

# Package ‘pillar’

January 14, 2018

**Title** Coloured Formatting for Columns

**Version** 1.1.0

**Description** Provides a 'pillar' generic designed for formatting columns of data using the full range of colours provided by modern terminals.

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**URL** <https://github.com/r-lib/pillar>

**BugReports** <https://github.com/r-lib/pillar/issues>

**Imports** cli, crayon (>= 1.3.4), methods, rlang, utf8 (>= 1.1.3)

**Suggests** knitr, testthat (>= 2.0.0)

**RoxygenNote** 6.0.1

**Collate** 'capital.R' 'compat-purrr.R' 'dim.R' 'extent.R' 'multi.R' 'ornament.R' 'pillar-package.R' 'pillar.R' 'rowid-capital.R' 'rowid-data.R' 'rowid-title.R' 'rowid-type.R' 'scientific.R' 'shaft.R' 'shaft-simple.R' 'sigfig.R' 'spark-bar.R' 'spark-line.R' 'strep.R' 'styles.R' 'testthat.R' 'tick.R' 'title.R' 'type-sum.R' 'type.R' 'utils.R' 'width.R' 'zzz.R'

**NeedsCompilation** no

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**Repository** CRAN

**Date/Publication** 2018-01-14 22:42:38 UTC

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pillar-package      *pillar: Coloured Formatting for Columns*

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### Description

Provides a 'pillar' generic designed for formatting columns of data using the full range of colours provided by modern terminals.

### Package options

- `pillar.bold`: Use bold font, e.g. for column headers? This currently defaults to FALSE, because many terminal fonts have poor support for bold fonts.
- `pillar.subtle`: Use subtle style, e.g. for insignificant digits? Default: TRUE.
- `pillar.neg`: Highlight negative numbers? Default: TRUE.
- `pillar.sigfig`: The number of significant digits that will be printed and highlighted, default: 3. Set the `pillar.subtle` option to FALSE to turn off highlighting of significant digits.
- `pillar.min_title_chars`: The minimum number of characters for the column title, default: 15. Column titles may be truncated up to that width to save horizontal space. Set to Inf to turn off truncation of column titles.

### Author(s)

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### See Also

Useful links:

- <https://github.com/r-lib/pillar>
- Report bugs at <https://github.com/r-lib/pillar/issues>

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`colonnade`*Format multiple vectors in a tabular display*

---

### Description

The vectors are formatted to fit horizontally into a user-supplied number of characters per row.

The `squeeze()` function is called by `format()` and `print()` and usually doesn't need to be called manually. It returns an object suitable for printing and formatting at a fixed width with additional information about omitted columns.

### Usage

```
colonnade(x, has_row_id = TRUE, width = NULL, ...)
```

```
squeeze(x, width = NULL, ...)
```

### Arguments

<code>x</code>	A list of vectors to format
<code>has_row_id</code>	Include a column indicating row IDs? Pass "*" to mark the row ID column with a star.
<code>width</code>	Default width of the entire output, optional
<code>...</code>	Ignored

### Details

Pillars may be distributed over multiple tiers if `width > getOption("width")`. In this case each tier is at most `getOption("width")` characters wide. The very first step of formatting is to determine how many tiers are shown at most, and the width of each tier.

To avoid unnecessary computation for showing very wide colonnades, a first pass tries to fit all capitals into the tiers. For each pillar whose capital fits, it is then decided in which tier it is shown, if at all, and how much horizontal space it may use (either its minimum or its maximum width). Remaining space is then distributed proportionally to pillars that do not use their desired width.

For fitting pillars in one or more tiers, it is first attempted to fit all of them in the first tier. If this succeeds (or if no more tiers are available), this fit is accepted. Otherwise, an attempt is made to fit all remaining pillars in the remaining tiers (with a recursive call). If there still are pillars that don't fit, the minimum-width fit is accepted.

In case all remaining pillars fit all remaining tiers, a heuristic selects the optimal number of pillars in the first tier. The tier is grown starting with all pillars that are fitting with their desired width (at least one pillar will be used), and attempts are made to fit the remaining pillars in the remaining tiers (with a recursive call for each attempt). The first successful fit (or otherwise the initial minimum-width fit) is accepted.

For computing the pillar widths in a single tier, two cases are distinguished:

1. When taking the minimum width for each pillar (plus one inter-pillar space), at least one pillar does not fit. In this case, the minimum width is assigned to all pillars that do fit, the non-fitting pillars are stripped.
2. All pillars fit with their minimum width. In this case, starting at the leftmost pillar, the maximum width is allocated to the pillars until all available space is used.

The remaining space is distributed from left to right. Each column gains space proportional to the fraction of missing and remaining space, rounded down. Any space remaining after rounding is distributed from left to right, one space per column.

### Examples

```
colonnade(list(a = 1:3, b = letters[1:3]))

long_string <- list(paste(letters, collapse = " "))
colonnade(long_string, width = 20)
colonnade(long_string, has_row_id = FALSE, width = 20)

# The width can also be overridden when calling format() or print():
print(colonnade(long_string), width = 20)

# If width is larger thangetOption("width"), multiple tiers are created:
colonnade(rep(long_string, 4), width = Inf)
squeeze(colonnade(long_string), width = 20)
```

---

dim\_desc

*Format dimensions*

---

### Description

Multi-dimensional objects are formatted as  $a \times b \times \dots$ , for vectors the length is returned.

### Usage

```
dim_desc(x)
```

### Arguments

**x**                      The object to format the dimensions for

### Examples

```
dim_desc(1:10)
dim_desc(Titanic)
```

---

expect\_known\_display *Test helpers*

---

## Description

Expectation for packages that implement a data type with pillar support. Allows storing the desired result in a file, and comparing the output with the file contents. Note that this expectation sets options that affect the formatting of the pillar, see examples for usage.

## Usage

```
expect_known_display(object, file, ..., width = 80L, crayon = TRUE)
```

## Arguments

object	object to test
file	File path where known value/output will be stored.
...	Unused.
width	The width of the output.
crayon	Color the output?

## Examples

```
file <- tempfile("pillar", fileext = ".txt")

# The pillar is constructed after options have been set
# (need two runs because reference file doesn't exist during the first run)
suppressWarnings(tryCatch(
  expect_known_display(pillar(1:3), file, crayon = FALSE),
  expectation_failure = function(e) {}
))
expect_known_display(pillar(1:3), file, crayon = FALSE)

# Good: Use tidyeval to defer construction
pillar_quo <- rlang::quo(pillar(1:3))
expect_known_display(!pillar_quo, file, crayon = FALSE)

## Not run:
# Bad: Options set in the active session may affect the display
integer_pillar <- pillar(1:3)
expect_known_display(integer_pillar, file, crayon = FALSE)

## End(Not run)
```

---

extra_cols	<i>Retrieve information about columns that didn't fit the available width</i>
------------	---

---

### Description

Formatting a `colonnade` object may lead to some columns being omitted due to width restrictions. This method returns a character vector that describes each of the omitted columns.

### Usage

```
extra_cols(x, ...)

## S3 method for class 'squeezed_colonnade'
extra_cols(x, ..., n = Inf)
```

### Arguments

x	The result of <code>squeeze()</code> on a <code>colonnade</code> object
...	Unused
n	The number of extra columns to return; the returned vector will always contain as many elements as there are extra columns, but elements beyond n will be NA.

### Examples

```
extra_cols(squeeze(colonnade(list(a = 1:3, b = 4:6), width = 8)))
```

---

get_extent	<i>Calculate display width</i>
------------	--------------------------------

---

### Description

`get_extent()` calculates the display width for each string in a character vector.

`get_max_extent()` calculates the maximum display width of all strings in a character vector, zero for empty vectors.

### Usage

```
get_extent(x)

get_max_extent(x)
```

### Arguments

x	A character vector.
---	---------------------

**Examples**

```
get_extent(c("abc", "de"))
get_extent("\u904b\u6c23")
get_max_extent(c("abc", "de"))
```

---

new\_ornament

*Helper to define the contents of a pillar*


---

**Description**

This function is useful if your data renders differently depending on the available width. In this case, implement the `pillar_shaft()` method for your class to return a subclass of "pillar\_shaft" and have the `format()` method for this subclass call `new_ornament()`. See the implementation of `pillar_shaft.numeric()` and `format.pillar_shaft_decimal()` for an example.

**Usage**

```
new_ornament(x, width = NULL, align = NULL)
```

**Arguments**

x	A character vector with formatting, see <a href="#">crayon</a>
width	An optional width of the resulting pillar, computed from x if missing
align	Alignment, one of "left" or "right"

**Examples**

```
new_ornament(c("abc", "de"), align = "right")
```

---

new\_pillar\_shaft

*Constructor for column data*


---

**Description**

The `new_pillar_shaft()` constructor creates objects of the "pillar\_shaft" class. This is a virtual or abstract class, you must specify the `subclass` argument. By convention, this should be a string that starts with "pillar\_shaft\_". See `vignette("extending", package = "tibble")` for usage examples.

`new_pillar_shaft_simple()` provides an implementation of the `pillar_shaft` class suitable for output that has a fixed formatting, which will be truncated with a continuation character (ellipsis or ~) if it doesn't fit the available width. By default, the required width is computed from the natural width of the formatted argument.

**Usage**

```
new_pillar_shaft(x, ..., width, min_width = width, subclass)

new_pillar_shaft_simple(formatted, ..., width = NULL, align = "left",
  min_width = NULL, na_indent = 0L)
```

**Arguments**

x	An object
...	Additional attributes
width	The maximum column width.
min_width	The minimum allowed column width, width if omitted.
subclass	The name of the subclass.
formatted	An object coercible to <a href="#">character</a> .
align	Alignment of the column.
na_indent	Indentation of NA values.

**Details**

The formatted argument may also contain ANSI escapes to change color or other attributes of the text, see [crayon](#).

---

pillar	<i>Format a vector suitable for tabular display</i>
--------	---

---

**Description**

pillar() formats a vector using one row for a title (if given), one row for the type, and length(x) rows for the data.

**Usage**

```
pillar(x, title = NULL, width = NULL, ...)
```

**Arguments**

x	A vector to format
title	An optional title for the column
width	Default width, optional
...	Other arguments passed to methods

**Examples**

```

x <- 123456789 * (10 ^ c(-1, -3, -5, NA, -8, -10))
pillar(x)
pillar(-x)
pillar(runif(10))
pillar(rcauchy(20))

# Special values are highlighted
pillar(c(runif(5), NA, NaN, Inf, -Inf))

# Very wide ranges will be displayed in scientific format
pillar(c(1e10, 1e-10), width = 20)
pillar(c(1e10, 1e-10))

x <- c(FALSE, NA, FALSE, FALSE, TRUE, FALSE, FALSE, TRUE, FALSE, TRUE)
pillar(x)

x <- c("This is string is rather long", NA, "?", "Short")
pillar(x)
pillar(x, width = 30)
pillar(x, width = 5)

date <- as.Date("2017-05-15")
pillar(date + c(1, NA, 3:5))
pillar(as.POSIXct(date) + c(30, NA, 600, 3600, 86400))

```

---

pillar\_shaft

*Column data*


---

**Description**

Internal class for formatting the data for a column. `pillar_shaft()` is a coercion method that must be implemented for your data type to display it in a tibble.

This class comes with a default method for `print()` that calls `format()`. If `print()` is called without width argument, the natural width will be used when calling `format()`. Usually there's no need to implement this method for your subclass.

Your subclass must implement `format()`, the default implementation just raises an error. Your `format()` method can assume a valid value for the width argument.

**Usage**

```

pillar_shaft(x, ...)

## S3 method for class 'pillar_shaft'
print(x, width = NULL, ...)

## S3 method for class 'pillar_shaft'
format(x, width, ...)

```

```
## S3 method for class 'logical'
pillar_shaft(x, ...)

## S3 method for class 'numeric'
pillar_shaft(x, ..., sigfig = getOption("pillar.sigfig", 3))

## S3 method for class 'Date'
pillar_shaft(x, ...)

## S3 method for class 'POSIXt'
pillar_shaft(x, ...)

## S3 method for class 'character'
pillar_shaft(x, ...)

## S3 method for class 'list'
pillar_shaft(x, ...)

## S3 method for class 'AsIs'
pillar_shaft(x, ...)

## Default S3 method:
pillar_shaft(x, ...)
```

### Arguments

x	A vector to format
...	Unused, for extensibility.
width	Width for printing and formatting.
sigfig	Minimum number of significant figures to display. Numbers larger than 1 will potentially show more significant figures than this but they will be greyed out.

### Details

The default method will currently coerce via `as.character()`, but you should not rely on this behavior.

### Examples

```
pillar_shaft(1:3)
pillar_shaft(1.5:3.5)
pillar_shaft(NA)
pillar_shaft(c(1:3, NA))
```

---

`style_num`*Styling helpers*

---

## Description

Functions that allow implementers of formatters for custom data types to maintain a consistent style with the default data types.

## Usage

```
style_num(x, negative, significant = rep_along(x, TRUE))
```

```
style_subtle(x)
```

```
style_bold(x)
```

```
style_na(x)
```

```
style_neg(x)
```

## Arguments

`x` The character vector to style.

`negative`, `significant`

Logical vector the same length as `x` that indicate if the values are negative and significant, respectively

## Details

`style_subtle()` is affected by the `pillar.subtle` option.

`style_bold()` is affected by the `pillar.bold` option.

`style_neg()` is affected by the `pillar.neg` option.

## See Also

[pillar-package](#) for a list of options

## Examples

```
style_num(  
  c("123", "456"),  
  negative = c(TRUE, FALSE)  
)  
style_num(  
  c("123", "456"),  
  negative = c(TRUE, FALSE),  
  significant = c(FALSE, FALSE)
```

```
)  
style_subtle("text")  
style_bold("Petal.Width")  
style_na("NA")  
style_neg("123")
```

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