

The `kvsetkeys` package

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2006/10/19 v1.1

Abstract

Package `kvsetkeys` provides `\kvsetkeys`, a variant of package `keyval`'s `\setkeys`. It allows to specify a handler that deals with unknown options. Active commas and equal signs may be used (e.g. see `babel`'s shorthands) and only one level of curly braces is removed from the values.

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1 Documentation

`\kvsetkeys` can be used as replacement for `keyval`'s `\setkeys`. Also it uses the same syntax. Before I describe `\kvsetkeys` in more detail, first I want to explain, how this package deals with key value lists. For the package also provides low level interfaces that can be used by package authors.

1.1 Normalizing key value lists

`\kv@normalize {⟨key value list⟩}`

Specifying key value lists, the user usually wants to have nice formatted source code, e.g.:

```
\hypersetup{
  pdftitle    = {...},
  pdfsubject  = {...},
  pdfauthor   = {...},
  pdfkeywords = {...},
  ...
}
```

Thus there can be spaces around keys, around = or around the value. Also empty entries are possible by too many commas. Therefore these spaces and empty entries are silently removed by package `keyval` and this package. Whereas the contents of the value can be protected by curly braces, especially if spaces or commas are used inside, a key name must not use spaces or other syntax characters.

`\kv@normalize` takes a key value list and performs the cleanup:

- Spaces are removed.
- Syntax characters (comma and equal sign) that are active are replaced by the same characters with standard catcode. (Example: `babel`'s language option `turkish` uses the equal sign as active shorthand character.)

The result is stored in `\kv@list`, e.g.:

```
\kv@list → ,pdftitle={},pdfsubject={},...,
```

Empty entries are removed later. In fact it adds a comma at the begin and end to protect the last value and an easier implementation.

1.2 Parsing key value lists

`\kv@parse {⟨key value list⟩} {⟨processor⟩}`

It is easier to parse a normalized list, thus `\kv@parse` normalizes the list and calls `\kv@parse@normalized`.

`\kv@parse@normalized {⟨key value list⟩} {⟨processor⟩}`

Now the key value list is split into single key value pairs. For further processing the key and value are given as arguments for the `⟨processor⟩`:

```
⟨processor⟩ {⟨key⟩} {⟨value⟩}
```

Also key and value are stored in macro names:

- `\kv@key` stores the key.
- `\kv@value` stores the value or if the value was not specified it has the meaning `\relax`.

The behaviour in pseudo code:

```
foreach (⟨key⟩, ⟨value⟩) in (⟨key value list⟩)
  \kv@key := ⟨key⟩
  \kv@value := ⟨value⟩
  ⟨processor⟩ {⟨key⟩} {⟨value⟩}
```

1.3 Processing key value pairs

`\kv@processor@default {⟨family⟩} {⟨key⟩} {⟨value⟩}`

There are many possibilities to process key value pairs. `\kv@processor@default` is the processor used in `\kvsetkeys`. It reimplements and extends the behaviour of `keyval`'s `\setkeys`. In case of unknown keys `\setkeys` raise an error. This processor, however, calls a handler instead, if it is provided by the family.

The behaviour in pseudo code:

```

if ⟨key⟩ exists
  call the keyval code of ⟨key⟩
else
  if ⟨handler⟩ for ⟨family⟩ exists
    ⟨handler⟩ {⟨key⟩} {⟨value⟩}
  else
    raise unknown key error
fi
fi

```

1.4 Default family handler

`\kv@processor@default` calls `⟨handler⟩`, the default handler for the family, if the key does not exist in the family. The handler is called with two arguments, the key and the value. It can be defined with `\kv@set@family@handler`:

`\kv@set@family@handler {⟨family⟩} {⟨handler definition⟩}`

This sets the default family handler for the keyval family `⟨family⟩`. Inside `⟨handler definition⟩` #1 stands for the key and #2 is the value. Also `\kv@key` and `\kv@value` can be used for the key and the value. If the value is not given, `\kv@value` has the meaning `\relax`.

1.5 Do it all

`\kvsetkeys {⟨family⟩} {⟨key value list⟩}`

The work is done by the previous commands. `\kvsetkeys` just calls them:

```
\kv@parse {⟨key value list⟩} {\kv@processor@default {⟨family⟩}}
```

Thus you can replace `\setkeys` of package `keyval` by the key value parser of this package:

```

\renewcommand*{\setkeys}{\kvsetkeys}
or
\let\setkeys\kvsetkeys

```

2 Example

The following example prints a short piece of HTML code using the tabbing environment for indenting purpose and a key value syntax for specifying the attributes of an HTML tag. The example illustrates the use of a default family handler.

```

1 ⟨*example⟩
2 \documentclass{article}
3 \usepackage[T1]{fontenc}
4 \usepackage{kvsetkeys}

```

```

5 \usepackage{keyval}
6
7 \makeatletter
8 \newcommand*{\tag}[2] [] {%
9   % #1: attributes
10  % #2: tag name
11  \begingroup
12    \toks@={}%
13    \let\@endslash\@empty
14    \kvsetkeys{tag}{#1}%
15    \texttt{%
16      \textless #2\the\toks@\@endslash\textgreater
17    }%
18  \endgroup
19 }
20 \kv@set@family@handler{tag}{%
21   % #1: key
22   % #2: value
23   \toks@\expandafter{%
24     \the\toks@
25     \space
26     #1=\string"#2\string"%
27   }%
28 }
29 \define@key{tag}{/} [] {%
30   \def\@endslash{/}%
31 }
32 \makeatother
33
34 \begin{document}
35 \begin{tabbing}
36   \mbox{}\qqquad=\qqquad=\kill
37   \tag{html}\|
38   \>\dots\|
39   \>\tag[border=1]{table}\|
40   \>\>\tag[width=200, span=3, /]{colgroup}\|
41   \>\>\dots\|
42   \>\tag{/table}\|
43   \>\dots\|
44   \tag{/html}\|
45 \end{tabbing}
46 \end{document}
47 \end{example}

```

3 Implementation

3.1 Identification

```

48 (*package)

```

Reload check, especially if the package is not used with L^AT_EX.

```

49 \begingroup
50   \expandafter\let\expandafter\x\csname ver@kvsetkeys.sty\endcsname
51   \ifcase 0%
52     \ifx\x\relax % plain
53   \else
54     \ifx\x\empty % LaTeX
55   \else
56     1%
57   \fi
58   \fi
59 \else

```

```

60 \expandafter\ifx\csname PackageInfo\endcsname\relax
61 \def\x#1#2{%
62 \immediate\write-1{Package #1 Info: #2.}%
63 }%
64 \else
65 \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
66 \fi
67 \x{kvsetkeys}{The package is already loaded}%
68 \endgroup
69 \expandafter\endinput
70 \fi
71 \endgroup
Package identification:
72 \begingroup
73 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
74 \def\x#1#2#3[#4]{\endgroup
75 \immediate\write-1{Package: #3 #4}%
76 \xdef#1{#4}%
77 }%
78 \else
79 \def\x#1#2[#3]{\endgroup
80 #2[{#3}]%
81 \ifx#1\relax
82 \xdef#1{#3}%
83 \fi
84 }%
85 \fi
86 \expandafter\x\csname ver@kvsetkeys.sty\endcsname
87 \ProvidesPackage{kvsetkeys}%
88 [2006/10/19 v1.1 Key value parser with default handler support (HO)]
89 \expandafter\edef\csname KVS@endinput\endcsname{%
90 \catcode39 \the\catcode39 % '
91 \catcode44 \the\catcode44 % ,
92 \catcode61 \the\catcode61 % =
93 \catcode64 \the\catcode64 % @
94 \catcode94 \the\catcode94 % ^
95 \catcode96 \the\catcode96 % '
96 \catcode126 \the\catcode126 % ~
97 \relax
98 \noexpand\endinput
99 }
100 \catcode39 12 % '
101 \catcode44 12 % ,
102 \catcode61 12 % =
103 \catcode64 11 % @
104 \catcode94 7 % ^
105 \catcode96 12 % '
106 \catcode126 13 % ~
107 \def\KVS@empty{}
108 \long\def\@ReturnAfterFi#1\fi{\fi#1}

```

3.2 Normalizing key value lists

\kv@normalize

```

109 \def\kv@normalize#1{%
110 \begingroup
111 \toks@{, #1}%
112 \KVS@comma
113 \KVS@equal
114 \KVS@spaceA
115 \KVS@spaceB{ }%
116 \KVS@spaceC

```

```

117 \KVS@spaceD{ }%
118 \xdef\kv@global{\the\toks@}%
119 \endgroup
120 \let\kv@list\kv@global
121 }

```

\KVS@comma Converts active commas into comma with catcode other. Also adds a comma at the end to protect the last value for next cleanup steps.

```

122 \begingroup
123 \lccode'\,='\",%
124 \lccode'\~='\",%
125 \lowercase{\endgroup
126 \def\KVS@comma{%
127 \toks@\expandafter{\expandafter}\expandafter
128 \KVS@@comma\the\toks@\~\KVS@nil
129 }
130 \def\KVS@@comma#1~#2\KVS@nil{%
131 \toks@\expandafter{\the\toks@#1,}%
132 \toks2{#2}%
133 \edef\x{\the\toks2}%
134 \ifx\x\KVS@empty
135 \else
136 \@ReturnAfterFi{%
137 \KVS@@comma#2\KVS@nil
138 }%
139 \fi
140 }%
141 }

```

\KVS@equal Converts active equal signs into catcode other characters.

```

142 \begingroup
143 \lccode'\,='\",%
144 \lccode'\~='\",%
145 \lowercase{\endgroup
146 \def\KVS@equal{%
147 \toks@\expandafter{\expandafter}\expandafter
148 \KVS@@equal\the\toks@\~\KVS@nil
149 }
150 \def\KVS@@equal#1~#2\KVS@nil{%
151 \edef\x{\the\toks@}%
152 \ifx\x\KVS@empty
153 \toks@{#1}%
154 \else
155 \toks@\expandafter{\the\toks@=#1}%
156 \fi
157 \toks2{#2}%
158 \edef\x{\the\toks2}%
159 \ifx\x\KVS@empty
160 \else
161 \@ReturnAfterFi{%
162 \KVS@@equal#2\KVS@nil
163 }%
164 \fi
165 }%
166 }

```

\KVS@spaceA Removes one space after the equal sign. In theory also several spaces could be removed, but this is not really necessary, because T_EX usually collapses several spaces to one already.

```

167 \def\KVS@spaceA{%
168 \toks@\expandafter{\expandafter}\expandafter
169 \KVS@@spaceA\the\toks@= \KVS@nil

```

```

170 }
171 \def\KVS@@spaceA#1= #2\KVS@nil{%
172   \edef\x{\the\toks@}%
173   \ifx\x\KVS@empty
174     \toks@{#1}%
175   \else
176     \toks@\expandafter{\the\toks@=#1}%
177   \fi
178   \toks2{#2}%
179   \edef\x{\the\toks2}%
180   \ifx\x\KVS@empty
181   \else
182     \@ReturnAfterFi{%
183       \KVS@@spaceA#2\KVS@nil
184     }%
185   \fi
186 }

```

\KVS@spaceB Removes one space before the comma.

```

187 \def\KVS@spaceB#1{%
188   \toks@\expandafter{\expandafter}\expandafter
189   \KVS@@spaceB\the\toks@#1,\KVS@nil
190 }
191 \def\KVS@@spaceB#1 ,#2\KVS@nil{%
192   \edef\x{\the\toks@}%
193   \ifx\x\KVS@empty
194     \toks@{#1}%
195   \else
196     \toks@\expandafter{\the\toks@,#1}%
197   \fi
198   \toks2{#2}%
199   \edef\x{\the\toks2}%
200   \ifx\x\KVS@empty
201   \else
202     \@ReturnAfterFi{%
203       \KVS@@spaceB#2\KVS@nil
204     }%
205   \fi
206 }

```

\KVS@spaceC Removes one space after the comma.

```

207 \def\KVS@spaceC{%
208   \toks@\expandafter{\expandafter}\expandafter
209   \KVS@@spaceC\the\toks@, \KVS@nil
210 }
211 \def\KVS@@spaceC#1, #2\KVS@nil{%
212   \edef\x{\the\toks@}%
213   \ifx\x\KVS@empty
214     \toks@{#1}%
215   \else
216     \toks@\expandafter{\the\toks@,#1}%
217   \fi
218   \toks2{#2}%
219   \edef\x{\the\toks2}%
220   \ifx\x\KVS@empty
221   \else
222     \@ReturnAfterFi{%
223       \KVS@@spaceC#2\KVS@nil
224     }%
225   \fi
226 }

```

`\KVS@spaceD` Removes one space before the equal sign.

```

227 \def\KVS@spaceD#1{%
228   \toks@{\expandafter{\expandafter}\expandafter
229     \KVS@@@spaceD\the\toks@#1=\KVS@nil
230 }
231 \def\KVS@@@spaceD#1 =#2\KVS@nil{%
232   \edef\x{\the\toks@}%
233   \ifx\x\KVS@empty
234     \toks@{#1}%
235   \else
236     \toks@{\expandafter{\the\toks@=#1}%
237   \fi
238   \toks2{#2}%
239   \edef\x{\the\toks2}%
240   \ifx\x\KVS@empty
241   \else
242     \@ReturnAfterFi{%
243       \KVS@@@spaceD#2\KVS@nil
244     }%
245   \fi
246 }

```

3.3 Parsing key value lists

`\kv@parse` Normalizes and parses the key value list. Also sets `\kv@list`.

```

247 \def\kv@parse#1{%
248   \kv@normalize{#1}%
249   \expandafter\kv@parse@normalized\expandafter{\kv@list}%
250 }

```

`\kv@parse@normalized`

```

251 \def\kv@parse@normalized#1#2{%
252   \KVS@parse#1,\KVS@nil{#2}%
253 }

254 \def\KVS@parse#1,#2\KVS@nil#3{%
255   \begingroup
256     \toks@{#1}%
257     \edef\x{\the\toks@}%
258     \expandafter\endgroup
259     \ifx\x\KVS@empty
260     \else
261       \KVS@process#1=\KVS@nil{#3}%
262     \fi
263   \begingroup
264     \toks@{#2}%
265     \edef\x{\the\toks@}%
266     \expandafter\endgroup
267     \ifx\x\KVS@empty
268     \else
269       \@ReturnAfterFi{%
270         \KVS@parse#2\KVS@nil{#3}%
271       }%
272     \fi
273 }

274 \def\KVS@process#1=#2\KVS@nil#3{%
275   \def\kv@key{#1}%
276   \begingroup
277     \toks@{#2}%
278     \edef\x{\the\toks@}%
279     \expandafter\endgroup

```



```

280 \ifx\x\KVS@empty
281   \let\kv@value\relax
282   #3{#1}{}%
283 \else
284   \KVS@@process{#1}#2\KVS@nil{#3}%
285 \fi
286 }
287 \def\KVS@@process#1#2=\KVS@nil#3{%
288   \begingroup
289     \toks@{#2}%
290     \xdef\KVS@global{\the\toks@}%
291   \endgroup
292   \let\kv@value\KVS@global
293   #3{#1}{#2}%
294 }

```

3.4 Processing key value pairs

\kv@processor@default

```

295 \def\kv@processor@default#1#2#3{%
296   \begingroup\expandafter\expandafter\expandafter\endgroup
297   \expandafter\ifx\csname KV@#1@#2\endcsname\relax
298     \begingroup\expandafter\expandafter\expandafter\endgroup
299     \expandafter\ifx\csname KVS@#1@handler\endcsname\relax
300       \kv@error@unknownkey{#1}{#2}%
301     \else
302       \csname KVS@#1@handler\endcsname{#2}{#3}%
303       \relax
304     \fi
305   \else
306     \ifx\kv@value\relax
307       \begingroup\expandafter\expandafter\expandafter\endgroup
308       \expandafter\ifx\csname KV@#1@#2@default\endcsname\relax
309         \kv@error@novalue{#1}{#2}%
310       \else
311         \csname KV@#1@#2@default\endcsname
312         \relax
313       \fi
314     \else
315       \csname KV@#1@#2\endcsname{#3}%
316     \fi
317   \fi
318 }

```

\kv@set@family@handler

```

319 \def\kv@set@family@handler#1{%
320   \KVS@set@family@handler{#1}\@nil
321 }
322 \def\KVS@set@family@handler#1\@nil{%
323   \expandafter\def\csname KVS@#1@handler\endcsname##1##2%
324 }

```

3.5 Error handling

\kv@error@novalue Only a poor \PackageError is provided by miniltx.tex.

```

325 \expandafter\ifx\csname MessageBreak\endcsname\relax
326   \def\MessageBreak{^^J}%
327 \fi
328 \expandafter\ifx\csname @ehc\endcsname\relax
329   \def\@ehc{%
330     Try typing \space\string<return\string> %

```

```

331     \space to proceed.\MessageBreak
332     If that doesn't work, type \space X %
333     \string<return\string> \space to quit\string.%
334 }%
335 \fi
336 \def\kv@error@novalue{%
337   \kv@error@generic{No value specified for}%
338 }
339 \def\kv@error@unknownkey{%
340   \kv@error@generic{Undefined}%
341 }
342 \def\kv@error@generic#1#2#3{%
343   \begingroup
344     \newlinechar=10 %
345     \def\MessageBreak{^^J}%
346     \expandafter\ifx\csname PackageError\endcsname\relax
347       \edef\x{%
348         \errhelp{%
349           The keyval family of the key '#3' is '#2'.\MessageBreak
350           \MessageBreak
351           \@ehc
352         }%
353       }%
354       \x
355       \errmessage{kvsetkeys: #1 key '#3'}%
356     \else
357       \edef\x{%
358         \noexpand\PackageError{kvsetkeys}{%
359           #1 key '#3'%
360         }{%
361           The keyval family of the key '#3' is '#2'.\MessageBreak
362           \MessageBreak
363           \@ehc
364         }%
365       }%
366       \x
367     \fi
368   \endgroup
369 }%

```

3.6 Do it all

`\kvsetkeys`

```

370 \def\kvsetkeys#1#2{%
371   \kv@parse{#2}{\kv@processor@default{#1}}%
372 }
373 \KVS@endinput
374 \endpackage

```

4 Installation

CTAN. This package is available on CTAN¹:

[CTAN:macros/latex/contrib/oberdiek/kvsetkeys.dtx](http://ctan.org/ctan/ctan/macros/latex/contrib/oberdiek/kvsetkeys.dtx) The source file.

[CTAN:macros/latex/contrib/oberdiek/kvsetkeys.pdf](http://ctan.org/ctan/ctan/macros/latex/contrib/oberdiek/kvsetkeys.pdf) Documentation.

¹[ftp://ftp.ctan.org/tex-archive/](http://ftp.ctan.org/tex-archive/)

Unpacking. The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain- \TeX :

```
tex kvsetkeys.dtx
```

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
kvsetkeys.sty      → tex/generic/oberdiek/kvsetkeys.sty
kvsetkeys.pdf      → doc/latex/oberdiek/kvsetkeys.pdf
kvsetkeys-example.tex → doc/latex/oberdiek/kvsetkeys-example.tex
kvsetkeys.dtx      → source/latex/oberdiek/kvsetkeys.dtx
```

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

Refresh file databases. If your \TeX distribution (`te \TeX` , `mik \TeX` , ...) rely on file databases, you must refresh these. For example, `te \TeX` users run `texhash` or `mktextlsr`.

4.1 Some details for the interested

Attached source. The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk kvsetkeys.pdf unpack_files output .
```

Unpacking with \LaTeX . The `.dtx` chooses its action depending on the format:

plain- \TeX : Run `docstrip` and extract the files.

\LaTeX : Generate the documentation.

If you insist on using \LaTeX for `docstrip` (really, `docstrip` does not need \LaTeX), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{kvsetkeys.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with `pdf \LaTeX` :

```
pdflatex kvsetkeys.dtx
makeindex -s gind.ist kvsetkeys.idx
pdflatex kvsetkeys.dtx
makeindex -s gind.ist kvsetkeys.idx
pdflatex kvsetkeys.dtx
```

5 References

- [1] David Carlisle: *The keyval package*; 1999/03/16 v1.13; [CTAN:macros/latex/required/graphics/keyval.dtx](#).

6 History

[2006/03/06 v1.0]

- First version.

[2006/10/19 v1.1]

- Fix of `\kv@set@family@handler`.
- Example added.

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