The propbox package
Boxes with Properties[*]

Sean Allred[†]

Released 9999/12/31

This is some cool stuff. The basic idea is this: have a sequence of boxes that you can use (all with generated names using `\newsavebox`) and then have their properties stored as an additional token list of nearly the same name. Then, when it comes time to retrieve the boxes, just iterate through the sequence and pick some that satisfy a given filter.

1 Properties

1.1 Defining New Properties

`\DeclareBoxProperties`
Updated: 2013/08/11

`\DeclareBoxProperties {⟨`*`properties`*`⟩}`

Declares the set of box properties as a comma-separated list.

`\NewBoxProperty`
Updated: 2013/08/11

`\NewBoxProperty {⟨`*`property`*`⟩}`

Adds a *single* key to the property list.

`\RemoveBoxProperty`
Updated: 2013/08/11

`\RemoveBoxProperty {⟨`*`property`*`⟩}`

Removes a *single* key from the property list.

`\ClearBoxProperties`
Updated: 2013/08/11

`\ClearBoxProperties`

Removes *all* keys from the property list.

[*] This file describes v999, last revised 9999/12/31.

[†] E-mail: seallred@smcm.edu

2 Internal functions

2.1 Debugging

`\__propbox_debug_mode_bool`

Turns on/off debugging mode. This controls almost all log output, and will certainly clutter your log file if set. When set, propbox will show the contents of internal sequences and keys throughout the compile. It is probably hard to follow, so the usefulness of macros dependendent on this remains dubious.

`\propbox_debug_msg:n`

Updated: 2013/08/11

`\propbox_debug_msg:n {⟨message⟩}`

Types out a message to the console if debug-mode is on. This is often used to check the values of variables during development.

3 propbox implementation

```
⟨*initex | package⟩
```

```
⟨@@=propbox⟩
```

Our story begins with xparse[1] and expl3,[2] two fantastic packages that make the whole LaTeX3 world happy.

```
⟨*package⟩
\ProvidesExplPackage
  {\ExplFileName}{\ExplFileDate}{\ExplFileVersion}{\ExplFileDescription}
\__expl_package_check:
⟨/package⟩
```

3.1 Boxes

`\__propbox_boxes_seq`

(End definition for `\__propbox_boxes_seq`. This variable is documented on page **??***.)*

3.2 Properties

`\__propbox_properties_clist`

This list contains all of the properties that are used for boxes, along with their default values. Thus, it is a bona-fide l3keys specification. Since each property is *supposed* to be a rather simple identifier, a comma-separated list seemed appropriate to store this set.

```
\clist_new:c { propbox_properties_clist }
```

(End definition for `\__propbox_properties_clist`. This variable is documented on page **??***.)*

`\__propbox_property_parse`

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

[1] texdoc xparse

[2] texdoc interface3

\propbox_new_box:nn When creating a new box, care must be taken so that the new box and its properties are somehow associated with each other. This function does so by generating a name for the box (whose content is given as #1) and then using this generated name (say, \gn) to store the property list, #2, as a token list in \gn_properties. Thus, when retrieving the properties for a box, one only needs to append _properties to the control sequence to retrive that box's properties.

```
\cs_new_protected:Npn { \g_propbox_new_box } #1 #2
 {
```

Store the generated name into a local temporary token list. (It gets very tedious, not to mention inefficient, to type out all the time.)

```
  \tl_set:Nn \l_tmpa_tl { propbox_boxnames_\seq_count:N \propbox_boxes_seq }
```

Store the properties for this box in its own token list. This way, the keys can be set easily and simply to determine whether or not to select the box.

```
  \tl_new:cn { \l_tmpa_tl _properties } { #1 }
```

Create a new save box of the name \propbox_boxnames_N where N is the current number of items in the collection. ($N \in \{0\} \cup \mathbf{N}$.) The minipage environment is used here to force page-wise sequential output only; this package grew out of a question on the TeX Stack Exchange site, and this seemed appropriate at the time.

```
  \newsavebox { \use:c { \l_tmpa_tl } }
  \savebox { \use:c { \l_tmpa_tl } } {
    \begin{minipage}{\linewidth}
      #2
    \end{minipage}
  }
```

Put the handle for the box into the collection of boxes.

```
  \seq_push:Nv { \propbox_boxes_seq }
               { \use:c { \l_tmpa_tl } }

 }
```

(*End definition for* \propbox_new_box:nn. *This function is documented on page* **??**.)

3.3 Debugging Utilities

\__propbox_debug_mode_bool Create a toggle to turn on/off debug mode.

```
\bool_new:c { propbox_debug_mode_bool }
```

(*End definition for* \__propbox_debug_mode_bool. *This variable is documented on page* 2.)

\propbox_debug_msg:n If \propbox_debug_mode is set, then \typeout the argument, #1.

```
\cs_new:Npn \propbox_debug_msg:n #1 {
  \bool_if:NTF \__propbox_debug_mode_bool
               { \typeout{#1} }
               { } }
```

(*End definition for* \propbox_debug_msg:n. *This function is documented on page* 2.)

```
⟨/initex | package⟩
```