

The keyvaltable package*

Richard Grewe
r-g+tex@posteo.net

November 3, 2018

1 Introduction

The main goal of the `keyvaltable` package is to offer means for typesetting tables

1. easily and yet still looking rather nicely,
2. in a way that separates content from presentation, and
3. with re-usable layout for tables of the same type.

For this purpose, the package essentially builds on two concepts:

table types: A table type is identified by a table name, $\langle tname \rangle$, and has a list of columns as well as further properties such as the background colors of rows. Each column also has a name, $\langle cname \rangle$, as well as further properties such as the heading of the column and the alignment of the column's content.

key-value rows: A table row is specified by a list of key-value pairs, where the keys are column names and the corresponding values are the content of the cell in this row in the respective column.

The the display of the tables, the `keyvaltable` package builds on the packages `tabu`, `longtable`, and `booktabs`.

2 Usage

We start with a basic usage example. An explanation of the involved macros follows afterwards.

```
\NewKeyValTable{Recipe}{  
  amount:      align=r;  
  ingredient:   align=l;  
  step:        align=X[1];  
}  
\begin{KeyValTable}{Recipe}  
\Row{amount=150g, ingredient=ice cream,  
      step=put into bowl}  
\Row{amount= 50g, ingredient=cherries,  
      step=heat up and add to bowl}  
\end{KeyValTable}
```

amount	ingredient	step
150g	ice cream	put into bowl
50g	cherries	heat up and add to bowl

*This document corresponds to `keyvaltable` v0.3b, dated 2018/11/01. The package is available online at <http://www.ctan.org/pkg/keyvaltable> and <https://github.com/Ri-Ga/keyvaltable>.

The example code first defines a new table type, `Recipe`, along with the columns that belong to this type. There are three columns (`amount`, `ingredient`, and `step`), whose specifications are separated with semicolons. After the separating `:`, for each column, the macro configures the column alignment using the `align` key. The alignments `r` (right) and `l` (left) are the standard `tabular` alignments; the `X[1]` alignment is provided by the `tabu` package (see the documentation there).

After the definition of the table type, the example creates a table of the newly defined type. For this, the example uses the `KeyValTable` environment and the `\Row` macro, once for each row. The parameter `Recipe` of the `KeyValTable` identifies the type of the table. Most notably, each row can now be produced by a single macro in which the content of the individual cells can be specified by pairs such as `amount=150g`, which puts “150g” into the `amount` column of the respective row.

The example above already shows that producing a rather nice-looking table – including alternating row colors as well as horizontal rules – without further ado. How the `keyvaltable` package can be used in the general case and how its visual appearance can be customized is subject of the remainder of this section.

2.1 Table Type Definition

`\NewKeyValTable[options]{tname}{colspecs}`

Table types are defined via the `\NewKeyValTable` macro, where

- *tname* is the name of the table type,
- *colspecs* is a semicolon-separated list of individual column specifications, and
- *options*, if provided, specify table type options that override the default table options; they must then be a comma-separated list of *property*=*value* pairs; the list of table options can be found at the introduction of the `KeyValTable` environment on page 3.

Each column specification is of the form

colname: *property*=*value*, *property*=*value*, ...

In such a specification, *colname* represents the name of the column. The *property*=*value* pairs configure certain properties of the column. The *property* can be one of the following:

align: This property specifies the alignment of content in the column. The *value* can be set to any column alignment understood by the `tabu` environment of the `tabu` package. This particularly includes `l`, `c`, `r`, `p`, and `X`. By default (i.e., if this property is not set explicitly), this property is set to `l`.

default: This property specifies the default value of a cell in this column, i.e., in case that a `\Row` does not provide content for the cell. By default (i.e., if unset for a column), this is an empty string.

format: This property specifies a formatting macro for content of the cell. By default, the formatting macro takes the content as is but puts a `\strut` before and after the content (to yield a better vertical spacing).

head: This property specifies the content of the column's header row. The default value for this property is the name of the column.

hidden: This property specifies whether a table column shall be displayed or not. The $\langle value \rangle$ for this property can be `true` (to display the cell; the default) or `false` (to not display the cell).

2.2 Typesetting Tables

The first possibility for typesetting a table using the `keyvaltable` package, is via the `KeyValTable` environment, which the example at the beginning of this section shows. The second possibility is described in Section 2.3.

```
\begin{KeyValTable}[\langle options \rangle]{\langle tname \rangle}
\end{KeyValTable}
```

The `KeyValTable` environment creates a table of type $\langle tname \rangle$. The type $\langle tname \rangle$ must have been created using `\NewKeyValTable` before. The environment itself already produces a table with the columns specified for the table type, produces a header row and some horizontal lines, and sets up background colors of rows.

The $\langle options \rangle$ override default configurations, if provided, and must then be a comma-separated list of $\langle property \rangle = \langle value \rangle$ pairs. The following $\langle property \rangle$ names are available:

shape: This property specifies the table's shape. For $\langle value \rangle$, the package currently supports `multipage` (the default) and `onepage`. In case of `multipage`, the table may span multiple pages and on each page, the column header is repeated. In case of `onepage`, the table does not split into multiple pages.

showhead: This property specifies whether the head row shall be shown. The $\langle value \rangle$ must be a Boolean (i.e., `true` or `false`), where `true` (the default) specifies that the head row is shown and `false` specifies that the head row is not shown.

headbg: This property specifies the background color of the head row. The $\langle value \rangle$ must be a single color specification that is understood by the `xcolor` package.¹ The default is `black!14`.

rowbg: This property specifies the background colors of content rows. The format of the $\langle value \rangle$ for this property must be $\langle oddcolor \rangle . . \langle evencolor \rangle$.² The default is `white . . black!10`, i.e., alternatingly white and light very gray.

The following example shows the $\langle options \rangle$ in action.

¹The $\langle value \rangle$ is passed directly to the `\rowcolor` macro.

²The $\langle value \rangle$ is passed directly to `\taburowcolors` of the `tabu` package.

```

\NewKeyValTable[shape=onpage,
  showhead=false, headbg=blue!25,
  rowbg=blue!10..blue!15,
]{TabOptions}{
  opt: align=1, format=\texttt;
  val: align=1, format=\texttt;}
\begin{table}\centering
\begin{KeyValTable}{TabOptions}
\Row{opt=shape, val=onpage}
\Row{opt=showhead, val=false}
\Row{opt=headbg, val=blue!25}%invisible
\Row{opt=rowbg, val=blue!10..blue!15}
\end{KeyValTable}
\caption{table options demo}
\end{table}

```

shape	onpage
showhead	false
headbg	blue!25
rowbg	blue!10..blue!15

Table 2: table options demo

`\Row{<content>}`

A table row is produced by the `\Row` macro. The `<content>` must be a comma-separated list of `<cname>=<text>` pairs. The `<cname>` identifies a column that was registered for the table type `<tname>`. The `<text>` specifies the content of the cell in the respective column. Each column for which no `<text>` is provided in `<content>`, will result in a cell that is filled with the column's default value.

2.3 Tables of Collected Rows

As an alternative to producing a table within a single environment, the `keyvaltable` package offers a way to scatter individual rows throughout a document and display the full table later. This method can be useful when table rows are strongly connected to portions of text outside of the table. The method then allows specifying the rows together with the connected text rather than separately in the table environment. Table types for this method are defined via `\NewKeyValTable` as previously described.

`\AddKeyValRow{<tname>}{<content>}`

A table row is produced by the `\AddKeyValRow` macro. The `<tname>` identifies the table type and the `<content>` provides the content of the cells in the row. The format of the `<content>` is the same as for the `\Row` macro described in Section 2.2.

`\ShowKeyValTable[<options>]{<tname>}`

A table of all the rows defined via `\AddKeyValRow` can be displayed by the `\ShowKeyValTable` macro. The parameters have the same meaning as for the `KeyValTable` environment. This macro resets the list of rows for the specified table type.

`\begin{KeyValTableContent}{<tname>}`

`\end{KeyValTableContent}`

For simplifying the addition of rows, the `KeyValTableContent` environment can be used. In this environment, the `\Row` macro can be used just like in the `KeyValTable` environment. The only difference is that the `KeyValTableContent` environment does not cause the table to be displayed. For displaying the content

collected in `KeyValTableContent` environments, the `\ShowKeyValTable` macro can be used.

The following example demonstrates the use, based on the previously defined `Recipe` table type.

```
\AddKeyValRow{Recipe}{amount=3,
    ingredient=balls of snow,
    step=staple all 3 balls}
\begin{KeyValTableContent}{Recipe}
\Row{amount=1, ingredient=carrot,
    step=stick into top ball}
\Row{amount=2, ingredient=coffee beans,
    step=put diagonally above carrot}
\end{KeyValTableContent}
\ShowKeyValTable{Recipe}
```

amount	ingredient	step
3	balls of snow	staple all 3 balls
1	carrot	stick into top ball
2	coffee beans	put diagonally above carrot

2.4 Setting Global Defaults

`\kvtSet{<options>}`

The `keyvaltable` package allows changing the default values globally for the parameters of tables and columns. This can be done by using the `\kvtSet` macro.

```
\kvtSet{headbg=red,default=?,align=r}
\NewKeyValTable{Defaults}{x; y}
\begin{KeyValTable}{Defaults}
\Row{x=1}
\Row{y=4}
\end{KeyValTable}
```

x	y
1	?
?	4

Notice the use of the `\NewKeyValTable` in the example. Column properties, including the separating `:` can be omitted completely, making the definition of a table type very simple.

2.5 Row Numbering and Labeling

The mechanism of default column values enables a simple means for automatic row numbering. For this, one can use one of three row counters provided by the `keyvaltable` package: `kvtRow`, `kvtTypeRow`, and `kvtTotalRow`. The counters are explained after the following example, which demonstrates the use for the case of the `kvtRow` counter.

```
\NewKeyValTable{Numbered1}{
    line: align=r, head=\#,
    default=\thekvtRow;
    text: align=l, head=\textbf{Text}}
\begin{KeyValTable}{Numbered1}
\Row{text=First row}
\Row{text=Second row}
\end{KeyValTable}
```

#	Text
1	First row
2	Second row

- kvtRow** The `kvtRow` counter counts the row in the *current* table. The row number excludes the header row of the table. If the table spans multiple pages, the row number also excludes the repeated headings on subsequent pages.
- kvtTypeRow** The `kvtTypeRow` counter counts the rows in the current table and includes the number of rows of all previous tables of the same type.
- kvtTotalRow** The `kvtTotalRow` counter counts the rows in the current table and includes the number of rows of all previous tables produced using the `keyvaltable` package.

Row numbering can easily be combined with row labeling. The following example shows how the `format` column property can be used for this purpose.

```
\NewKeyValTable{Labeled}{
  label: align=r, head=\textbf{\#},
        format=\kvtLabel{kvtRow};
  text:  align=l, head=\textbf{Text}}
\begin{KeyValTable}{Labeled}
\Row{text=First row, label=first}
\Row{text=After row \ref{first}}
\end{KeyValTable}
```

#	Text
1	First row
2	After row 1

`\kvtLabel[labelopts]{counter}{label}`

The `\kvtLabel` macro shows the current value of the *counter* – in particular `kvtRow`, `kvtTypeRow`, and `kvtTotalRow` – and sets the *label* to the value of *counter*. When using the macro with the `format` property, only the first argument (*counter*) must be provided, as the above example shows. The second argument (*label*) is provided by the respective cell content.

The `\kvtLabel` macro should work well with packages that change the referencing, like `cleveref` or `varioref`. When using a package that add an optional argument to the `\label` command (like `cleveref` does), the *labelopts* can be used to pass an optional argument to `\label`. This feature is demonstrated in section 3.1.

3 Use with Other Packages

3.1 Named References

The `\kvtLabel` feature of the `keyvaltable` package can be used together with named references, as provided by the `cleveref` package. A name to a row label can be given by using the optional first argument to the `\kvtLabel` formatting macro and specifying the name to use using `\crefname`. The following example uses “row” for the optional argument and “line” for the displayed name of the reference.

```
\usepackage{cleveref}
\crefname{row}{line}{lines}
\NewKeyValTable{NamedRef}{
  label: align=r, head=\textbf{Line},
        format=\kvtLabel[row]{kvtRow};
  text:  align=l, head=\textbf{Text}}
\begin{KeyValTable}{NamedRef}
\Row{text=First row, label=one}
\Row{text=After \cref{one}}
\end{KeyValTable}
```

Line	Text
1	First row
2	After line 1

3.2 Computational Cells

The mechanism of cell formatting macros enables a simple means for automatically computing formulas contained in a column. This can be done, for instance using the `xint` package and defining a custom format macro (here `\Math`) that takes over the computation.

```
\usepackage{xintexpr}
\newcommand\Math[1]{%
  \xinttheexpr trunc(#1, 1)\relax}
\NewKeyValTable{Calculating}{
  type; value: align=r,format=\Math}
\begin{KeyValTable}{Calculating}
\Row{type=simple, value=10+5.5}
\Row{type=advanced, value=0.2*(9+2^8)}
\end{KeyValTable}
```

type	value
simple	15.5
advanced	53.0

3.3 Cell Formatting

The `keyvaltable` package can be used together with the `makecell` package in at least two ways:

1. formatting header cells using the **head** property of columns;
2. formatting content cells using the **format** property of columns.

The following example gives an impression.

```
\usepackage{makecell}
\renewcommand\theadfont{\bfseries}
\renewcommand\theadalign{lt}
\NewKeyValTable{Header}{
  first: head=\thead{short};
  second: head=\thead{two\ lines};}
\begin{KeyValTable}{Header}
\Row{first=just a, second=test}
\end{KeyValTable}
```

short	two lines
just a	test

4 Related Packages

I'm not aware of any \LaTeX packages that pursue similar goals or provide similar functionality. The following \LaTeX packages provide loosely related functionalities to the `keyvaltable` package.

ctable: This package focuses on typesetting tables with captions and notes. With this package, the specification of table content is quite close to normal `tabular` environments, except that the package's table creation is done via a macro, `\ctable`.

easytable: This package provides an environment `TAB` which simplifies the creation of tables with particular horizontal and vertical cell alignments, rules around cells, and cell width distributions. In that sense, the package aims at simpler table creation, like the `keyvaltable`. However, the package does not pursue separation of content from presentation or re-use of table layouts.

tabularkv: Despite the similarity in the name, this package pursues a different purpose. Namely, this package provides means for specifying table options such as width and height through an optional key-value argument to the **tabularkv** environment. This package does not use a key-value like specification for the content of tables.

5 Future Work

- configurable default heading format
- improved row coloring that makes sure that the alternation re-starts on continued pages of a table that spans several pages

6 Implementation

We use `etoolbox` for some convenience macros that make the code more easily maintainable and use `xkeyval` for options in key–value form.

```
1 \RequirePackage{etoolbox}
2 \RequirePackage{xkeyval}
```

We use `tabu` for creating the tables and `longtable` for tables that can span multiple pages (via `longtabu`). We use `booktabs` for nice horizontal lines and `xcolor` for row coloring

```
3 \RequirePackage[table]{xcolor}
4 \RequirePackage{booktabs}
5 \RequirePackage{longtable,tabu}
```

6.1 Setting Defaults

`\kvtSet` The `\kvtSet{<options>}` set the default options, which apply to all tables typeset with the package.

```
6 \newcommand\kvtSet[1]{\bgroup
7   \def\kvt@presetqueue{\egroup}
8   \setkeys[kvt]{defaults}{#1}{}%
9   \kvt@presetqueue}
```

`\kvt@lazypreset` The `\kvt@lazypreset{<family>}{<head keys>}` macro collects a request collects a request for pre-setting `<head keys>` in family key `<family>`. Using this macro, one can avoid causing problems with using `xkeyval`’s `\presetkeys` inside the `<function>` defined for a key (e.g., via `\define@key`). The collected requests can be performed by expanding the `\kvt@presetqueue` macro.

```
10 \newcommand\kvt@lazypreset[2]{%
11   \appto\kvt@presetqueue{\presetkeys[kvt]{#1}{#2}{}}}
```

`\mkv@dossvlist` The `\mkv@dossvlist{<list>}` macro parses a semicolon-separated list and runs `\do{<item>}` for every element of the list.

```
12 \DeclareListParser{\mkv@dossvlist}{;}
```

`\kvt@addtableprop` The `\kvt@addtableprop{<name>}{<default>}` macro adds a new table option, named `<name>` and with default value `<default>`.

```
13 \newcommand\kvt@addtableprop[2]{%
14   \define@key[kvt]{defaults}{#1}{%
15     \kvt@lazypreset{Table}{#1=#1}}%
16   \presetkeys[kvt]{defaults}{#1=#2}{}%
17   \define@cmdkey[kvt]{Table}{#1}{}%
18   \presetkeys[kvt]{Table}{#1=#2}{}}
```

`\kvt@addchoicetableprop` The `\kvt@addchoicetableprop{<name>}{<default>}{<choice>}` macro adds a new table option, named `<name>` and with default value `<default>` and possible values from the comma-separated list provided by `<choice>`.

```
19 \newcommand\kvt@addchoicetableprop[3]{%
```

```

20 \define@choicekey[kvt]{defaults}{#1}{#3}{%
21   \kvt@lazypreset{Table}{#1=##1}}%
22 \presetkeys[kvt]{defaults}{#1=#2}{}%
23 \define@choicekey[kvt]{Table}{#1}{#3}{%
24   {\csdef{cmdkvt@Table@#1}{##1}}%
25 \presetkeys[kvt]{Table}{#1=#2}{}}

```

`\kvt@addbooltableprop` The `\kvt@addbooltableprop{<name>}{<default>}` macro adds a new table option, named `<name>` and with default value `<default>` and possible values being booleans (`true`, `false`).

```

26 \newcommand\kvt@addbooltableprop[2]{%
27   \define@boolkey[kvt]{defaults}{#1}{%
28     \kvt@lazypreset{Table}{#1=##1}}%
29   \presetkeys[kvt]{defaults}{#1=#2}{}%
30   \define@boolkey[kvt]{Table}{#1}{%
31     {\csdef{cmdkvt@Table@#1}{##1}}%
32   \presetkeys[kvt]{Table}{#1=#2}{}}

```

`\kvt@addcolumnprop` The `\kvt@addcolumnprop{<name>}{<default>}` macro adds a new column option, named `<name>` and with default value `<default>`.

```

33 \newcommand\kvt@addcolumnprop[2]{%

```

The following makes the `<name>` available as an option for `\kvtSet` for setting a global default value to this column option.

```

34 \define@key[kvt]{defaults}{#1}{%
35   \kvt@lazypreset{Column}{#1=##1}}%
36 \presetkeys[kvt]{defaults}{#1=#2}{}%

```

The following makes the `<name>` available as an option for the `<colspecs>` of `\NewKeyValTable` for setting a default value to the particular column.

```

37 \define@key[kvt]{Column}{#1}{%
38   \csdef{kvt@col@#1@kvt@@column}{##1}}%
39 \presetkeys[kvt]{Column}{#1=#2}{}%
40 }

```

`\kvt@addchoicecolumnprop` The `\kvt@addchoicecolumnprop{<name>}{<default>}{<choice>}` macro adds a new column option, named `<name>` and with default value `<default>` and possible values from the comma-separated list provided by `<choice>`.

```

41 \newcommand\kvt@addchoicecolumnprop[3]{%

```

The following makes the `<name>` available as an option for `\kvtSet` for setting a global default value to this column option.

```

42 \define@choicekey[kvt]{defaults}{#1}{#3}{%
43   \kvt@lazypreset{Column}{#1=##1}}%
44 \presetkeys[kvt]{defaults}{#1=#2}{}%

```

The following makes the `<name>` available as an option for the `<colspecs>` of `\NewKeyValTable` for setting a default value to the particular column.

```

45 \define@choicekey[kvt]{Column}{#1}{#3}{%
46   {\csdef{kvt@col@#1@kvt@@column}{##1}}%

```

```

47 \presetkeys[kvt]{Column}{#1=#2}{}%
48 }

```

The following are the known column properties and their defaults as well as the known table properties and their defaults.

```

49 \kvt@addtableprop{rowbg}{white..black!10}
50 \kvt@addtableprop{headbg}{black!14}
51 \kvt@addbooltableprop{showhead}{true}
52 \kvt@addchoicetableprop{shape}{multipage}{multipage, onepage}
53 \kvt@addcolumnprop{default}{}
54 \kvt@addcolumnprop{format}{\kvt@struttedcell}
55 \kvt@addcolumnprop{align}{l}
56 \kvt@addcolumnprop{head}{}
57 \kvt@addchoicecolumnprop{hidden}{false}{false, true}
58 \kvtSet{}

```

`\kvt@struttedcell` The `\kvt@struttedcell{<arg>}` macro prefixes and suffixes the argument `<arg>` with a `\strut`. When used for formatting cell content, this makes sure that there is some vertical space between the content of a cell and the top and bottom of the row.

```

59 \newcommand\kvt@struttedcell[1]{\strut #1\ifhmode\expandafter\strut\fi}

```

6.2 Declaring Key-Value Tables

`\NewKeyValTable` The `\NewKeyValTable[<options>]{<tname>}{<colspecs>}` declares a new key-value table type, identified by the given `<tname>`. The columns of the table type are specified by `<colspecs>`. The optional `<options>`, if given, override the default table options for tables of type `<tname>`.

```

60 \newcommand\NewKeyValTable[3][]{%

```

First initialize the “variables”.

```

61 \csdef{kvt@options@#2}{#1}%
62 \csdef{kvt@headings@#2}{}%
63 \csdef{kvt@alignments@#2}{}%
64 \csdef{kvt@colkeys@#2}{}%
65 \csdef{kvt@rowcount@#2}{1}%
66 \csdef{kvt@rows@#2}{}%
67 \listadd\kvt@alltables{#2}%

```

Now parse `<colspecs>`, a semicolon-separated list of individual column specifications, and add the columns to the table. Each `\do{<colspec>}` takes the specification for a single column.

```

68 \def\do##1{%
69 \kvt@parsecolspec{#2}##1::\@undefined}%
70 \mkv@dossvlist{#3}%
71 }

```

The `\kvt@parsecolspec{<tname>}{<cname>}{<config>}{<empty>}\@undefined` takes a configuration `<config>` for a column `<cname>` in table `<tname>` and adds the column with the configuration to the table.

```

72 \def\kvt@parsecolspec#1#2:#3:#4\@undefined{%
73   \def\kvt@column{#1@#2}%
74   \setkeys[kvt]{Column}{#3}%

```

The following stores the column's properties. The column is only added if the hidden option is not set to true.

```

75   \ifcsstring{kvt@col@hidden@#1@#2}{true}{}{%
76     \cseappto{kvt@alignments@#1}{\csexpandonce{kvt@col@align@#1@#2}}%
77     \ifcsvoid{kvt@headings@#1}{}{\csappto{kvt@headings@#1}{&}}%
78     \ifcsstring{kvt@col@head@#1@#2}{}%
79       {\cseappto{kvt@headings@#1}{#2}}%
80       {\cseappto{kvt@headings@#1}{\csexpandonce{kvt@col@head@#1@#2}}}%
81     \listcsadd{kvt@colkeys@#1}{#2}%
82   }%

```

The following creates the column key that can be used by the row macros to set the content of the column's content in that row.

```

83   \define@cmdkey[KeyValTable]{#1}{#2}[]{}%
84   \presetkeys[KeyValTable]{#1}{#2}{}%
85 }

```

\kvt@alltables The `\kvt@alltables` is an etoolbox list containing the names of all tables declared by `\NewKeyValTable`.

```

86 \newcommand\kvt@alltables{}

```

6.3 Row Numbering and Labeling

The following counters simplify row numbering in key-value tables. One can use a table-local counter (`kvtRow`), a table-type local counter (`kvtTypeRow`), and a global counter (`kvtTotalRow`).

kvtRow The `kvtRow` counter can be used by cells to get the current row number. This row number (in contrast to `taburow`) does not count table headers. That is, `kvtRow` provides the current *content* row number, even in tables that are spread over multiple pages.

```

87 \newcounter{kvtRow}

```

kvtTypeRow The `kvtTypeRow` counter can be used by cells to get the current row number, including all previous rows of tables of the same type. This counter works together with the `\kvt@rowcount@<aname>` macro, which keeps track of the individual row counts of the `<aname>` type.

```

88 \newcounter{kvtTypeRow}

```

kvtTotalRow The `kvtTotalRow` counter can be used by cells to get the current row number, including all previous `KeyValTable` tables.

```

89 \newcounter{kvtTotalRow}
90 \setcounter{kvtTotalRow}{1}

```

`\kvtLabel` The `\kvtLabel[<labelopts>]{<counter>}{<label>}` macro sets a label, named *<label>*, for the current value of the L^AT_EX counter named *<counter>*.

```
91 \newcommand\kvtLabel[3][]{%
```

The following imitates a `\refstepcounter` in the sense of setting the current label, but it does not touch the *<counter>* (in case someone added some custom hooks to them).

```
92 \setcounter{kvt@LabelCtr}{\csname the#2\endcsname}%
93 \addtocounter{kvt@LabelCtr}{-1}%
94 \refstepcounter{kvt@LabelCtr}%
```

Next, define the *<label>* (if provided) and show the value of *<counter>*.

```
95 \ifstrempy{#3}{}{%
96 \ifstrempy{#1}{\label{#3}}{\label{#1}{#3}}}%
97 \csuse{the#2}}
```

`kvt@LabelCtr` The `kvt@LabelCtr` counter is an auxiliary counter for setting labels, used by `\kvtLabel`.

```
98 \newcounter{kvt@LabelCtr}
```

6.4 Key-Value Table Content

`KeyValTable` The `KeyValTable[<options>]{<tname>}` environment encloses a new table whose type is identified by the given *<tname>*. Table options can be overridden by providing *<options>*.

```
99 \newenvironment{KeyValTable}[2][]{%
100 \bgroup%
101 \def\Row##1{\kvt@AddKeyValRow{#2}{##1}\kvt@@row\}%
102 \kvt@SetOptions{#2}{#1}%
103 \csuse{kvt@StartTable@\cmdkvt@Table@shape}{#2}%
104 }{%
105 \csuse{kvt@EndTable@\cmdkvt@Table@shape}%
106 \egroup}
```

The following saves the row counter value outside the table environment but still in the then-local scope.

```
107 \AfterEndEnvironment{KeyValTable}{%
108 \csdef{kvt@rowcount@\kvt@@recenttable}{\the kvtTypeRow}}
```

`\kvt@SetOptions` The `\kvt@SetOptions{<tname>}{<options>}` set the specific table options in the current environment, based on the options for table type *<tname>* and the specific *<options>*.

```
109 \newcommand\kvt@SetOptions[2]{%
110 \bgroup\edef\kvt@@do{\egroup\noexpand%
111 \setkeys[kvt]{Table}%
112 {\csexpandonce{kvt@options@#1},\unexpanded{#2}}}%
113 }\kvt@@do}
```

`\kvt@StartTable@onepage` The `\kvt@StartTable@onepage{⟨tname⟩}` begins the table environment for a KeyValTable of shape `onepage`, which includes displaying the head row, and setting the row counters. The `\kvt@StartTable@multipage{⟨tname⟩}` does the same for a table environment of shape `multipage`. These macros internally use `\kvt@StartTabu{⟨env⟩}{⟨tname⟩}` for beginning a table environment of the `tabu` package. The `⟨env⟩` specifies the concrete environment, either `tabu` or `longtabu`.

```

114 \newcommand\kvt@StartTable@onepage[1]{%
115   \kvt@StartTabu{tabu}{#1}}
116 \newcommand\kvt@StartTable@multipage[1]{%
117   \kvt@StartTabu{longtabu}{#1}}
118 \newcommand\kvt@StartTabu[2]{%

```

The `\kvt@@recenttable` allows the `\AfterEndEnvironment` hook for KeyValTable to access the most recent table type.

```

119   \gdef\kvt@@recenttable{#2}%
120   \bgroup\edef\kvt@@do{\egroup
121     \noexpand\begin{#1}{\csuse{kvt@alignments@#2}}%
122     \noexpand\toprule
123     \ifbool{kvt@Table@showhead}{%
124       \noexpand\rowcolor{\cmdkvt@Table@headbg}%
125       \unexpanded{\csuse{kvt@headings@#2}\\midrule}}{ }%
126     \noexpand\taburowcolors 2{\cmdkvt@Table@rowbg}%
127   }\kvt@@do%
128   \iftabu@long\expandafter\endhead\fi
129   \setcounter{kvtRow}{1}%
130   \setcounter{kvtTypeRow}{\csuse{kvt@rowcount@#2}}%
131   \everyrow{%
132     \addtocounter{kvtRow}{1}%
133     \addtocounter{kvtTypeRow}{1}%
134     \addtocounter{kvtTotalRow}{1}%
135   }%
136 }

```

`\kvt@EndTable@onepage` The `\kvt@EndTable@onepage` and `\kvt@EndTable@multipage` macros end a table environment of the `onepage` or, respectively, `multipage` shape.

```

137 \newcommand\kvt@EndTable@onepage{%
138   \bottomrule%
139   \end{tabu}}
140 \newcommand\kvt@EndTable@multipage{%
141   \bottomrule%
142   \end{longtabu}}

```

`\kvt@AddKeyValRow` The `\kvt@AddKeyValRow{⟨tname⟩}{⟨content⟩}` adds a new row to the current table of type `⟨tname⟩`. The `⟨content⟩` is a key-value list that specifies the content of the individual cells in the row. The macro assumes that the current content of the table is stored in `\kvt@row` and modifies this macro by appending the additional row.

```

143 \newcommand\kvt@AddKeyValRow[2]{%
144   \setkeys[KeyValTable]{#1}{#2}%

```

The following loop uses `\do{<cname>}` to append the content of all columns (in the given format and using the given default value), where each column value is in `\cmdKeyValTable@<tname>@<cname>`. Note that currently the default value is formatted using the given format macro – a design decision.

```

145 \def\do##1{%
146   \ifdefined\kvt@row{\appto\kvt@row{&}}%
147   \eappto\kvt@row{%
148     \csexpandonce{\kvt@col@format@#1@##1}{%
149       \ifcsvoid{\cmdKeyValTable@#1@##1}%
150       {\csexpandonce{\kvt@col@default@#1@##1}}%
151       {\csexpandonce{\cmdKeyValTable@#1@##1}}}%
152   }%
153 } \dolistcsloop{\kvt@colkeys@#1}%
154 }
```

6.5 Collecting Key-Value Table Content

\ShowKeyValTable The `\ShowKeyValTable[<options>]{<tname>}` macro shows a table of type `<tname>` with given `<options>`. The rows must have been collected using `\Row` in `KeyValTableContent` environments or using `\AddKeyValRow`.

```

155 \newcommand\ShowKeyValTable[2][]{%
156   \begin{KeyValTable}[#1]{#2}%
157   \csuse{\kvt@rows@#2}%
158   \end{KeyValTable}%
159   \csdef{\kvt@rows@#2}{}}
```

\AddKeyValRow The `\AddKeyValRow{<tname>}{<content>}` adds a row with a given `<content>` to the existing content for the next table of type `<tname>`. That is displayed with `\ShowKeyValTable`. The `<content>`, like with `\kvt@AddKeyValRow`, is supposed to be a key-value list specifying the content of the cells in the row.

```

160 \newcommand\AddKeyValRow[2]{%
161   \bgroup%
162   \kvt@AddKeyValRow{#1}{#2}%
163   \csxappto{\kvt@rows@#1}{\expandonce{\kvt@row}\noexpand\\}%
164   \egroup}
```

KeyValTableContent The `KeyValTableContent{<tname>}` environment acts as a container in which rows can be specified without automatically being displayed. In this environment, rows can be specified via the `\Row{<content>}` macro, which is supposedly shorter than using `\AddKeyValRow<tname>{<content>}`.

```

165 \newenvironment{KeyValTableContent}[1]{%
166   \def\Row{\AddKeyValRow{#1}}}%

```

Change History

v0.1		v0.3
General: Initial version	1	\kvt@StartTabu: Added <code>showhead</code> option
v0.2		\kvt@struttedcell: Fix for cells with vertical material
\NewKeyValTable: Added table-type options	11	\kvtLabel: Robustified for use with, e.g., <code>cleveref</code>
\kvtLabel: Added macro for row labeling	13	v0.3b
General: Added “shape” table option	11	General: Package author’s name change
		1

Index

Symbols

\@undefined 69, 72
 \\ 101, 125, 163

A

\AddKeyValRow 160, 166
 \addtocounter 93, 132, 133, 134
 \AfterEndEnvironment 107
 \appto 11, 146

B

\begin 121, 156
 \bgroup 6, 100, 110, 120, 161
 \bottomrule 138, 141

C

\cmdkvt@Table@headbg 124
 \cmdkvt@Table@rowbg 126
 \cmdkvt@Table@shape 103, 105
 \csappto 77
 \csdef 24, 31, 38, 46, 61, 62, 63, 64, 65, 66, 108, 159
 \cseappto 76, 79, 80
 \csexpandonce 76, 80, 112, 148, 150, 151
 \csname 92
 \csuse 97, 103, 105, 121, 125, 130, 157
 \csxappto 163

D

\DeclareListParser 12

\define@boolkey 27, 30
 \define@choicekey 20, 23, 42, 45
 \define@cmdkey 17, 83
 \define@key 14, 34, 37
 \do 68, 145
 \dolistcsloop 153

E

\eappto 147
 \egroup 7, 106, 110, 120, 164
 \end 139, 142, 158
 \endcsname 92
 \endhead 128
 environments:
 KeyValTable 99
 KeyValTableContent 165
 \everyrow 131
 \expandafter 59, 128
 \expandonce 163

F

\fi 59, 128

I

\ifbool 123
 \ifcsstring 75, 78
 \ifcsvoid 77, 149
 \ifdefvoid 146
 \ifhmode 59
 \ifstrepty 95, 96
 \iftabu@long 128

K	
KeyValTable (environment) ..	99
KeyValTableContent (environment)	165
\kvt@column	38 , 46 , 73
\kvt@do	110 , 113 , 120 , 127
\kvt@presetqueue	7 , 9 , 11
\kvt@recenttable	108 , 119
\kvt@row	101 , 146 , 147 , 163
\kvt@addbooltableprop ..	26 , 51
\kvt@addchoicecolumnprop	41 , 57
\kvt@addchoicetableprop	19 , 52
\kvt@addcolumnprop .	33 , 53 , 54 , 55 , 56
\kvt@AddKeyValRow	101 , 143 , 162
\kvt@addtableprop ...	13 , 49 , 50
\kvt@alltables	67 , 86
\kvt@EndTable@multipage ..	137
\kvt@EndTable@onepage	137
\kvt@LabelCtr	98
\kvt@lazypreset .	10 , 15 , 21 , 28 , 35 , 43
\kvt@parsecolspec	69 , 72
\kvt@SetOptions	102 , 109
\kvt@StartTable@multipage	114
\kvt@StartTable@onepage ..	114
\kvt@StartTabu	114
\kvt@struttedcell	54 , 59
\kvtLabel	91
\kvtRow	87
\kvtSet	6 , 58
\kvtTotalRow	89
\kvtTypeRow	88
L	
\label	96
M	
\listadd	67
\listcsadd	81
N	
\newcounter	87 , 88 , 89 , 98
\NewKeyValTable	60
\noexpand	110 , 121 , 122 , 124 , 126 , 163
P	
\presetkeys	11 , 16 , 18 , 22 , 25 , 29 , 32 , 36 , 39 , 44 , 47 , 84
R	
\refstepcounter	94
\RequirePackage ...	1 , 2 , 3 , 4 , 5
\Row	101 , 166
\rowcolor	124
S	
\setcounter ...	90 , 92 , 129 , 130
\setkeys	8 , 74 , 111 , 144
\ShowKeyValTable	155
\strut	59
T	
\taburowcolors	126
\thekvtTypeRow	108
\toprule	122
U	
\unexpanded	112 , 125