`tbl.typ`: a `tbl`-like preprocessor for Typst and `tablex`

Version **TK**

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Contents

Introduction

Typst [1] is "a new markup-based typesetting system that is powerful and easy to learn." While Typst provides a built-in `table()` function, it does not currently support more advanced features such as row spans and column spans, fine-grain control of borders, or complex cell alignments. Pg Biel's `tablex` project [2] provides many of these features. However, it remains the case that writing a table using either `table()` or `tablex()` can require rather verbose syntax.

The `tbl.typ` project is an effort to allow the expression of rich tables in Typst using a more terse syntax. This syntax comes from a UNIX heritage: the `tbl` preprocessor which designed for use with the traditional TROFF typesetting system [3] [4] [5]. Important differences between the syntax of traditional `tbl` and `tbl.typ` are noted in Section **TK**.

After importing the library using `#import "tbl.typ"`, the basic format of a table when using `tbl.typ` is the following:

```tbl
Format specifications .
Data
```

The two main components of this syntax are:

- *Format specifications*. This describes the layout of the table in terms of the number and style of columns for each row.

  The last line of the format specifications must end in a period (`.`). This is the separator between the two sections.

- *Data*. This is the content that will fill each cell of the table. Generally every line of input in this section corresponds to a row in the table, though there are exceptions noted later. Cells are separated by the `tab` option which defaults to a TAB character.

Region options

In addition to the overall table syntax itself, you may specify *region options* that control the parsing and styling of the table as a whole using a "show-everything" rule prior to the tables you would like to control. For example:

```
#show: tbl.template.with(
  allbox: true,
  tab: "|",
)
```

The following options are recognized:

auto-lines
Like `box`, but also draw a line between every cell if `true`. This is the same option from `tablex`.

Aliases: `allbox`
Default: `false`

box
If `true`, draw a line around the entire table.

Aliases: `frame`
Default: `false`

breakable
If `true`, the table can span multiple pages if necessary.

Aliases: `nokeep`
Default: `false`

decimalpoint
The string used to separate the integral part of a number from the fractional part.

Default: `"."`

doublebox
Like `box`, but also draw a second line around the entire table if `true`.

Aliases: `doubleframe`
Default: `false`

font
The font for the table. Can be overridden later by the format specifications.

Default: `"Times"`

header-rows	The number of rows at the beginning of the table to consider part of the "header" for the purposes of `repeat-header`. This option is also controlled by `.TH` rows in the table data. *Default:* `1`
macros	A dictionary of (name, function) pairs that can be used with column modifier `m`. *Default:* `(:)`
repeat-header	If `breakable` is `true` and this option is `true`, then the table header controlled by `header-rows` will be re-displayed on each subsequent page. This option is also controlled by `.TH` rows in the table data. *Default:* `false`
stroke	How to draw all lines in the table. *Aliases:* `linesize` *Default:* `1pt`
tab	The string delimiter that separates different cells within a given row of the table data. *Default:* `"\t"` (a TAB character)
tbl-align	How to align the table as a whole. *Default:* `left`

Format specifications

Data

Examples

Example 1: adapted from [4]

```tbl
lz  s | rt
lt| cb| ^
^ | rz  s.
left||r
l|center|
|right
```

```
| left        | r     |
| l | center  |       |
|        right|       |
```

Example 2: adapted from [5, p. 41]

```tbl
c c c
l l ne .
Fact|Location|Statistic
Largest state|Alaska|591,004 sq. mi.
Smallest state|Rhode Island|1,212 sq. mi.
Longest river|Mississippi-Missouri|3,710 mi.
Highest mountain|Mount McKinley, AK|20,320 ft.
Lowest point|Death Valley, CA|-- 282 ft.
```

Fact	Location	Statistic
Largest state	Alaska	591,004 sq. mi.
Smallest state	Rhode Island	1,212 sq. mi.
Longest river	Mississippi-Missouri	3,710 mi.
Highest mountain	Mount McKinley, AK	20,320 ft.
Lowest point	Death Valley, CA	– 282 ft.

Example 3: adapted from [4]

```tbl
r| l
r  n.
software|version

_
AFL|2.39b
Mutt|1.8.0
Ruby|1.8.7.374
TeX Live|2015
```

software	version
AFL	2.39b
Mutt	1.8.0
Ruby	1.8.7.374
TeX Live	2015

Example 4: adapted from [5, p. 43]

```tbl
cf(Courier New) s s s
c | cs s
c | cs s
c |c|c|c
c |c|c|c
l |n |ne |ne.
Composition of Foods
_
Food|Percent by Weight
\^|_
\^|Protein|Fat|Carbo-
\^|\^|\^|hydrate
_
Apples|.4|.5|13.0
Halibut|18.4|5.2|...
Lima beans|7.5|.8|22.0
Milk|3.3|4.0|5.0
Mushrooms|3.5|.4|6.0
Rye bread|9.0|.6|52.7
```

Composition of Foods			
Food	Percent by Weight		
	Protein	Fat	Carbo-hydrate
Apples	.4	.5	13.0
Halibut	18.4	5.2	...
Lima beans	7.5	.8	22.0
Milk	3.3	4.0	5.0
Mushrooms	3.5	.4	6.0
Rye bread	9.0	.6	52.7

Example 5: adapted from [5, p. 42]

```tbl
c s s
c | c | c
l | l | ne .
Major New York Bridges
_
Bridge|Designer|Length
_
Brooklyn|J . A . Roebling|1595
Manhattan|G . Lindenthal|1470
Williamsburg|L . L . Buck|1600
_
Queensborough|Palmer &|1182
|Hornbostel
_
||1380
Triborough|O . H . Ammann|_
||383
_
Bronx Whitestone|O . H . Ammann|2300
Throgs Neck|O . H . Ammann|1800
_
George Washington|O . H . Ammann|3500
```

Major New York Bridges		
Bridge	Designer	Length
Brooklyn	J . A . Roebling	1595
Manhattan	G . Lindenthal	1470
Williamsburg	L . L . Buck	1600
Queensborough	Palmer & Hornbostel	1182
Triborough	O . H . Ammann	1380
		383
Bronx Whitestone	O . H . Ammann	2300
Throgs Neck	O . H . Ammann	1800
George Washington	O . H . Ammann	3500

Example 6: adapted from [4]

```tbl
rb c  lb
r  ci l.
r|center|l
ri|ce|le
right|c|left
```

<div>

r	center	**l**
ri	*ce*	le
right	*c*	left

</div>

Example 7: adapted from [3]

```tbl
Cf(BI) Cf(BI) Cf(B), C C Cu.
n|n*#sym.times;*n|difference
1|1
2|4|3
3|9|5
4|16|7
5|25|9
6|36|11
```

<div>

n	***n×n***	**difference**
1	1	
		3
2	4	
		5
3	9	
		7
4	16	
		9
5	25	
		11
6	36	

</div>

Example 8: adapted from [5, p. 42]

```tbl
c c
np(-2) | n | .
|Stack
|_
1|46
|_
2|23
|_
3|15
|_
4|6.5
|_
5|2.1
|_
```

<div>

	Stack
1	46
2	23
3	15
4	6.5
5	2.1

</div>

Example 9: adapted from [5, p. 37]

```tbl
n.
13
4.2
26.4.12
26.4. 12
26.4 .12
abc
abc\&
43\&3.22
749.12
```

<div>

```
      13
      4.2
     26.4.12
       26.4. 12
    26.4 .12
       abc
       abc
      433.22
      749.12
```

</div>

Example 10: adapted from [5, p. 41]

```tbl
c s s
c c c
n n ne .
AT&T Common Stock
Year|Price|Dividend
1984|15-20|\$1.20
5|19-25|1.20
6|21-28|1.20
7|20-36|1.20
8|24-30|1.20
9|29-37|.30\*
```

AT&T Common Stock		
Year	Price	Dividend
1984	15-20	$1.20
5	19-25	1.20
6	21-28	1.20
7	20-36	1.20
8	24-30	1.20
9	29-37	.30*

Example 11

```tbl
cb cb
c   c.
Grade|Points
A|510
B|450
C|390
D|330
```

Grade	Points
A	510
B	450
C	390
D	330

Example 12: adapted from [5, p. 44]

```tbl
cf(I) s s
c cw(1in) cw(1in)
ltp(9) ltp(9) ltp(9).
New York Area Rocks
Era|Formation|Age (years)
Precambrian|Reading Prong|>1 billion
Paleozoic|Manhattan Prong|400 million
Mesozoic|T{
#set text(hyphenate: true, overhang: true)
Newark Basin, incl.
Stockton, Lockatong, and Brunswick
formations; also Watchungs
and Palisades.
T}|200 million
Cenozoic|Coastal Plain|T{
#set text(hyphenate: true, overhang: true)
#set par(justify: true)
On Long Island 30,000 years;
Cretaceous sediments redeposited
by recent glaciation.
T}
```

New York Area Rocks		
Era	Formation	Age (years)
Precambrian	Reading Prong	>1 billion
Paleozoic	Manhattan Prong	400 million
Mesozoic	Newark Basin, incl. Stockton, Lockatong, and Brunswick forma-tions; also Watchungs and Palisades.	200 million
Cenozoic	Coastal Plain	On Long Island 30,000 years; Cretaceous sediments redeposited by recent glaciation.

Example 13: adapted from [4]

```tbl
le le7| lw(10).
The fourth line|_|line 1
of this column|=|line 2
determines|\_|line 3
the column width.|T{
This text is too wide to fit into a column of width 17.
T}|line 4
T{
No break here.
T}||line 5
```

The fourth line	—————————————	line 1
of this column	═══════════════	line 2
determines	———————————	line 3
the column width.	This text is too wide to fit into a column of width 17.	line 4
No break here.		line 5

Example 14: adapted from [5, p. 45]

```tbl
cb s s s s
cp(-2) s s s s
c | c | c | c | c
c | c | c | c | c
r2 | n2 | n2 | n2e | nbe.
Readability of Text
Line Width and Leading for 10-Point Type
_
Line : Set : 1-Point : 2-Point : 4-Point
Width : Solid : Leading : Leading : Leading
_
9 Pica : 93 : --6.0 : --5.3 : --7.1
14 Pica : 450 : --0.6 : --0.3 : --1.7
19 Pica : 5 : --5.1 : 0.0 : --2.0
31 Pica : 3 : --3.8 : --2.4 : --3.6
43 Pica : 5.1 : --90000.000 : --5.9 : --8.8
```

| Readability of Text | | | | |
Line Width and Leading for 10-Point Type				
Line Width	Set Solid	1-Point Leading	2-Point Leading	4-Point Leading
9 Pica	93	−6.0	−5.3	**−7.1**
14 Pica	450	−0.6	−0.3	**−1.7**
19 Pica	5	−5.1	0.0	**−2.0**
31 Pica	3	−3.8	−2.4	**−3.6**
43 Pica	5.1	−90000.000	−5.9	**−8.8**

References

[1] https://typst.app/

[2] Pg Biel, "Typst-tablex." https://github.com/PgBiel/typst-tablex

[3] https://man7.org/linux/man-pages/man1/tbl.1.html

[4] https://man.openbsd.org/tbl.7

[5] L. L. Cherry, and M. E. Lesk, "Tbl – a program to format tables," in *Unix Res. System*, A. G. Hume, and M. D. McIlroy, Eds., vol. 2, 10th ed., Murray Hill, New Jersey 07974: Holt Rinehart & Winston, pp. 35–51. [Online]. Available: https://9p.io/10thEdMan/tbl.pdf