

A Table Geometry Manager for Tk

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Introduction

A geometry manager arranges windows (widgets) according to a particular layout style.

Conceived to simplify composition of graphic user interfaces.

- Manages size and placement of windows
- Automatically handles resizing of windows

Current implementations have several problems

- Overly complex
 - too hard to use
 - too many different managers
- Inflexible
 - difficult to align components
- Perpetuate bad graphical design

Table Geometry Manager

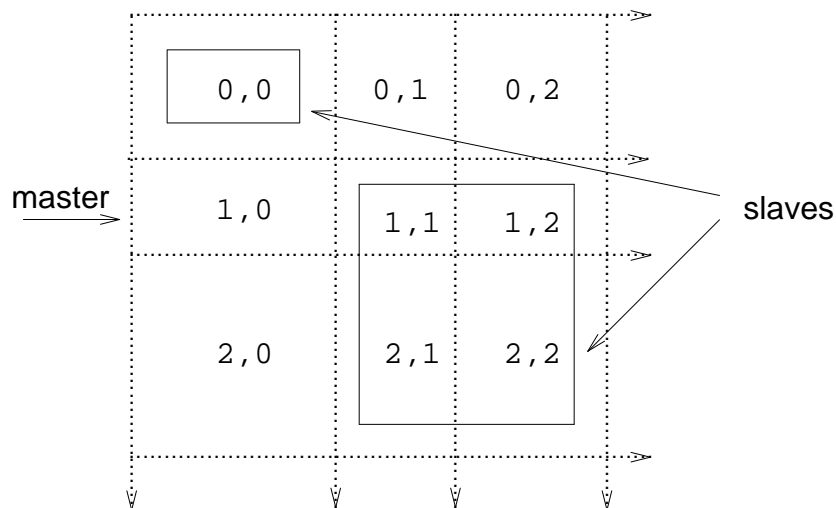
Arranges windows in a non-uniform rectilinear grid

Based upon two observations:

- Gridding is a common tool in graphical design.
 - Helps define relationships among graphical components (scale, balance, symmetry, etc.)
- Any orthogonal arrangement of rectangles can be described by a non-uniform grid.
 - Only need to consider horizontal and vertical relationships

Description

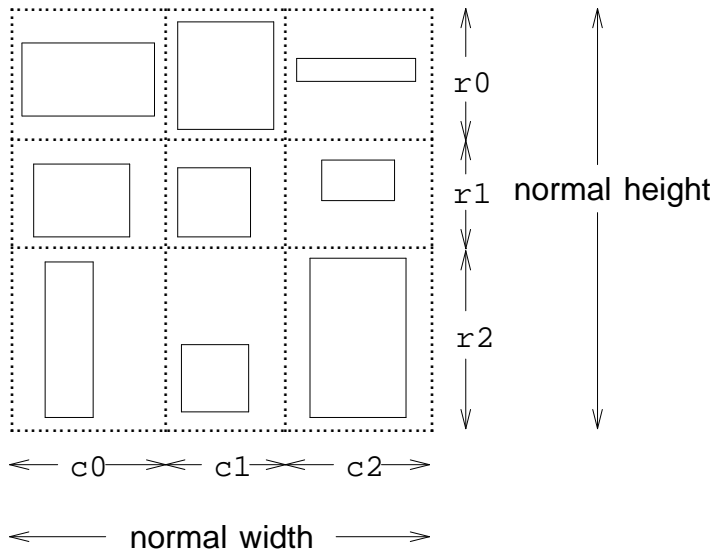
Table arranges windows (*slaves*) inside of another window (*master*).



- Master window partitioned into rows and columns
- Slave windows positioned at *row,column*
- Slaves may span multiple rows and columns (*row,column* is upper-left corner)
- But only one slave can start at any *row,column*

Layout

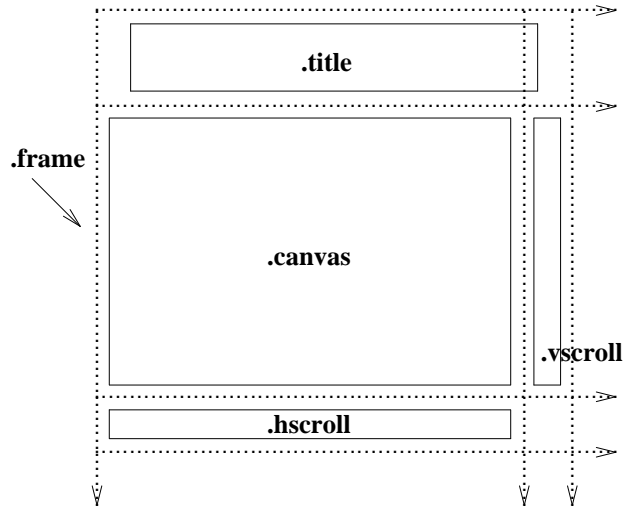
By default **table** tries to arrange all slaves in the minimum space required



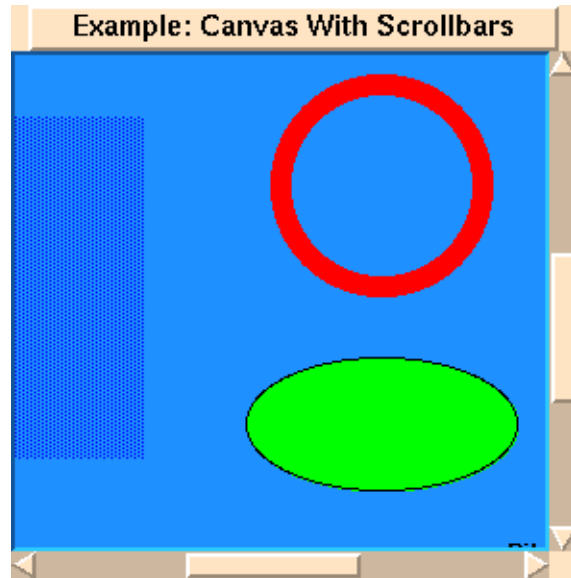
- Normal width/height of columns/rows based on requested sizes of slave windows
 - column width = max requested width
 - row height = max requested height
- Normal width/height of table is requested size of master window
 - table width = Σ column width
 - table height = Σ row height
- Extra space in master window (e.g. resizing) is divided among the rows and columns.

Example

- Canvas, label, two scrollbars



```
table .frame \  
    .title 0,0 -columnspan 2 \  
    .canvas 1,0 -fill both \  
    .vscroll 1,1 -fill y \  
    .hscroll 2,0 -fill x
```



June 1993						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			
						Quit

Layout Options

Slave window configuration options

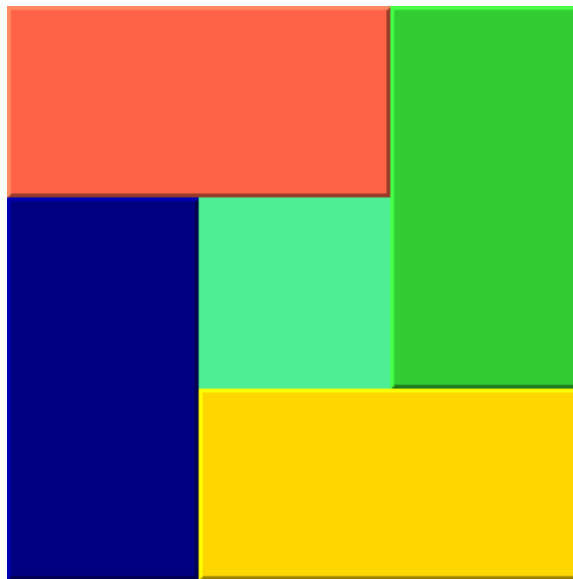
- Many **packer** options
 - `fill`
 - `anchor`
 - `padx, pady`
 - `ipadx, ipady`
- Can override requested size of slave window
 - `reqwidth, reqheight`

Row/column configuration options

- `resize`
 - controls stretch/shrink of row or column
- `padx, pady`
 - pads normal width/height of column/row
- `width, height`
 - specify normal width/height of column/row
 - create whitespace, enforce size requirements

Simplicity

- Table model is intuitive (*tbl*)
 - layout should be predictable from description
- Layout is independent of order specified
- Flattens hierarchy
 - reflects design view, not X hierarchy
 - one geometry manager



```
table . \
    .frame1 0,0 -columnspan 2 -fill both \
    .frame2 0,2 -rowspan 2 -fill both \
    .frame3 1,0 -rowspan 2 -fill both \
    .frame4 2,1 -columnspan 2 -fill both
```


Alignment

- Creates strong attraction between elements
- Table naturally aligns both vertically and horizontally
- Balances and groups elements

QUERY POST DATABASE

Name			Telephone		
howlett					
last	first	middle	area code	exchange	extension
Organization			Location		
				alc	
company	organization	title	room	location	new location
Address			e-mail		
street address					
city	state	zip code			

Howlett, George A	538640000	pa1830	215-770-3351	aluxpo!gah
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 Post query successful

Constraints

Override slave requested size or row/column size

- Not all widgets provide adequate resources to control their sizes
- Centralize layout description

Bound slave and row/column sizes too

- Four forms argument make take

<code>{ 2i }</code>	set size to value
<code>{ 1i 2i }</code>	bound size between min/max
<code>{ .5i 2i 1i }</code>	bound size and set nominal size
<code>{ }</code>	reset to default, no bounding

Example: three buttons all one inch in width

```
table .frame \  
    .apply 5,2 -reqwidth 1i \  
    .cancel 5,3 -reqwidth 1i \  
    .done 5,4 -reqwidth { .5i 3i 1i }
```

Spreadsheet Example

Parameters	Nominal	Minimum	Bounds	Maximum	Current
<input type="checkbox"/> VS	1.4398	1		2	1.4398
<input type="checkbox"/> VKO	0.0621	0.05		1	0.0621
<input type="checkbox"/> KN	1.071	1		10	1.071
<input type="checkbox"/> RO	99.143	10		10000	4205.8
<input type="checkbox"/> RX	264.334	10		10000	264.334
<input type="checkbox"/> R1	1	0		1	0.19
<input type="checkbox"/> C1	1	0		1	0.33
<input type="checkbox"/> XRF	1	0		1	0.76
<input type="checkbox"/> RS	1.1	0.1		10	1.1
<input type="checkbox"/> RD	1.1	0.1		10	1.1
<input type="checkbox"/> RHO	0.65	0.01		10	0.65
<input type="checkbox"/> COGS	0.326805	0		1	0.326805
<input type="checkbox"/> COGD	0.326805	0		1	0.326805
<input type="checkbox"/> CODS	0.18833	0		1	0.18833
<input type="checkbox"/> CGSO	1.5	0		10	1.5
<input type="checkbox"/> CGDO	1.5	0		10	1.5
<input type="checkbox"/> CDSO	0.4555	0		10	0.4555
<input type="checkbox"/> ALPH	0.2	0.01		1	0.2
<input type="checkbox"/> F	3	1		10	3
<input type="checkbox"/> A3	0	0		10	0
<input type="checkbox"/> E3	2.3	1		5	2.3
<input type="checkbox"/> DEL3	0	0		1	0
<input type="checkbox"/> A4	-2.22965	-10		0	-2.22965

Bugs

- Slave window is taken by another geometry manager
- Master window is managed by another geometry manager
 - Can cause strange interaction with window manager