

Making Table Heads with Diagonal Lines

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1 Introduction

`diagbox` is a replacement of old `slashbox` package. I write this package simply because that `slashbox` is not available in T_EX Live for licencing problems. `slashbox` has no explicit license information available, but `diagbox` is under LPPL.

`diagbox` is a modern alternative of `slashbox`. I changed the user interface to use a key-value syntax, get rid of some restrictions of `slashbox`, use `pict2e` to draw diagonal lines. `diagbox` package also provides compatible macros of `slashbox`, but the result is a little different.

To use `diagbox`, ϵ -T_EX is needed. And `diagbox` requires `pict2e` package.

2 Usage

`\diagbox` `\diagbox` is the main command. It takes two arguments, to produce a box with a diagonal line from north west to south east.

For example:

<div style="display: inline-block; transform: rotate(-45deg);">Time \ Day</div>	Mon	Tue	Wed
Morning	used	used	
Afternoon		used	used

```

1 \begin{tabular}{|l|ccc|}
2 \hline
3 \diagbox{Time}{Day} & Mon & Tue & Wed \\
4 \hline
5 Morning & used & used & \\
6 Afternoon & & used & used \\
7 \hline
8 \end{tabular}

```

`\diagbox` can take an optional argument in key-value syntax to specify the width and height of the box, the direction of the diagonal line, and the trimming margin:

width Specify the width of the box explicitly.

height Specify the height of the box explicitly.

dir Specify the direction of the diagonal line. The value can be **SE** and **NE**. Default value is **SE** (from north west to south east).

trim Specify the margin to be trimmed. The value can be **l**, **r**, and **lr**, **rl**.

Here is a more complex example:

```

1 \begin{tabular}{|@{}l|c|c|c@{}}
2 \hline
3 \diagbox[width=5em,trim=l]{Time}{Day} & Mon & Tue & Wed\\
4 \hline
5 Morning & used & used & used\\
6 \hline
7 Afternoon & & used & \diagbox[dir=NE,height=2em,trim=r]{A}{B} \\
8 \hline
9 \end{tabular}

```

Day Time	Mon	Tue	Wed
Morning	used	used	used
Afternoon		used	A B

\backslashdiagbox **\backslashdiagbox** works as **\diagbox**, but it takes two optional arguments to specify the **width** and **trim** options.

\slashbox **\slashbox** works as **\diagbox[dir=NE]**, and takes two optional arguments to specify the **width** and **trim** options.

The syntax of **\slashbox** and **\backslashdiagbox** comes from **slashbox** packages. **diagbox** package emulates **slashbox** and also prevents **slashbox** to be loaded. However, the results of the two packages are a little different. These two commands are for compatibility only, it is better to use **\diagbox** instead.

3 Bugs and TODO

I will provide a new command to produce a three-part box with two diagonal lines in later version.

diagbox 宏包 (v1.0) English Version

制做斜线表头

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4 简介

diagbox 设计用来代替旧的 slashbox 宏包。编写这个宏包的缘起是 slashbox 因为缺少明确的自由许可信息，被 T_EX Live 排除。这个宏包是在 LPPL 协议下发行的。

diagbox 是 slashbox 宏包的一个较现代的版本。这里我采用了新的 key-value 式语法参数，去除了 slashbox 原有的一些长度限制，并调用 pict2e 宏包画斜线。diagbox 除了提供自己的新命令，也提供了 slashbox 原有的两个命令，语法不变，编译结果略有区别。

diagbox 依赖 ϵ -T_EX 扩展（这在目前总是可用的），依赖 pict2e 宏包。

5 用法说明

`\diagbox` `\diagbox` 是宏包提供的主要命令。它带有两个必选参数，表示要生成斜线表头的两部分内容。默认斜线是从西北到东南方向的。

例如：

Day Time	Mon	Tue	Wed
Morning	used	used	
Afternoon		used	used

```
1 \begin{tabular}{|l|ccc|}  
2 \hline  
3 \diagbox{Time}{Day} & Mon & Tue & Wed \\  
4 \hline  
5 Morning & used & used & \\  
6 Afternoon & & used & used \\  
7 \hline  
8 \end{tabular}
```

`\diagbox` 还可以带一个可选参数，里面用 key-value 的语法设置宽度、方向等更多的选项：

width 明确指定盒子的总宽度。

height 明确指定盒子的总高度。

dir 指定斜线方向。可以取 **NE**（划向东北）和 **SE**（划向东南）两个值，默认值是 **SE**。

trim 设置左边界或右边界不计算额外的空白，可以取值为 **l**, **r**, **lr** 或 **rl**。这个选项在列格式包含 **@{}** 时将会有用。

一个更繁杂的例子：

```
1 \begin{tabular}{|@{}l|c|c|c@{}}
2 \hline
3 \diagbox[width=5em,trim=l]{Time}{Day} & Mon & Tue & Wed\\
4 \hline
5 Morning & used & used & used\\
6 \hline
7 Afternoon & & used & \diagbox[dir=NE,height=2em,trim=r]{A}{B} \\
8 \hline
9 \end{tabular}
```

Day Time	Mon	Tue	Wed
Morning	used	used	used
Afternoon		used	<div><div>A</div><div>B</div></div>

\backslashdiagbox **\backslashdiagbox** 基本功能与 **\diagbox** 类似。它带有两个可选参数，分别表示 **\diagbox** 中的 **width** 与 **trim** 选项。

\slashbox **\slashbox** 基本功能与 **\diagbox[dir=NE]** 类似。它也带有两个可选参数，表示 **\diagbox** 中的 **width** 和 **tirm** 选项。

\slashbox 与 **\backslashdiagbox** 的语法来自 **slashbox** 宏包。**diagbox** 宏包模拟了 **slashbox** 宏包的功能，并禁止 **slashbox** 再被调用。这两个命令仅在旧文档中作为兼容命令使用。实际中使用 **\diagbox** 更为方便。

6 已知问题和未来版本

未来版本会增加带有两条斜线的表头命令。这部分代码是以前写过的，正在整理中。

7 Implementation / 代码实现

使用 key-value 界面。

```
1 \RequirePackage{keyval}
```

绘图依赖 pict2e 宏包。

```
2 \RequirePackage{pict2e}
3 \newbox\diagbox@boxa
4 \newbox\diagbox@boxb
5 \newdimen\diagbox@wd
6 \newdimen\diagbox@ht
7 \newdimen\diagbox@sepl
8 \newdimen\diagbox@sepr
9 \define@key{diagbox}{width}{%
10   \setlength{\diagbox@wd}{#1}}
11 \define@key{diagbox}{height}{%
12   \setlength{\diagbox@ht}{#1}}
13 \define@key{diagbox}{trim}{%
14   \@tfor\@reserveda:=#1\do{%
15     \setlength{\csname diagbox@sep\@reserveda\endcsname}{\z@}}}
16 \define@key{diagbox}{dir}{%
17   \ifcsname diagbox@pict@#1\endcsname
18     \def\diagbox@pict@content{\@nameuse{diagbox@pict@#1}}%
19   \else
20     \PackageError{diagbox}{Unknown direction `#1'.}{SE and NE is supported.}%
21   \fi}
```

`\diagbox@pict` 这是带斜线的盒子本身。由一个 `picture` 环境实现。

```
22 \def\diagbox@pict{%
23   \unitlength\p@
24   \begin{picture}
25     (\strip@pt\dimexpr\diagbox@wd-\diagbox@sepl-\diagbox@sepr\relax,\strip@pt\diagbox@ht)
26     (\strip@pt\diagbox@sepl,0)
27     \diagbox@pict@content
28   \end{picture}}
```

`\diagbox@pict@SE` 方向为 SE 的斜线盒子内容。

```
29 \def\diagbox@pict@SE{%
30   \put(0,0){\makebox(0,0)[bl]{\box\diagbox@boxa}}
31   \put(\strip@pt\diagbox@wd,\strip@pt\diagbox@ht){\makebox(0,0)[tr]{\box\diagbox@boxb}}
32   \Line(0,\strip@pt\diagbox@ht)(\strip@pt\diagbox@wd,0)}
```

`\diagbox@pict@NE` 方向为 NE 的斜线盒子内容。

```
33 \def\diagbox@pict@NE{%
34   \put(0,\strip@pt\diagbox@ht) {\makebox(0,0)[tl]{\box\diagbox@boxa}}
35   \put(\strip@pt\diagbox@wd,0) {\makebox(0,0)[br]{\box\diagbox@boxb}}
36   \Line(0,0)(\strip@pt\diagbox@wd,\strip@pt\diagbox@ht)}
```

`\diagbox` 主要的用户命令。三个参数，分别为 key-value 格式的可选项、左半边内容、右半边内容。这个命令的主要内容是读入参数并计算斜线盒子的大小。

```
37 \newcommand\diagbox[3][]{%
38   \begingroup
39   \diagbox@wd=\z@
40   \diagbox@ht=\z@
41   \diagbox@sepl=\tabcolsep
42   \diagbox@sepr=\tabcolsep
43   \setkeys{diagbox}{dir=SE,#1}%
44   \setbox\diagbox@boxa=\hbox{%
45     \begin{tabular}[l@{}]{#2}\end{tabular}}%
46   \setbox\diagbox@boxb=\hbox{%
47     \begin{tabular}[@{}r]{#3}\end{tabular}}%
48   \ifdim\diagbox@wd=\z@
49     \ifdim\wd\diagbox@boxa>\wd\diagbox@boxb
50       \diagbox@wd=\dimexpr2\wd\diagbox@boxa+\diagbox@sepl+\diagbox@sepr\relax
51     \else
52       \diagbox@wd=\dimexpr2\wd\diagbox@boxb+\diagbox@sepl+\diagbox@sepr\relax
53   \fi
54   \fi
55   \ifdim\diagbox@ht=\z@
56     \diagbox@ht=\dimexpr\ht\diagbox@boxa+\dp\diagbox@boxa+\ht\diagbox@boxb+\dp\diagbox@boxb\relax
57   \fi
58   $\vcenter{\hbox{\diagbox@pict}}$\%
59 \endgroup}
```

以下代码用来模拟 `slashbox` 宏包的功能。

禁止读入 `slashbox`。

```
60 \expandafter\xdef\csname ver@slashbox.\@pkgextension\endcsname{9999/99/99}
```

`\slashbox` 模拟 `\slashbox`。

```
61 \def\slashbox{%
62   \def\diagbox@slashbox@options{dir=NE,}%
63   \slashbox@}
```

```

\backslashbox 模拟 \backslashbox。

64 \def\backslashbox{%
65   \def\diagbox@slashbox@options{dir=SE,}%
66   \slashbox@}

\slashbox@

67 \newcommand\slashbox@[1] [] {%
68   \ifx\relax#1\relax\else
69     \edef\diagbox@slashbox@options{%
70       \unexpanded\expandafter{\diagbox@slashbox@options}%
71       \unexpanded{width=#1,}}%
72   \fi
73   \slashbox@@}

\slashbox@@

74 \newcommand\slashbox@@[3] [] {%
75   \edef\diagbox@slashbox@options{%
76     \unexpanded\expandafter{\diagbox@slashbox@options}%
77     \unexpanded{trim=#1,}}%
78   \expandafter\diagbox\expandafter[\diagbox@slashbox@options]{#2}{#3}}
79 \endinput

```

Change History

v1.0

General: 初始版本 1

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