

conv-xkv: Convert xkeyval format style

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¹ `*package`

1 Introduction

This is an intellectual exercise for creating *alternate key-value* notation. The standard L^AT_EX notation is `\langle key \rangle = \langle value \rangle`. To change to the JavaScript object style of key-values (`\langle key \rangle : \langle value \rangle`), use `\cxkvsetkeys` as you would `\setkeys`:

```
\cxkvsetkeys{\family}{\KV-pairs}
```

to convert `\langle key \rangle : \langle value \rangle` to `\langle key \rangle = \langle value \rangle` and `xkeyval` processes the keys as it normally does. The comma (,) separates sets of key-value pairs and must not, therefore, be used as the delimiter that separates the `\langle key \rangle` from the `\langle value \rangle`.

The package is more general than what is described above. You can define several key-value delimiters, for whatever reason, in your document or package. Declare a *named* delimiter:

```
\DeclareDelimiter{\name}{\delimiter}
```

Use the newly declared delimited as follows:

```
\cxkvsetkeys(\name){\family}{\KV-pairs}
```

The case of using a colon (:) for the delimiter is already defined, its name is ‘colon’ and need not be declared.

Important change in syntax With version dated 2017/01/03 or later, the optional argument $\langle name \rangle$ is now delimited by **parentheses**, rather than the standard brackets. This is to be able to detect $\langle name \rangle$ when the full syntax of `\setkeys` is used:

```
\setkeys*[\langle prefix \rangle]{\langle families \rangle}[\langle na \rangle]{\langle keys \rangle}
```

The syntax for `\cckvsetkeys` shall be

```
\cckvsetkeys(\langle name \rangle)*[\langle prefix \rangle]{\langle families \rangle}[\langle na \rangle]{\langle keys \rangle}
```

The `conv-xkv` package does nothing with `xkeyval` arguments `*[\langle prefix \rangle]` and `[\langle na \rangle]` other than to collect them and pass them on to `\setkeys` at the appropriate time. The `conv-xkv` is concerned only with converting a new notation $\langle key \rangle \langle delim \rangle \langle value \rangle$ to $\langle key \rangle = \langle value \rangle$.

If the key-values do not contain the designated delimiter, `conv-xkv` simply passes everything on to `\setkeys`. What this means is that, for example, both `\cckvsetkeys{myfam}{fname:Don,lname:Story}` works as does `\cckvsetkeys{myfam}{fname=Don,lname=Story}`. One then has the option of using the standard notation or an alternate notation.

Demo file The example file is `convert2xkeyval.tex`, use it to explore the possibilities and is found in the `examples` folder of this distribution.

2 Preliminaries

We require the `xkeyval` package.

```
2 \RequirePackage{xkeyval}
```

The code below is taken from `hyperref`, and `set` and `restore` commands are renamed. This hopefully makes a number of special characters available to act as a delimiter.

```
3 \begingroup
4 \@makeother\‘%
5 \@makeother\=%
6 \edef\x{%
7   \edef\noexpand\x{%
8     \endgroup
9     \noexpand\toks@{%
10      \catcode 96=\noexpand\the\catcode'\noexpand\‘\relax
11      \catcode 61=\noexpand\the\catcode'\noexpand\=\relax
12    }%
13  }%
14  \noexpand\x
15 }%
16 \x
17 \@makeother\‘
18 \@makeother\=
19 \def\cckv@SetCatcodes{%
```

```

20 \@makeother\`%
21 \@makeother\=%
22 \@makeother\~%
23 \@catcode'\$=3 %
24 \@catcode'\&=4 %
25 \@catcode'\^=7 %
26 \@catcode'\_ =8 %
27 \@makeother\|%
28 \@makeother\:%
29 \@makeother\(%
30 \@makeother\)%)%
31 \@makeother\[%
32 \@makeother\]%
33 \@makeother\/%
34 \@makeother\!%
35 \@makeother\<%
36 \@makeother\>%
37 \@makeother\.%
38 \@makeother\;%
39 \@makeother\+%
40 \@makeother\-%
41 \@makeother\"%
42 \@makeother\'%
43 }
44 \begingroup
45 \def\x#1{\catcode'\noexpand#1=\the\catcode'#1\relax}%
46 \xdef\ckv@RestoreCatcodes{%
47   \the\toks@
48   \x\~%
49   \x\$%
50   \x\&%
51   \x\^%
52   \x\_%
53   \x\|%
54   \x\:%
55   \x\(%
56   \x\)%)%
57   \x\[%
58   \x\]%
59   \x\/%
60   \x\!%
61   \x\<%
62   \x\>%
63   \x\.%
64   \x\;%
65   \x\+%
66   \x\-%
67   \x\"%
68   \x\'%
69 }%

```

```
70 \endgroup
71 \ckv@SetCatcodes
```

3 Core commands for this package

The default delimiter is the colon (:).

```
72 \def\csarg#1#2{\expandafter#1\csname#2\endcsname}
73 \csarg\def{kvdelim-colon}{:}
```

`\usekvdelim` Use `\usekvdelim` to display delimiter, as associated with the argument #1.

```
74 \def\usekvdelim#1{\@nameuse{kvdelim-#1}}
```

`\DeclareDelimiter` In the preamble, we declare the delimiter to be used. The command takes one argument, which is the delimiter to be used, for example ‘:’ or ‘->’. If this declaration does not appear in the preamble, the delimiter is taken to be ‘:’.

```
75 \def\DeclareDelimiter{\ckv@SetCatcodes\DeclareDelimiter@i}
76 \def\DeclareDelimiter@i#1#2{\@ifundefined{kvdelim-#1}
77   {\csarg\def{kvdelim-#1}{#2}\ckv@RestoreCatcodes\cxkvSetup{#1}}
78   {\ckv@RestoreCatcodes}}
79 \@onlypreamble\DeclareDelimiter
```

`\cxkv@tmptoks` is used to hold the converted key-values, the contents of this token register is passed to `\setkeys` in `\cxkv@cnvrtDelimniiEquali`

```
80 \newtoks\cxkv@tmptoks \cxkv@tmptoks={}
81 \def\cxkv@dummys{dummy}
82 \def\cxkv@dummysc{dummy,}
83 \bgroup
84   \catcode'\#=12\relax\gdef\cxkvarg{#}
85   \obeyspaces\gdef\cxkv@TAB{   }
86 \egroup
```

`\cxkvsetkeys` This is the default definition, setup for using the colon (:) as the key-value delimiter. But these next two commands are redefined by the `\DeclareDelimiter` command in the preamble. The syntax is

```
\cxkvsetkeys[<name>]{<family>}{<KV-pairs>}
```

where *<KV-pairs>* are the key-value pairs using the declared delimiter.

```
\cxkvsetkeys{myfam}{fname: Fred,lname: Flintstone}
```

The family `myfam` and keys `fname` and `lname` must have been defined earlier: If the optional argument is not specified, then it is assumed the *<name>* argument is `colon`, a reserved word for this package for this argument.

```
\define@key{myfam}{\def\fname{#1}}
\define@key{myfam}{\def\lname{#1}}
87 \def\cxkv@colon{colon}
```

The general form for `\setkeys` is

```
\setkeys*[(prefix)]{(families)}[(na)]{(keys)}
```

`\cxkvsetkeys` The syntax for `\cxkvsetkeys` shall be

```
\cxkvsetkeys(name)*[(prefix)]{(families)}[(na)]{(keys)}
```

The process to pick up the full parameter set of `\setkeys` is lengthy.

```
88 \newcommand\cxkvsetkeys{%
89   \@ifnextchar({\cxkvsetkeys@i}{\cxkvsetkeys@i(colon)}}
90 \def\cxkvsetkeys@i(#1){\cxkvsetkeys@ii{#1}}
91 \def\cxkvsetkeys@ii#1{\def\cxkv@delimname{#1}\ifstar
92   {\def\cxkv@skOpts{*}\cxkvsetkeys@iii}
93   {\def\cxkv@skOpts{}\cxkvsetkeys@iii}}
94 \newcommand\cxkvsetkeys@iii[2] []{\def\@rgi{#1}\ifx\@rgi@empty
95   \expandafter\def\expandafter\cxkv@skOpts
96     \expandafter{\cxkv@skOpts{#2}}\else
97   \expandafter\def\expandafter
98     \cxkv@skOpts\expandafter{\cxkv@skOpts[#1]{#2}}\fi
99   \def\thisxkvF@mily{#2}\cxkvsetkeys@iv}
100 \newcommand\cxkvsetkeys@iv[2] []{\def\@rgi{#1}\ifx\@rgi@empty\else
101   \expandafter\def\expandafter\cxkv@skOpts
102     \expandafter{\cxkv@skOpts[#1]}\fi
103   \expandafter\cxkvsetkeys@v\expandafter{\thisxkvF@mily}{#2}}
104 \def\cxkvsetkeys@v#1#2{\cxkv@skipfalse
105   \ifx\cxkv@delimname\cxkv@colon\else
106     \InputIfFileExists{xkv-\cxkv@delimname.cut}
107     {\PackageInfo{conv-xkv}{Inputting xkv-\cxkv@delimname.cut}}
108     {\PackageInfo{conv-xkv}{Cannot find xkv-\cxkv@delimname.cut}}\fi
109   \@nameuse{cxkvsetkeys-\cxkv@delimname}{#1}{#2}}

110 \csarg\def{cxkvsetkeys-colon}#1#2{%
111   \def\thisxkvF@mily{#1}\def\thisxkvV@lues{#2}\def\cxkv@scratch{}}%
112   \cxkv@tmptoks={}%
113   \@nameuse{cxkv@cnvrtDelimniiEqual-colon}#2,dummy:dummy,\@nil}
114 \csarg\def{cxkv@cnvrtDelimniiEqual-colon}#1:#2,#3\@nil{%
115   \cxkv@cnvrtDelimniiEquali{colon}{#1}{#2}{#3}}
```

`\cxkvSetup` Write the definitions of `\cxkvsetkeys` and `\cxkv@cnvrtDelimniiEqual` to the file `conv-xkv.cut` then input this file back in.

```
116 \def\cxkvSetup#1{\bgroup
117 \IfFileExists{xkv-#1.cut}{\PackageInfo{conv-xkv}{xkv-#1.cut
118   already exists,\MessageBreak will not create another one}}{%
119   \PackageInfo{conv-xkv}{Creating the file xkv-#1.cut
120     containing\MessageBreak required definitions}%
121   \newwrite \cxkv@write
122   \uccode'c='%
123   \def#w{#1}\def\x{cxkvsetkeys-#1}%
124   \def\y{cxkv@cnvrtDelimniiEqual-#1}%
```

```

125 \def\z{kvdelim-#1}%
126 \immediate\openout \cxkv@write xkv-#1.cut
127 \immediate\write\cxkv@write{\string\makeatletter}%
128 \uppercase{\immediate\write\cxkv@write{\string
129   \csarg\string\def{y}\cxkvarg1\@nameuse{z}%
130   \cxkvarg2,\cxkvarg3\string\@nil{c^^J\cxkv@TAB
131   \string\cxkv@cnvrtDelimniiEquali{w}{\cxkvarg1}%
132   {\cxkvarg2}{\cxkvarg3}}}}
133 \uppercase{\immediate\write\cxkv@write{\string\csarg\string\def
134   {x}\cxkvarg1\cxkvarg2{c^^J\cxkv@TAB
135   \string\def\string\thisxkvF@mily{\cxkvarg1}\string
136   \def\string\thisxkvV@lues{\cxkvarg2}\string
137   \let\string\cxkv@scratch\string\@empty\string
138   \cxkv@tmptoks={}c^^J\cxkv@TAB
139   \string\@nameuse{y}\cxkvarg2,%
140   \cxkv@dumy\@nameuse{z}\cxkv@dumy,\string\@nil}}}}
141 \immediate\write\cxkv@write{\string\makeatother}%
142 \immediate\closeout \cxkv@write
143 }%
144 \egroup}

```

\cxkv@cnvrtDelimniiEquali continues \cxkv@cnvrtDelimniiEqual. It is the part that does not need to be redefined.

```

145 \newif\ifcxkv@keyonly \cxkv@keyonlyfalse
146 \def\cxkv@comma{,}
147 \def\cxkv@removecomma#1,\@nil{\def\cxkv@key{#1}}
148 \def\cxkv@parsecomma#1,#2\@nil{\def\@rgi{#1}\def\@rgii{#2}%
149   \ifx\@rgii\@empty\cxkv@keyonlyfalse\else
150     \cxkv@keyonlytrue\cxkv@removecomma#2\@nil\fi}
151 \newif\ifcxkv@skip \cxkv@skipfalse
152 \def\cxkv@cnvrtDelimniiEquali#1#2#3#4{%
153   \def\cxkv@rgiii{#3}\def\cxkv@rgiv{#4}%

```

If the fourth argument is empty, that means there were no delimiters in the argument, so we pass the original argument \thisxkvF@mily to \setkeys.

```

154   \ifx\thisxkvV@lues\@empty\else
155     \ifx\cxkv@rgiv\@empty
156       \edef\cxkv@next{\noexpand
157         \setkeys\cxkv@skOpts{\thisxkvV@lues}}%
158       \cxkv@skiptrue
159     \fi
160   \fi
161   \let\thisxkvV@lues\@empty
162   \ifcxkv@skip\else
163   \ifx\cxkv@rgiii\cxkv@dumy
164     \cxkv@parsecomma#2,\@nil
165   \ifcxkv@keyonly
166     \edef\cxkv@tmp{\the\cxkv@tmptoks,\@rgi}%
167     \cxkv@tmptoks=\expandafter{\cxkv@tmp}%
168     \edef\cxkv@scratch{\the\cxkv@tmptoks}%

```

```

169         \edef\cxkv@next{\noexpand
170             \setkeys\cxkv@skOpts{\the\cxkv@tmptoks}}%
171     \else
172         \edef\cxkv@next{\noexpand
173             \setkeys\cxkv@skOpts{\the\cxkv@tmptoks}}%
174     \fi
175 \else
176     \cxkv@parsecomma#2,\@nil
177     \ifcxkv@keyonly
178         \edef\cxkv@tmp{\the\cxkv@tmptoks,\@rgi}%
179         \cxkv@tmptoks=\expandafter{\cxkv@tmp}%
180         \edef\cxkv@scratch{\the\cxkv@tmptoks}%
181         \edef\cxkv@next{\noexpand
182             \@nameuse{cxkv@cnvrtDelimniiEqual-#1}\cxkv@key
183             \@nameuse{kvdelim-#1}#3,#4\noexpand\@nil}
184     \else
(2017/02/17) Enclose #3 in braces
185         \cxkv@tmptoks=\expandafter{\cxkv@scratch,#2={#3}}%
186         \edef\cxkv@scratch{\the\cxkv@tmptoks}%
187         \def\cxkv@next{%
188             \@nameuse{cxkv@cnvrtDelimniiEqual-#1}#4\@nil}\fi
189     \fi\fi\cxkv@next
190 }
191 \ckv@RestoreCatcodes
192 </package>

```

4 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

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5 Change History

v1.0 (2016/12/20)		v1.1a (2017/01/03)	
General: Date of first upload to CTAN	2	General: Change in syntax, use parentheses	
v1.1 (2017/01/03)		rather than brackets	2
General: Try to detect if the expected delimiter		v1.1c (2017/02/17)	
is present at all	6	General: Enclose #3 in braces	7