`rowmantic`: Tables row by row

A Typst package for editing tables row-by-row.

The idea is a row-oriented way to input tables, with just a little less syntactical overhead than the usual `table` function in Typst.

The `rowtable` function works like the usual `table` function but takes one markup block (`[...]`) per row, and the markup is split internally[1] on a delimiter which is `&` by default.

Input:	`[A & B & C]`
Table cells (effectively):	`..([A], [B], [C])`

For improved table ergonomics, the table sizes the number of columns by the longest row. All rows are effectively completed so that they are of full length. This creates a better the editing experience, as rows can be filled out gradually.

Examples

Document Result

goá	*iáu-boē*	*koat-tēng*	*tang-sî*	*boeh*	*tńg-khì*
goa^{1}	iau^{1}-boe^{3}	koat^{2}-teng^{3}	tang^{7}-si^{5}	boeh^{2}	tng^{1}-khi^{3}
goa^{2}	iau^{2}-boe^{7}	koat^{4}-teng^{7}	tang^{1}-si^{5}	boeh^{4}	tng^{2}-khi^{3}
I	not-yet	decide	when	want	return.

“I have not yet decided when I shall return.”

Input

```
#{
  show regex("\d"): super.with(size: 0.8em, typographic: false)
  show table.cell: it => { set text(size: 0.9em) if it.y >= 1; it }
  show table.cell.where(y: 0): emph
  rowtable(
    separator: ",",   // configurable separator
    stroke: none,     // pass through table arguments, hlines, cells et.c.
    inset: (x: 0em),
    column-gutter: 0.9em,
    // rows are filled to be equal length after collecting cells
    [goá,   iáu-boē,    koat-tēng,    tang-sî,    boeh,   tńg-khì   ],
    [goa1,  iau1-boe3,  koat2-teng3,  tang7-si5,  boeh2,  tng1-khi3 ],
    [goa2,  iau2-boe7,  koat4-teng7,  tang1-si5,  boeh4,  tng2-khi3 ],
    [I,     not-yet,    decide,       when,       want,   return.   ],
    table.hline(),
    // cell that fills remainder of row
    expandcell["I have not yet decided when I shall return."],
  )
}
```

Example from Wikipedia[2]

[1] But shallowly - not looking into styled or nested content

[2] https://en.wikipedia.org/wiki/Interlinear_gloss

Document Result

Term	Explanation	Assumptions
$\mathbf{X}$	Explanatory variables	Non-random
$\mathbf{Y}$	$Y_1, ..., Y_n$ observations	**Pairwise independent**
β	Model parameters	

Input

```
#{
  set table(stroke: none, inset: 0.8em)
  set table.hline(stroke: 0.5pt)
  show table.cell.where(y: 0): strong
  show table.cell.where(x: 0): x => math.bold(math.upright(x))
  rowtable(
    table.hline(),
    table.header([Term  & Explanation         & Assumptions ]),
    table.hline(),
    [$X$      & Explanatory variables         & Non-random ],
    [$Y$      & $Y_1, ..., Y_n$ observations  & *Pairwise independent*],
    [$beta$   & Model parameters              ],
    table.hline(),
  )
}
```

Trying some more difficult examples

Document Result

Literal &	**Strong**	**X**–*Y*
Equation $\pi = 3.1415...$	$\int_\Omega d\omega$	$X \& Y$
π^1	π^2	π^3
• A • B	1. A 2. B	**A** a **B** b
Figure 1: Top A	See Figure 1 & Figure 2	B Figure 2: Bot
Nested rowtable A B	Nested table A B	`table.cell`
Cell with colspan=2		
Expandcell		the rest
N/A	N/A	N/A

Input

```
#rowtable(
  align: horizon,
  stroke: 0.1pt,
  row-filler: [N/A],
  [Literal \& & *Strong* & *X*--_Y_ ],
  [Equation \ $pi = 3.1415...$ & $ integral_Omega d omega $  & $X \& Y$],
  $ pi^1 & pi^2 & pi^3 $,
  [
    - A
    - B
    &
    + A
    + B
    &
    / **A**: a
    / **B**: b
  ],
  [
    #{
      set figure.caption(position: top)
      [#figure(rect[A], caption: "Top")<fig1>]
    }
    &
    See @fig1 \& @fig2
    &
    #figure(rect[B], caption: "Bot")<fig2>
  ],
  {
    [Nested rowtable \ ]
    rowtable([A & B])
    [&]
    [Nested table \ ]
    table(columns: 2, [A], [B])
    [&]
    table.cell(stroke: 1pt + red)[`table.cell`]
  },
  [#table.cell(fill: yellow.lighten(90%), colspan: 2)[Cell with colspan=2] &#none],
  [#expandcell(fill: yellow.lighten(90%))[Expandcell] & #expandcell[the rest]],
  table.footer([]),
)
```

Double semicolon separator

Document Result

First	This is a literal ;; and ; and , and &
Second; Third	Equation $\pi = 3.1415...$

Input

```
#rowtable(
  separator: ";;",
  stroke: 0.5pt,
  [First           ;; This is a literal \;\; and ; and , and & ],
  [Second; Third   ;; Equation $pi = 3.1415...$],
)
```

Combine with pillar (or other table function)

Use the `table` argument to let rowtable pass its result to a different table function rather than the standard one, for example `pillar.table` (shown below) or `zero.ztable`.

Document Result

Isotope	Z	N	Half-life	Mass (Da)	Abundance (%)
^{107}Ag	47	60	Stable	106.905 091 5(26)	51.839 ± 0.008
^{109}Ag	47	62	Stable	108.904 755 8(14)	48.161 ± 0.008

Input

```
#import "@preview/pillar:0.3.2"
#set text(font: "Libertinus Serif")
#show table.cell.where(y: 0): strong
#rowtable(
  separator: ",",
  table: pillar.table,
  cols: "rCCCCC",
  format: (auto, ) * 4 + ((uncertainty-mode: "compact"), auto),
  column-gutter: (0.5em, 0pt),
  stroke: (x, y) => if y == 0 { (bottom: 0.75pt) },
  table.header(
  [Isotope,       Z,  N,  Half-life,  Mass (Da),        Abundance (%) ]),
  [#super[107]Ag, 47, 60, Stable,     106.9050915(26),  51.839(8) ],
  [#super[109]Ag, 47, 62, Stable,     108.9047558(14),  48.161(8) ],
)
```

Equations

Equations as rows are are split on `&` by default. Other symbols are possible. Note that `&` can be escaped in equations, but other separator symbols are not as easy to escape[3].

Document Result

A	B	C	D	E
1	x	x^2	$\sum_i^n$	inline equation row
1	x	x^2	$\sum_i^n$	block equation row
1	x	x^2	$\sum_i^n$	markup with embedded equations row

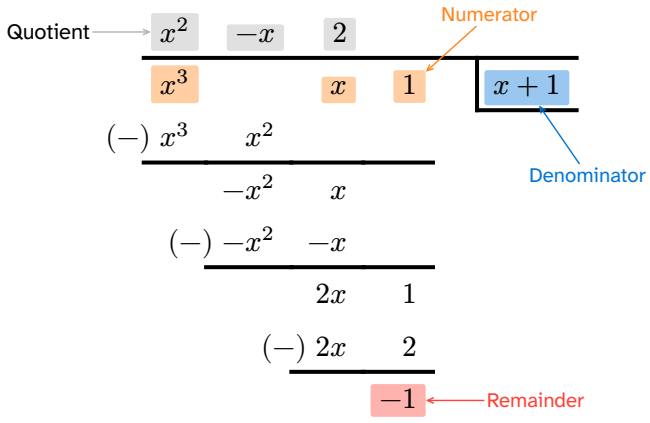
Input

```
#rowtable(
  align: center + horizon,
  stroke: (x, y) => (bottom: int(y == 0) * 1pt),
  separator: ",",     // regular sep
  separator-eq: $&$,  // equation sep
  [A, B, C, D, E],
  $1  & x   & x^2 & sum_i^n & #[inline equation row]$,
  $ 1 & x   & x^2 & sum_i^n & #[block equation row] $,
  [$1$, $x$, $x^2$, $ sum_i^n $, markup with embedded \ equations row],
)
```

Long Division

This example shows one way to set up long division. In this case it's polynomial division, computing the result $x^3 + x + 1 = (x^2 - x + 2)(x + 1) - 1$. For this example, the colorful annotations add the most of the complexity. `rowtable` contributes to the example by splitting equations on the separator and filling rows to be equal length.

Document Result



Input

```
#import "@preview/mannot:0.3.0": annot, markhl
```

[3]The escape for `&` is just `\&`, for other separators like for example the comma use a `box` to escape them in an equation.

```
/// Set up strokes and gutter for long division table
#let longdiv(..args, table: std.table) = {
  let cols = args.at("columns")
  let st = std.stroke(args.at("stroke", default: black))
  let stroke = (x, y) => (
     // Add left stroke to the last column
    left: if x == cols - 1 and y == 1 { st },
    bottom: if (
      // Add top and bottom stroke to denominator cell
      y == 1 and x == cols - 1
      // Add bottom stroke every two rows (calc.even check),
      // but for one less column each time
      or y >= 1 and x < cols - 1 and calc.even(y) and x + 1 >= y / 2
    ) {
      st
    }
  )
  table(..args,
    column-gutter: (0pt,) * (cols - 2) + (1.5em, ),
    stroke: stroke,
    std.table.hline(y: 1, stroke: st))
}

// Set up marking functions
#let markhl = markhl.with(outset: (top: 0.15em, rest: 0.30em), radius: 1pt)
#let um = math.class("unary", math.minus) // unary minus
#let mkq = markhl.with(color: luma(70%))
#let mkn = markhl.with()
#let mkdenom = markhl.with(color: blue, tag: <denom>)
#let mkrem = markhl.with(color: red, tag: <rem>)

#let leftset(x) = box(place(dx: -0.3em, right + bottom, $#x$))
#let rm = math.class("unary", leftset($(-)$)) // row minus

#show: block.with(breakable: false)
#rowtable(
  align: right,
  table: longdiv.with(stroke: 1.5pt),
  inset: 0.55em,
  $mkq(x^2, tag: #<ans>)& mkq(um x) & mkq(2)    &$,
  $mkn(x^3) &           & mkn(x)    & mkn(1, tag: #<num>) & mkdenom(x + 1)$,
  $rm x^3   & x^2$,

  $         &-x^2       &  x$,
  $         & rm -x^2 & -x$,

  $         &           &   2x  & 1$,
  $         &           &rm 2x  & 2$,

  $         &           &       & mkrem(um 1)$,
)
#annot(<ans>, pos: left + horizon, dx: -2em, dy: -0em, annot-text-props: (fill:
black, size: 0.75em))[Quotient]
#annot(<denom>, pos: right + bottom, dy: +2em)[Denominator]
#annot(<num>, pos: right + top, dy: -1.5em, dx: 1em)[Numerator]
#annot(<rem>, pos: right + horizon, dy: 0em, dx: 2em)[Remainder]
```

Equations with alignment

Use a different separator than `&` to use equations with alignment.

Document Result

Matrix Form	Equation System Form
$\begin{bmatrix} y_1 \\ y_2 \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$	$(1\text{st})\ y_1 = a_{11}x_1 + a_{12}x_2$ $(2\text{nd})\ y_2 = a_{21}x_1 + a_{22}x_2$

Input

```
#set math.mat(delim: "[")
#rowtable(
  separator: ";",
  stroke: (x, y) => (bottom: int(y == 0) * 1pt),
  [Matrix Form; Equation System Form],
  $
    mat(y_1; y_2) = mat(a_11, a_12; a_21, a_22) mat(x_1; x_2)
    ;
    "(1st)" y_1 &= a_11 x_1 &+ a_12 x_2 \
    "(2nd)" y_2 &= a_21 x_1 &+ a_22 x_2 \
  $
)
```