LaTeX and Friends
Option Parsing

http://csweb.ucc.ie/~dongen/LAF/LAF.html

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What are ⟨Key⟩=⟨Value⟩ Interfaces?

- Traditional APIs use *positional association.*
  - `Math.max( first, second );`
  - `\section[Short Title]{Very Long Title}.`
- More recent APIs use *named association.*
  - Use ⟨key⟩=⟨value⟩ pairs to specify parameters.
  - `\includegraphics[width=9cm,height=3cm]{pic.jpg}.`

Why Use ⟨Key⟩=⟨Value⟩ Arguments?

number of arguments Can have any number of ⟨key⟩=⟨value⟩ pairs.

robustness The mechanism is more robust.

- Arguments may have defaults;
- Arguments may occur in any order.

simplicity The purpose of the arguments is clear.

self-documentation Formal parameters have meaningful names.

Providing and Using the Values

`\pgfkeys{⟨key⟩/.code=⟨expr⟩}`

- Defines ⟨expr⟩ as the code for the key.
- When user provides the value, it is substituted for `#1` in ⟨expr⟩.

LaTeX Input

```
\pgfkeys{/greeting/.code=Hello #1.}
\pgfkeys{/greeting=moon}
\pgfkeys{/greeting=world}
```

LaTeX Output

Hello moon.
Hello world.

Providing and Using the Values

`\pgfkeys{⟨key⟩/.default=⟨default⟩}`

- Defines default value for the key.

LaTeX Input

```
\pgfkeys{/greeting/.default=sun}
\pgfkeys{/greeting=stars}
\pgfkeys{/greeting}
```

LaTeX Output

Hello stars.
Hello sun.

Relative Paths

`\pgfkeys{⟨path⟩/.cd,⟨stuff⟩}`

- Makes ⟨path⟩ the current path in ⟨stuff⟩.

LaTeX Input

```
\pgfkeys{/cork/greeting/.cd,
         .default=boie,
         .code=Howsagoin #1.}
\pgfkeys{/cork/greeting=Liz,
         /cork/greeting}
```

LaTeX Output

Howsagoin Liz.
Howsagoin boie.

Styles

`\pgfkeys{⟨key⟩/.style=⟨list⟩}`

- Defines ⟨list⟩ as a style for ⟨key⟩.
- Results in `\pgfkeys{⟨list⟩}`.

LaTeX Input

```
\pgfkeys{/cork/greetings/.style={
        /cork/.cd,
        greeting=#1,
        greeting}}
\pgfkeys{/cork/greetings=Roy}
```

LaTeX Output

Howsagoin Roy. Howsagoin boie.

Error Handling

`\pgfkeys{⟨key⟩/.value required}`

- Makes ⟨key⟩ require a value.

LaTeX Input

```
\pgfkeys{/homer/drink/.cd,
         .code=#1,
         .value required}
\pgfkeys{/homer/drink=beer}
\pgfkeys{/homer/drink}% D'oh
```

LaTeX Output

beer

Error Handling

`\pgfkeys{⟨key⟩/.value forbidden}`

- Forbids values for ⟨key⟩.

LaTeX Input

```
\pgfkeys{/homer/lunch/.cd,
         .code=donuts,
         .value forbidden}
\pgfkeys{/homer/lunch}
\pgfkeys{/homer/lunch=peas}% D'oh
```

LaTeX Output

donuts

Storing Values in Macros

`\pgfkeys{⟨key⟩/.store in=⟨command⟩}`

- Stores value of ⟨key⟩ in ⟨command⟩.

LaTeX Input

```
\newcommand*\a{a}
\pgfkeys{/storage/.store in=\myget}
\pgfkeys{/storage=a is \a.}
Before: \myget
\renewcommand*\a{A}
After:  \myget
```

LaTeX Output

Before: a is a.
After: a is A.

Storing Values in Macros

`\pgfkeys{⟨key⟩/.estore in=⟨command⟩}`

- Works as `.store in` but expands value.

Decisions

`\pgfkeys{⟨key⟩/.is if=⟨switch⟩}`

- Defines ⟨key⟩ as a decision key.
- Used in combination with low-level TEX `\if⟨switch⟩`.

LATEX Input

```
\newif{\ifswitch}
\pgfkeys{/decision/.is if=switch}
\pgfkeys{/decision}       \ifswitch ON\else OFF\fi.
\pgfkeys{/decision=false} \ifswitch ON\else OFF\fi.
\pgfkeys{/decision=true}  \ifswitch ON\else OFF\fi.
```

LATEX Output

ON. OFF. ON.

Choices

`\pgfkeys{⟨key⟩/.is choice}`

- Makes ⟨key⟩ a choice key.

LaTeX Input

```
\newcommand*\mycount{0}
\pgfkeys{/counter/.store in=\mycount}

\pgfkeys{/selection/.cd,
         .is choice,
         first/.style={/counter=1},
         second/.style={/counter=2},
         third/.style={/counter=3}}
\pgfkeys{/selection=first}  \mycount
\pgfkeys{/selection=third}  \mycount
\pgfkeys{/selection=second} \mycount
\pgfkeys{/selection=fourth} % D'oh
```

LaTeX Output

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Bibliography

Acronyms and Abbreviations

AMS	American Mathematical Society
API	Application Programming Interface
APL	A Programming Language
CTAN	Comprehensive TEX Archive Network
CD	Compact Disk
FAQ	Frequently Asked Question
GUI	Graphical User Interface
IDE	Integrated Development Environment
ISBN	International Standard Book Number
OS	Operating System
SI	Système International d'Unités/International System of Units
TUG	TEX Users Group
URL	Uniform Resource Locator
WYSIWYG	What You See Is What You Get

About this Document

- This document was created with `pdflatex`.
- The LaTeX document class is `beamer`.