Package ‘tibble’

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Title Simple Data Frames

Version 3.1.8

Description Provides a 'tbl_df' class (the 'tibble') with stricter checking and better formatting than the traditional data frame.

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BugReports https://github.com/tidyverse/tibble/issues

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tibble: Simple Data Frames

Description

Provides a 'tbl_df' class (the 'tibble') with stricter checking and better formatting than the traditional data frame.
Details

[Stable]

The tibble package provides utilities for handling tibbles, where "tibble" is a colloquial term for the S3 tbl_df class. The tbl_df class is a special case of the base data.frame class, developed in response to lessons learned over many years of data analysis with data frames.

Tibble is the central data structure for the set of packages known as the tidyverse, including dplyr, ggplot2, tidyr, and readr.

General resources:

- Website for the tibble package: https://tibble.tidyverse.org
- Tibbles chapter in R for Data Science

Resources on specific topics:

- Create a tibble: tibble(), as_tibble(), tribble(), enframe()
- Inspect a tibble: print.tbl(), glimpse()
- Details on the S3 tbl_df class: tbl_df
- Package options: tibble_options

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See Also

Useful links:

- https://tibble.tidyverse.org/
- https://github.com/tidyverse/tibble
- Report bugs at https://github.com/tidyverse/tibble/issues
add_column

Add columns to a data frame

Description

This is a convenient way to add one or more columns to an existing data frame.

Usage

```r
add_column(
  .data,
  ..., ;
  .before = NULL,
  .after = NULL,
  .name_repair = c("check_unique", "unique", "universal", "minimal")
)
```

Arguments

- **.data**: Data frame to append to.
- **...**: <dynamic-dots> Name-value pairs, passed on to `tibble()`. All values must have the same size as `.data` or size 1.
- **.before, .after**: One-based column index or column name where to add the new columns, default: after last column.
- **.name_repair**: Treatment of problematic column names:
  - "minimal": No name repair or checks, beyond basic existence,
  - "unique": Make sure names are unique and not empty,
  - "check_unique": (default value), no name repair, but check they are unique,
  - "universal": Make the names unique and syntactic
  - a function: apply custom name repair (e.g., `.name_repair = make.names` for names in the style of base R).
  - A purrr-style anonymous function, see `rlang::as_function()`

This argument is passed on as repair to `vctrs::vec_as_names()`. See there for more details on these terms and the strategies used to enforce them.

See Also

Other addition: `add_row()`

Examples

```
# add_column ---------------------------------
df <- tibble(x = 1:3, y = 3:1)

df %>% add_column(z = -1:1, w = 0)
```
**add_row**

This is a convenient way to add one or more rows of data to an existing data frame. See `tribble()` for an easy way to create an complete data frame row-by-row. Use `tibble_row()` to ensure that the new data has only one row. 

```
add_case() is an alias of add_row().
```

### Usage

```
add_row(.data, ..., .before = NULL, .after = NULL)
```

### Arguments

- `.data`  
  Data frame to append to.
- `...`  
  Name-value pairs, passed on to `tibble()`. Values can be defined only for columns that already exist in `.data` and unset columns will get an **NA** value.
- `.before`, `.after`  
  One-based row index where to add the new rows, default: after last row.

### See Also

Other addition: `add_column()`

### Examples

```
# add_row ---------------------------------
df <- tibble(x = 1:3, y = 3:1)
df %>% add_row(x = 4, y = 0)

# You can specify where to add the new rows
df %>% add_row(x = 4, y = 0, .before = 2)

# You can supply vectors, to add multiple rows (this isn't recommended because it's a bit hard to read)
```
df %>% add_row(x = 4:5, y = 0:-1)

# Use tibble_row() to add one row only
df %>% add_row(tibble_row(x = 4, y = 0))
try(df %>% add_row(tibble_row(x = 4:5, y = 0:-1)))

# Absent variables get missing values
df %>% add_row(x = 4)

# You can’t create new variables
try(df %>% add_row(z = 10))

---

### as_tibble

**Coerce lists, matrices, and more to data frames**

**Description**

as_tibble() turns an existing object, such as a data frame or matrix, into a so-called tibble, a data frame with class tbl_df. This is in contrast with tibble(), which builds a tibble from individual columns. as_tibble() is to tibble() as base::as.data.frame() is to base::data.frame().

as_tibble() is an S3 generic, with methods for:

- **data.frame**: Thin wrapper around the list method that implements tibble’s treatment of rownames.
- **matrix, poly, ts, table**

Default: Other inputs are first coerced with base::as.data.frame().

as_tibble_row() converts a vector to a tibble with one row. If the input is a list, all elements must have size one.

as_tibble_col() converts a vector to a tibble with one column.

**Usage**

```r
as_tibble(  
  x,  
  ...,  
  .rows = NULL,  
  .name_repair = c("check_unique", "unique", "universal", "minimal"),  
  rownames = pkgconfig::get_config("tibble::rownames", NULL)  
)
```

```r
## S3 method for class 'data.frame'
as_tibble(  
  x,  
  validate = NULL,  
  ...,  
  .rows = NULL,  
)```
as_tibble

  .name_repair = c("check_unique", "unique", "universal", "minimal"),
  rownames = pkgconfig::get_config("tibble::rownames", NULL)
)

## S3 method for class 'list'

as_tibble(x,
  validate = NULL,
  ..., 
  .rows = NULL,
  .name_repair = c("check_unique", "unique", "universal", "minimal")
)

## S3 method for class 'matrix'

as_tibble(x, ..., validate = NULL, .name_repair = NULL)

## S3 method for class 'table'

as_tibble(x, `_n` = "n", ..., n = `_n`, .name_repair = "check_unique")

## S3 method for class `NULL`

as_tibble(x, ...)

## Default S3 method:

as_tibble(x, ...)

as_tibble_row(
  x,
  .name_repair = c("check_unique", "unique", "universal", "minimal")
)

as_tibble_col(x, column_name = "value")

Arguments

x A data frame, list, matrix, or other object that could reasonably be coerced to a
tibble.

... Unused, for extensibility.

.rows The number of rows, useful to create a 0-column tibble or just as an additional
check.

.name_repair Treatment of problematic column names:
  
  • "minimal": No name repair or checks, beyond basic existence,
  • "unique": Make sure names are unique and not empty,
  • "check_unique": (default value), no name repair, but check they are unique,
  • "universal": Make the names unique and syntactic
  
  • a function: apply custom name repair (e.g., .name_repair = make.names
    for names in the style of base R).
  • A purrr-style anonymous function, see rlang::as_function()
This argument is passed on as repair to vctrs::vec_as_names(). See there for more details on these terms and the strategies used to enforce them.

**rownames**
How to treat existing row names of a data frame or matrix:
- **NULL**: remove row names. This is the default.
- **NA**: keep row names.
- A string: the name of a new column. Existing rownames are transferred into this column and the row.names attribute is deleted. Read more in rownames.

**_n, validate**
[SofT-deprecated]
For compatibility only, do not use for new code.

**n**
Name for count column, default: “n”.

**column_name**
Name of the column.

**Row names**
The default behavior is to silently remove row names.

New code should explicitly convert row names to a new column using the rownames argument.

For existing code that relies on the retention of row names, call pkgconfig::set_config("tibble::rownames" = NA) in your script or in your package’s .onLoad() function.

**Life cycle**
Using as_tibble() for vectors is superseded as of version 3.0.0, prefer the more expressive as_tibble_row() and as_tibble_col() variants for new code.

**See Also**
tibble() constructs a tibble from individual columns. enframe() converts a named vector to a tibble with a column of names and column of values. Name repair is implemented using vctrs::vec_as_names().

**Examples**
```r
m <- matrix(rnorm(50), ncol = 5)
colnames(m) <- c("a", "b", "c", "d", "e")
df <- as_tibble(m)

as_tibble_row(c(a = 1, b = 2))
as_tibble_row(list(c = "three", d = list(4:5)))
as_tibble_row(1:3, .name_repair = "unique")

as_tibble_col(1:3)
as_tibble_col(
  list(c = "three", d = list(4:5)),
  column_name = "data"
)
```
Description

[Experimental]

Constructs a character vector that can be formatted with predefined minimum width or without width restrictions, and where the abbreviation style can be configured.

The formatting is applied when the vector is printed or formatted, and also in a tibble column.

`set_char_opts()` adds formatting options to an arbitrary character vector, useful for composing with other types.

Usage

```r
char(
  x,
  ..., min_chars = NULL,
  shorten = c("back", "front", "mid", "abbreviate")
)

set_char_opts(
  x,
  ..., min_chars = NULL,
  shorten = c("back", "front", "mid", "abbreviate")
)
```

Arguments

- `x` A character vector.
- `...` These dots are for future extensions and must be empty.
- `min_chars` The minimum width to allocate to this column, defaults to 15. The "pillar.min_chars" option is not consulted.
- `shorten` How to abbreviate the data if necessary:
  - "back" (default): add an ellipsis at the end
  - "front": add an ellipsis at the front
  - "mid": add an ellipsis in the middle
  - "abbreviate": use `abbreviate()`

See Also

Other vector classes: `num()`
Examples

# Display as a vector:
char(letters[1:3])

# Space constraints:
rand_strings <- stringi::stri_rand_strings(10, seq(40, 22, by = -2))

# Plain character vectors get truncated if space is limited:
data_with_id <- function(id) {
tibble(
  id,
  some_number_1 = 1, some_number_2 = 2, some_number_3 = 3,
  some_number_4 = 4, some_number_5 = 5, some_number_6 = 6,
  some_number_7 = 7, some_number_8 = 8, some_number_9 = 9
)
}
data_with_id(rand_strings)

# Use char() to avoid or control truncation
data_with_id(char(rand_strings, min_chars = 24))
data_with_id(char(rand_strings, min_chars = Inf))
data_with_id(char(rand_strings, min_chars = 24, shorten = "mid"))

# Lorem Ipsum, one sentence per row.
lipsum <- unlist(strsplit(stringi::stri_rand_lipsum(1), "(?<=\[\.]) +", perl = TRUE))
tibble(
  back = char(lipsum, shorten = "back"),
  front = char(lipsum, shorten = "front"),
  mid = char(lipsum, shorten = "mid")
)
tibble(abbr = char(lipsum, shorten = "abbreviate"))

---
enframe

Converting vectors to data frames, and vice versa

Description

enframe() converts named atomic vectors or lists to one- or two-column data frames. For a list, the result will be a nested tibble with a column of type list. For unnamed vectors, the natural sequence is used as name column.

deframe() converts two-column data frames to a named vector or list, using the first column as name and the second column as value. If the input has only one column, an unnamed vector is returned.

Usage

enframe(x, name = "name", value = "value")
deframe(x)
Arguments

- **x**: A vector (for `enframe()`) or a data frame with one or two columns (for `deframe()`).
- **name, value**: Names of the columns that store the names and values. If `name` is `NULL`, a one-column tibble is returned; `value` cannot be `NULL`.

Value

For `enframe()`, a tibble with two columns (if `name` is not `NULL`, the default) or one column (otherwise).

For `deframe()`, a vector (named or unnamed).

Examples

```r
enframe(1:3)
enframe(c(a = 5, b = 7))
enframe(list(one = 1, two = 2:3, three = 4:6))
deframe(enframe(3:1))
deframe(tibble(a = 1:3))
deframe(tibble(a = as.list(1:3)))
```

Description

One of the main features of the `tbl_df` class is the printing:

- Tibbles only print as many rows and columns as fit on one screen, supplemented by a summary of the remaining rows and columns.
- Tibble reveals the type of each column, which keeps the user informed about whether a variable is, e.g., `<chr>` or `<fct>` (character versus factor). See vignette("types") for an overview of common type abbreviations.

Printing can be tweaked for a one-off call by calling `print()` explicitly and setting arguments like `n` and `width`. More persistent control is available by setting the options described in `pillar::pillar_options`. See also vignette("digits") for a comparison to base options, and vignette("numbers") that showcases `num()` and `char()` for creating columns with custom formatting options.

As of tibble 3.1.0, printing is handled entirely by the `pillar` package. If you implement a package that extends tibble, the printed output can be customized in various ways. See vignette("extending", package = "pillar") for details, and `pillar::pillar_options` for options that control the display in the console.
### Usage

```r
## S3 method for class 'tbl_df'
print(
  x,
  width = NULL,
  ..., 
  n = NULL,
  max_extra_cols = NULL,
  max_footer_lines = NULL
)

## S3 method for class 'tbl_df'
format(
  x,
  width = NULL,
  ..., 
  n = NULL,
  max_extra_cols = NULL,
  max_footer_lines = NULL
)
```

### Arguments

- **x**: Object to format or print.
- **width**: Width of text output to generate. This defaults to `NULL`, which means use the `width` option.
- **...**: Passed on to `tbl_format_setup()`.
- **n**: Number of rows to show. If `NULL`, the default, will print all rows if less than the `print_max` option. Otherwise, will print as many rows as specified by the `print_min` option.
- **max_extra_cols**: Number of extra columns to print abbreviated information for, if the width is too small for the entire tibble. If `NULL`, the `max_extra_cols` option is used. The previously defined `n_extra` argument is soft-deprecated.
- **max_footer_lines**: Maximum number of footer lines. If `NULL`, the `max_footer_lines` option is used.

### Examples

```r
print(as_tibble(mtcars))
print(as_tibble(mtcars), n = 1)
print(as_tibble(mtcars), n = 3)

print(as_tibble(trees), n = 100)
print(mtcars, width = 10)

mtcars2 <- as_tibble(cbind(mtcars, mtcars), .name_repair = "unique")
```
frame_matrix

print(mtcars2, n = 25, max_extra_cols = 3)

print(nycflights13::flights, max_footer_lines = 1)
print(nycflights13::flights, width = Inf)

frame_matrix                  Row-wise matrix creation

Description

Create matrices laying out the data in rows, similar to matrix(..., byrow = TRUE), with a nicer-
to-read syntax. This is useful for small matrices, e.g. covariance matrices, where readability is
important. The syntax is inspired by tribble().

Usage

frame_matrix(...)

Arguments

...  <dynamic-dots> Arguments specifying the structure of a frame_matrix. Col-
         umn names should be formulas, and may only appear before the data. These
         arguments are processed with rlang::list2() and support unquote via !! and
         unquote-splice via !!!.

Value

A matrix.

See Also

See quasiquotation for more details on tidy dots semantics, i.e. exactly how the ... argument is
processed.

Examples

frame_matrix(
    ~col1, ~col2,
    1, 3,
    5, 2
)
**is_tibble**  
*Test if the object is a tibble*

**Description**

This function returns **TRUE** for tibbles or subclasses thereof, and **FALSE** for all other objects, including regular data frames.

**Usage**

```
is_tibble(x)
```

**Arguments**

- `x`  
  An object

**Value**

**TRUE** if the object inherits from the `tbl_df` class.

---

**lst**  
*Build a list*

**Description**

`lst()` constructs a list, similar to `base::list()`, but with some of the same features as `tibble()`. `lst()` builds components sequentially. When defining a component, you can refer to components created earlier in the call. `lst()` also generates missing names automatically.

See `rlang::list2()` for a simpler and faster alternative without tibble’s evaluation and auto-name semantics.

**Usage**

```
lst(...)
```

**Arguments**

`...`  

<code class="highlighter syntax-r"
< dynamic-dots>  

A set of name-value pairs. These arguments are processed with `rlang::quos()` and support unquote via `!!` and unquote-splice via `!!!`. Use `:=` to create columns that start with a dot.

Arguments are evaluated sequentially. You can refer to previously created elements directly or using the `.data` pronoun. To refer explicitly to objects in the calling environment, use `!!` or `.env`, e.g. `!!`.data or `.env$.data for the special case of an object named `.data.`
Value

A named list.

Examples

# the value of n can be used immediately in the definition of x
lst(n = 5, x = runif(n))

# missing names are constructed from user's input
lst(1:3, z = letters[4:6], runif(3))

a <- 1:3
b <- letters[4:6]
lst(a, b)

# pre-formed quoted expressions can be used with lst() and then
# unquoted (with !!) or unquoted and spliced (with !!!)
n1 <- 2
n2 <- 3
n_stuff <- quote(n1 + n2)
x_stuff <- quote(seq_len(n))
lst(!!!list(n = n_stuff, x = x_stuff))
lst(n = !!n_stuff, x = !!x_stuff)
lst(n = 4, x = !!x_stuff)
lst(!!!list(n = 2, x = x_stuff))

---

Tibble constructor and validator

Description

Creates or validates a subclass of a tibble. These function is mostly useful for package authors that implement subclasses of a tibble, like sf or tsibble.

new_tibble() creates a new object as a subclass of tbl_df, tbl and data.frame. This function is optimized for performance, checks are reduced to a minimum. See vctrs::new_data_frame() for details.

validate_tibble() checks a tibble for internal consistency. Correct behavior can be guaranteed only if this function runs without raising an error.

Usage

new_tibble(x, ..., nrow = NULL, class = NULL, subclass = NULL)

validate_tibble(x)
Arguments

- **x**: A tibble-like object.
- **...**: Name-value pairs of additional attributes.
- **nrow**: The number of rows, inferred from `x` if omitted.
- **class**: Subclasses to assign to the new object, default: none.
- **subclass**: Deprecated, retained for compatibility. Please use the `class` argument.

Construction

For forgot_tibble(), `x` must be a list. The `nrow` argument may be omitted as of tibble 3.1.4. If present, every element of the list `x` should have `vctrs::vec_size()` equal to this value. (But this is not checked by the constructor). This takes the place of the "row.names" attribute in a data frame. `x` must have names (or be empty), but the names are not checked for correctness.

Validation

validate_tibble() checks for "minimal" names and that all columns are vectors, data frames or matrices. It also makes sure that all columns have the same length, and that `vctrs::vec_size()` is consistent with the data.

See Also

- `tibble()` and `as_tibble()` for ways to construct a tibble with recycling of scalars and automatic name repair, and `vctrs::df_list()` and `vctrs::new_data_frame()` for lower-level implementations.

Examples

```r
# The nrow argument is always required:
new_tibble(list(a = 1:3, b = 4:6), nrow = 3)

# Existing row.names attributes are ignored:
try(validate_tibble(new_tibble(trees, nrow = 3)))

# The length of all columns must be compatible with the nrow argument:
try(validate_tibble(new_tibble(list(a = 1:3, b = 4:6), nrow = 2)))
```

---

**num**

*Format a numeric vector*
Description

[Experimental]
Constructs a numeric vector that can be formatted with predefined significant digits, or with a
maximum or fixed number of digits after the decimal point. Scaling is supported, as well as forcing
a decimal, scientific or engineering notation. If a label is given, it is shown in the header of a
column.

The formatting is applied when the vector is printed or formatted, and also in a tibble column.
The formatting annotation and the class survives most arithmetic transformations, the most notable
exceptions are \texttt{var()} and \texttt{sd()}.

\texttt{set_num_opts()} adds formatting options to an arbitrary numeric vector, useful for composing with
other types.

Usage

\begin{verbatim}
num(
  x,
  ..., 
  sigfig = NULL,
  digits = NULL,
  label = NULL,
  scale = NULL,
  notation = c("fit", "dec", "sci", "eng", "si"),
  fixed_exponent = NULL,
  extra_sigfig = NULL
)

set_num_opts(
  x,
  ..., 
  sigfig = NULL,
  digits = NULL,
  label = NULL,
  scale = NULL,
  notation = c("fit", "dec", "sci", "eng", "si"),
  fixed_exponent = NULL,
  extra_sigfig = NULL
)
\end{verbatim}

Arguments

\begin{itemize}
\item \texttt{x} \hspace{2cm} A numeric vector.
\item \texttt{...} \hspace{2cm} These dots are for future extensions and must be empty.
\item \texttt{sigfig} \hspace{2cm} Define the number of significant digits to show. Must be one or greater. The
  "\texttt{pillar.sigfig}" option is not consulted. Can’t be combined with \texttt{digits}.
\item \texttt{digits} \hspace{2cm} Number of digits after the decimal points to show. Positive numbers specify
  the exact number of digits to show. Negative numbers specify (after negation) the maximum number of digits to show. With \texttt{digits = 2}, the numbers 1.2 and
1.234 are printed as 1.20 and 1.23, with digits = -2 as 1.2 and 1.23, respectively. Can’t be combined with sigfig.

label A label to show instead of the type description.
scale Multiplier to apply to the data before showing. Useful for displaying e.g. percentages. Must be combined with label.
notation One of "fit", "dec", "sci", "eng", or "si".
  • "fit": Use decimal notation if it fits and if it consumes 13 digits or less, otherwise use scientific notation. (The default for numeric pillars.)
  • "dec": Use decimal notation, regardless of width.
  • "sci": Use scientific notation.
  • "eng": Use engineering notation, i.e. scientific notation using exponents that are a multiple of three.
  • "si": Use SI notation, prefixes between 1e-24 and 1e24 are supported.
fixed_exponent Use the same exponent for all numbers in scientific, engineering or SI notation.
  -Inf uses the smallest, +Inf the largest fixed_exponent present in the data. The default is to use varying exponents.
extra_sigfig If TRUE, increase the number of significant digits if the data consists of numbers of the same magnitude with subtle differences.

See Also

Other vector classes: char()

Examples

# Display as a vector
num(9:11 * 100 + 0.5)

# Significant figures
tibble(
  x3 = num(9:11 * 100 + 0.5, sigfig = 3),
  x4 = num(9:11 * 100 + 0.5, sigfig = 4),
  x5 = num(9:11 * 100 + 0.5, sigfig = 5),
)

# Maximum digits after the decimal points
tibble(
  x0 = num(9:11 * 100 + 0.5, digits = 0),
  x1 = num(9:11 * 100 + 0.5, digits = -1),
  x2 = num(9:11 * 100 + 0.5, digits = -2),
)

# Use fixed digits and a currency label
tibble(
  usd = num(9:11 * 100 + 0.5, digits = 2, label = "USD"),
  gbp = num(9:11 * 100 + 0.5, digits = 2, label = "£"),
  chf = num(9:11 * 100 + 0.5, digits = 2, label = "SFr"))
# Scale
tibble(
  small = num(9:11 / 1000 + 0.00005, label = "\%", scale = 100),
  medium = num(9:11 / 100 + 0.0005, label = "\%", scale = 100),
  large = num(9:11 / 10 + 0.005, label = "\%", scale = 100)
)

# Notation
tibble(
  sci = num(10^(-13:6), notation = "sci"),
  eng = num(10^(-13:6), notation = "eng"),
  si = num(10^(-13:6), notation = "si"),
  dec = num(10^(-13:6), notation = "dec"
)

# Fixed exponent
tibble(
  scimin = num(10^(-7:6) * 123, notation = "sci", fixed_exponent = -Inf),
  engmin = num(10^(-7:6) * 123, notation = "eng", fixed_exponent = -Inf),
  simin = num(10^(-7:6) * 123, notation = "si", fixed_exponent = -Inf)
)

tibble(
  scismall = num(10^(-7:6) * 123, notation = "sci", fixed_exponent = -3),
  scilarge = num(10^(-7:6) * 123, notation = "sci", fixed_exponent = 3),
  scimax = num(10^(-7:6) * 123, notation = "sci", fixed_exponent = Inf)
)

# Extra significant digits
tibble(
  default = num(100 + 1:3 * 0.001),
  extra1 = num(100 + 1:3 * 0.001, extra_sigfig = TRUE),
  extra2 = num(100 + 1:3 * 0.0001, extra_sigfig = TRUE),
  extra3 = num(10000 + 1:3 * 0.00001, extra_sigfig = TRUE)
)

rownames

Tools for working with row names

Description

While a tibble can have row names (e.g., when converting from a regular data frame), they are removed when subsetting with the [ operator. A warning will be raised when attempting to assign non-NULL row names to a tibble. Generally, it is best to avoid row names, because they are basically a character column with different semantics than every other column.

These functions allow you to detect if a data frame has row names (has_rownames()), remove them (remove_rownames()), or convert them back-and-forth between an explicit column (rownames_to_column() and column_to_rownames()). Also included is rowid_to_column(), which adds a column at the start of the dataframe of ascending sequential row ids starting at 1. Note that this will remove any existing row names.
Usage

\begin{verbatim}
has_rownames(.data)
remove_rownames(.data)
rownames_to_column(.data, var = "rowname")
rowid_to_column(.data, var = "rowid")
column_to_rownames(.data, var = "rowname")
\end{verbatim}

Arguments

args
.data A data frame.
var Name of column to use for rownames.

Value

column_to_rownames() always returns a data frame. has_rownames() returns a scalar logical. All other functions return an object of the same class as the input.

Examples

\begin{verbatim}
# Detect row names -----------------------------------------------
has_rownames(mtcars)
has_rownames(trees)

# Remove row names -----------------------------------------------
remove_rownames(mtcars) %>% has_rownames()

# Convert between row names and column ----------------------------
mtcars_tbl <- rownames_to_column(mtcars, var = "car") %>% as_tibble()
mtcars_tbl
column_to_rownames(mtcars_tbl, var = "car") %>% head()

# Adding rowid as a column ----------------------------------------
rowid_to_column(trees) %>% head()
\end{verbatim}

Description

Accessing columns, rows, or cells via $, [, or [ ] is mostly similar to regular data frames. However, the behavior is different for tibbles and data frames in some cases:

- [ ] always returns a tibble by default, even if only one column is accessed.
• Partial matching of column names with $ and [] is not supported, and NULL is returned. For $, a warning is given.

• Only scalars (vectors of length one) or vectors with the same length as the number of rows can be used for assignment.

• Rows outside of the tibble’s boundaries cannot be accessed.

• When updating with [<- and <-, type changes of entire columns are supported, but updating a part of a column requires that the new value is coercible to the existing type. See vec_slice() for the underlying implementation.

Unstable return type and implicit partial matching can lead to surprises and bugs that are hard to catch. If you rely on code that requires the original data frame behavior, coerce to a data frame via as.data.frame().

Usage

```r
## S3 method for class 'tbl_df'
x$name

## S3 replacement method for class 'tbl_df'
x$name <- value

## S3 method for class 'tbl_df'
x[[i, j, ..., exact = TRUE]]

## S3 replacement method for class 'tbl_df'
x[[i, j, ...]] <- value

## S3 method for class 'tbl_df'
x[i, j, drop = FALSE, ...]

## S3 replacement method for class 'tbl_df'
x[i, j, ...] <- value
```

Arguments

- `x` A tibble.
- `name` A name or a string.
- `value` A value to store in a row, column, range or cell. Tibbles are stricter than data frames in what is accepted here.
- `i, j` Row and column indices. If `j` is omitted, `i` is used as column index.
- `...` Ignored.
- `exact` Ignored, with a warning.
- `drop` Coerce to a vector if fetching one column via `tb1[, j]`. Default FALSE, ignored when accessing a column via `tb1[j]`.
Details

For better compatibility with older code written for regular data frames, [ supports a drop argument which defaults to FALSE. New code should use [[ to turn a column into a vector.

Examples

df <- data.frame(a = 1:3, bc = 4:6)
tbl <- tibble(a = 1:3, bc = 4:6)

# Subsetting single columns:
df[, "a"]
tbl[, "a"]
tbl[, "a", drop = TRUE]
as.data.frame(tbl)[, "a"]

# Subsetting single rows with the drop argument:
df[1, , drop = TRUE]
tbl[1, , drop = TRUE]
as.list(tbl[1, ])

# Accessing non-existent columns:
df$b
tbl$b
df["b", exact = FALSE]
tbl["b", exact = FALSE]

df$bd <- c("n", "e", "w")
tbl$bd <- c("n", "e", "w")
df$b
tbl$b
df$b <- 7:9
tbl$b <- 7:9
df$b
tbl$b

# Identical behavior:
tbl[1, ]
tbl[1, c("bc", "a")]
tbl[, c("bc", "a")]
tbl[c("bc", "a")]
tbl["a"]
tbl$a
tbl[["a"]]

---

tbl_df-class
tbl_df class
Description

The tbl_df class is a subclass of data.frame, created in order to have different default behaviour. The colloquial term "tibble" refers to a data frame that has the tbl_df class. Tibble is the central data structure for the set of packages known as the tidyverse, including dplyr, ggplot2, tidyr, and readr.

The general ethos is that tibbles are lazy and surly: they do less and complain more than base data.frames. This forces problems to be tackled earlier and more explicitly, typically leading to code that is more expressive and robust.

Properties of tbl_df

Objects of class tbl_df have:

- A class attribute of c("tbl_df", "tbl", "data.frame").
- A base type of "list", where each element of the list has the same vctrs::vec_size().
- A names attribute that is a character vector the same length as the underlying list.
- A row.names attribute, included for compatibility with data.frame. This attribute is only consulted to query the number of rows, any row names that might be stored there are ignored by most tibble methods.

Behavior of tbl_df

How default behaviour of tibbles differs from that of data.frames, during creation and access:

- Column data is not coerced. A character vector is not turned into a factor. List-columns are expressly anticipated and do not require special tricks. Internal names are never stripped from column data. Read more in tibble().
- Recycling only happens for a length 1 input. Read more in vctrs::vec_recycle().
- Column names are not munged, although missing names are auto-populated. Empty and duplicated column names are strongly discouraged, but the user must indicate how to resolve. Read more in vctrs::vec_as_names().
- Row names are not added and are strongly discouraged, in favor of storing that info as a column. Read about in rownames.
- df[, j] returns a tibble; it does not automatically extract the column inside. df[, j, drop = FALSE] is the default. Read more in subsetting.
- There is no partial matching when $ is used to index by name. df$name for a nonexistent name generates a warning. Read more in subsetting.

See vignette("invariants") for a detailed description of the behavior.

Furthermore, printing and inspection are a very high priority. The goal is to convey as much information as possible, in a concise way, even for large and complex tibbles. Read more in formatting.

See Also
tibble(), as_tibble(), tribble(), print.tbl(), glimpse()
tibble (Build a data frame)

Description

tibble() constructs a data frame. It is used like base::data.frame(), but with a couple notable differences:

- The returned data frame has the class tbl_df, in addition to data.frame. This allows so-called "tibbles" to exhibit some special behaviour, such as enhanced printing. Tibbles are fully described in tbl_df.
- tibble() is much lazier than base::data.frame() in terms of transforming the user’s input.
  - Character vectors are not coerced to factor.
  - List-columns are expressly anticipated and do not require special tricks.
  - Column names are not modified.
  - Inner names in columns are left unchanged.
- tibble() builds columns sequentially. When defining a column, you can refer to columns created earlier in the call. Only columns of length one are recycled.
- If a column evaluates to a data frame or tibble, it is nested or spliced. If it evaluates to a matrix or an array, it remains a matrix or an array, respectively. See examples.

tibble_row() constructs a data frame that is guaranteed to occupy one row. Vector columns are required to have size one, non-vector columns are wrapped in a list.

Usage

tibble(
  ..., 
  .rows = NULL,
  .name_repair = c("check_unique", "unique", "universal", "minimal")
)

tibble_row(
  ..., 
  .name_repair = c("check_unique", "unique", "universal", "minimal")
)

Arguments

... <dynamic-dots> A set of name-value pairs. These arguments are processed with rlang::quos() and support unquote via !! and unquote-splice via !!!.
Use := to create columns that start with a dot.
Arguments are evaluated sequentially. You can refer to previously created elements directly or using the .data pronoun. To refer explicitly to objects in the calling environment, use !! or .env, e.g. !!.data or .env$.data for the special case of an object named .data.
tibble

.rows
The number of rows, useful to create a 0-column tibble or just as an additional check.

.name_repair
Treatment of problematic column names:
- "minimal": No name repair or checks, beyond basic existence,
- "unique": Make sure names are unique and not empty,
- "check_unique": (default value), no name repair, but check they are unique,
- "universal": Make the names unique and syntactic
- a function: apply custom name repair (e.g., .name_repair = make.names
for names in the style of base R).
- A purrr-style anonymous function, see rlang::as_function()

This argument is passed on as repair to vctrs::vec_as_names(). See there
for more details on these terms and the strategies used to enforce them.

Value
A tibble, which is a colloquial term for an object of class tbl_df. A tbl_df object is also a data
frame, i.e. it has class data.frame.

See Also
Use as_tibble() to turn an existing object into a tibble. Use enframe() to convert a named vector
into a tibble. Name repair is detailed in vctrs::vec_as_names(). See quasiquotation for more
details on tidy dots semantics, i.e. exactly how the ... argument is processed.

Examples
# Unnamed arguments are named with their expression:
a <- 1:5
tibble(a, a * 2)

# Scalars (vectors of length one) are recycled:
tibble(a, b = a * 2, c = 1)

# Columns are available in subsequent expressions:
tibble(x = runif(10), y = x * 2)

# tibble() never coerces its inputs,
str(tibble(letters))
str(tibble(x = list(diag(1), diag(2))))

# or munges column names (unless requested),
tibble(\'a + b\' = 1:5)

# but it forces you to take charge of names, if they need repair:
try(tibble(x = 1, x = 2))
tibble(x = 1, x = 2, .name_repair = "unique")
tibble(x = 1, x = 2, .name_repair = "minimal")

## By default, non-syntactic names are allowed,
```r
df <- tibble('a 1' = 1, 'a 2' = 2)
## because you can still index by name:
df['a 1']
df$'a 1'
with(df, 'a 1')

## Syntactic names are easier to work with, though, and you can request them:
df <- tibble('a 1' = 1, 'a 2' = 2, .name_repair = "universal")
df$a 1

## You can specify your own name repair function:
tibble(x = 1, x = 2, .name_repair = make.unique)

fix_names <- function(x) gsub("\s+", ",", x)
tibble('year 1' = 1, 'year 2' = 2, .name_repair = fix_names)

## purrr-style anonymous functions and constants
## are also supported
tibble(x = 1, x = 2, .name_repair = ~ make.names(., unique = TRUE))
tibble(x = 1, x = 2, .name_repair = ~ c("a", "b"))

# Tibbles can contain columns that are tibbles or matrices
# if the number of rows is compatible. Unnamed tibbled are
# spliced, i.e. the inner columns are inserted into the
# tibble under construction.
tibble(
  a = 1:3,
  tibble(
    b = 4:6,
    c = 7:9
  ),
  d = tibble(
    e = tibble(
      f = b
    )
  )
)
tibble(
  a = 1:3,
  b = diag(3),
  c = cor(trees),
  d = Titanic[1:3, , , ]
)

# Data can not contain tibbles or matrices with incompatible number of rows:
try(tibble(a = 1:3, b = tibble(c = 4:7)))

# Use := to create columns with names that start with a dot:
tibble(.dotted := 3)

# This also works, but might break in the future:
tibble(.dotted = 3)
```
# You can unquote an expression:
x <- 3
tibble(x = 1, y = x)
tibble(x = 1, y = !!x)

# You can splice-unquote a list of quosures and expressions:
tibble(!!!list(x = rlang::quo(1:10), y = quote(x * 2)))

# Use .data, .env and !! to refer explicitly to columns or outside objects
a <- 1
tibble(a = 2, b = a)
tibble(a = 2, b = .data$a)
tibble(a = 2, b = .env$a)
tibble(a = 2, b = (!!a)
try(tibble(a = 2, b = .env$bogus))
try(tibble(a = 2, b = !!bogus))

# Use tibble_row() to construct a one-row tibble:
tibble_row(a = 1, lm = lm(Height ~ Girth + Volume, data = trees))

tibble_options

Package options

Description

Options that affect interactive display. See pillar::pillar_options for options that affect display on
the console, and cli::num_ansi_colors() for enabling and disabling colored output via ANSI
sequences like [3m[38;5;246m[39m[23m.

Usage

tibble_options

Details

These options can be set via options() and queried via getOption(). For this, add a tibble. pre-
fix (the package name and a dot) to the option name. Example: for an option foo, use options(tibble.foo
= value) to set it and getOption("tibble.foo") to retrieve the current value. An option value of
NULL means that the default is used.

Options for the tibble package

- **view_max**: Maximum number of rows shown by view() if the input is not a data frame, passed
  on to head(). Default: 1000.
Examples

# Default setting:
getOption("tibble.view_max")

# Change for the duration of the session:
old <- options(tibble.view_max = 100)

# view() would show only 100 rows e.g. for a lazy data frame

# Change back to the original value:
options(old)

# Local scope:
local({
  rlang::local_options(tibble.view_max = 100)
  # view() would show only 100 rows e.g. for a lazy data frame
})
# view() would show the default 1000 rows e.g. for a lazy data frame

tribble

Row-wise tibble creation

Description

Create tibbles using an easier to read row-by-row layout. This is useful for small tables of data where readability is important. Please see tibble-package for a general introduction.

Usage

tribble(...)

Arguments

...<dynamic-dots> Arguments specifying the structure of a tibble. Variable names should be formulas, and may only appear before the data. These arguments are processed with rlang::list2() and support unquote via !! and unquote-splice via !!!.

Value

A tibble.

See Also

See quasiquotation for more details on tidy dots semantics, i.e. exactly how the ... argument is processed.
Examples

tribble(~colA, ~colB,
   "a", 1,
   "b", 2,
   "c", 3)

# tribble will create a list column if the value in any cell is
# not a scalar
tribble(~x, ~y,
   "a", 1:3,
   "b", 4:6)

# Use dplyr::mutate(dplyr::across(...)) to assign an explicit type
tribble(~a, ~b, ~c,
   1, "2000-01-01", "1.5")

%>%
  dplyr::mutate(
    dplyr::across(a, as.integer),
    dplyr::across(b, as.Date)
)

view

View an object

Description

[Experimental]
Calls utils::View() on the input and returns it, invisibly. If the input is not a data frame, it is
processed using a variant of as.data.frame(head(x, n)). A message is printed if the number of
rows exceeds n. This function has no effect in noninteractive sessions.

Usage

view(x, title = NULL, ..., n = NULL)

Arguments

x
   The object to display.

title
   The title to use for the display, by default the deparsed expression is used.

... Unused, must be empty.

n
   Maximum number of rows to display. Only used if x is not a data frame. Uses
   the view_max option by default.
Details

The RStudio IDE overrides `utils::View()`, this is picked up correctly.
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