NOTE⟩
    Alias headstyle. Within ⟨*code*⟩, the commands \NAME, \NUMBER, and \NOTE correspond to the
    formatted parts of the theorem head.

3.2   Keys added by **theorem-keys**

inherit-style=⟨*style name*⟩   (initially unset)
    Inherit the keys of any style declared with \NewThmStyle[→P. 1]. Additionally, the three styles prede-
    fined by amsthm are possible values: plain, definition, and remark.

4   Declaring Theorems

\NewThm{⟨*env name*⟩}[⟨*options*⟩]
    Defines a theorem environment ⟨*env name*⟩ which itself takes a few options (see section 5). You can
    also declare multiple theorems at once by replacing ⟨*env name*⟩ with a comma-list of names, e.g.
    \NewThm{theorem,lemma,proposition}[⟨*options*⟩]

```
% preamble
\NewThm{mytheorem}[name=Some Name]

% document
\begin{mytheorem}[a note]
Some text
\end{mytheorem}

\begin{mytheorem}[name=heading,label=foo]
Some more text
\end{mytheorem}

\ref{foo}
```

Some Name 1 (a note). *Some text*

Some Name 2 (heading). *Some more text*

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4.1 Keys inherited from **thmtools**

name=⟨*display name*⟩   (initially title-cased ⟨*env name*⟩)

    Aliases title and heading.

numbered=true|false   (default true, initially true)

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

parent=⟨*counter*⟩   (initially unset)

    Aliases numberwithin and within.

sibling=⟨*counter*⟩   (initially unset)

    Aliases numberlike and sharenumber.

style=⟨*style name*⟩   (initially unset)

preheadhook=⟨*code*⟩   (initially unset)
postheadhook=⟨*code*⟩   (initially unset)
prefoothook=⟨*code*⟩   (initially unset)
postfoothook=⟨*code*⟩   (initially unset)

    Details in section 7.

refname=⟨*ref name*⟩ or {⟨*singular name*⟩,⟨*plural name*⟩}   (initially ⟨*display name*⟩)

    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=⟨*ref name*⟩ or {⟨*singular name*⟩,⟨*plural name*⟩}   (initially ⟨*display name*⟩)

    Same as refname but for \Autoref (not yet implemented!) and \Cref.

qed=⟨*symbol*⟩   (default \openbox, initially unset)

4.2 Keys added by **theorem-keys**

tcolorbox={⟨*tcolorbox options*⟩}   (initially unset)

5 Keys available to theorem environments

label=⟨*label name*⟩   (initially unset)

note=⟨*text*⟩   (initially unset)

    Alias name.

continues=⟨*label name*⟩   (initially unset)

store=⟨*csname*⟩   (initially unset)

    Alias restate. Defines a command \⟨*csname*⟩ that can be used to restate the theorem, including the body text, later in the document.

6 Listing Theorems

\ListOfThms[⟨*options*⟩]

\ThmKeysListSet{⟨*options*⟩}

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)

showall   (initially set)

title=⟨*text*⟩   (initially `List of Theorems`)

swapnumber=true|false   (initially `false`)

6.2 Keys added by **theorem-keys**

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

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

no-title   (initially unset)

print-body   (initially unset)

    Instead of listing the theorem headings, the theorems are restated with their body text.

7 Theorem Hooks

\AddToTheoremPreHeadHook[⟨*env name*⟩]{⟨*code*⟩}
\AddToTheoremPostHeadHook[⟨*env name*⟩]{⟨*code*⟩}
\AddToTheoremPreFootHook[⟨*env name*⟩]{⟨*code*⟩}
\AddToTheoremPostFootHook[⟨*env name*⟩]{⟨*code*⟩}

    As in thmtools, the order of hooks is as follows:

$$\boxed{\substack{\langle env\ name\rangle \\ \texttt{prehead}}} \Rightarrow \boxed{\substack{\text{generic} \\ \texttt{prehead}}} \Rightarrow \boxed{\texttt{\textbackslash begin\{}\langle env\ name\rangle\texttt{\}}} \Rightarrow \boxed{\substack{\langle env\ name\rangle \\ \texttt{posthead}}} \Rightarrow \boxed{\substack{\text{generic} \\ \texttt{posthead}}}$$

$$\Rightarrow \boxed{\langle theorem\ body\rangle} \Rightarrow$$

$$\boxed{\substack{\text{generic} \\ \texttt{prefoot}}} \Rightarrow \boxed{\substack{\langle env\ name\rangle \\ \texttt{prefoot}}} \Rightarrow \boxed{\texttt{\textbackslash end\{}\langle env\ name\rangle\texttt{\}}} \Rightarrow \boxed{\substack{\text{generic} \\ \texttt{postfoot}}} \Rightarrow \boxed{\substack{\langle env\ name\rangle \\ \texttt{postfoot}}}$$
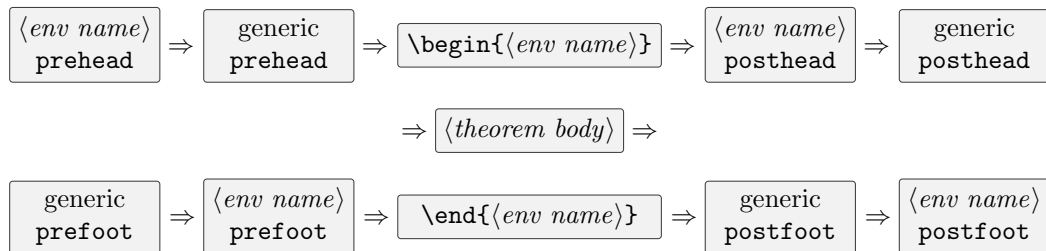
In thmtools, the `prefoot` and `postfoot` hooks always prepend code, i.e. the code

```
\addtotheorempostfoothook{A}
\addtotheorempostfoothook{B}
```

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

```
\AddToTheoremPostFootHook{A}
\AddToTheoremPostFootHook{B}
```

results in `AB` after the theorem. This is the behavior of the LaTeX kernel hooks that theorem-keys uses under the hood.

Right now, code added using the hook keys preheadhook^{→ P. 3}, 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…

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