Package ‘tibblify’

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Title Rectangle Nested Lists

Version 0.4.1

Description A tool to rectangle a nested list, that is to convert it into a 'tibble'. This is done automatically or according to a given specification. A common use case is for nested lists coming from parsing 'JSON' files, or the 'JSON' responses of 'REST' 'APIs'. 'Rectangling' uses the 'vctrs' package, and therefore offers a wide support of vector types.

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URL https://tibblify.wrangle.zone, https://github.com/wranglezone/tibblify

BugReports https://github.com/wranglezone/tibblify/issues

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Contents

`formatting` *Printing tibblify specifications*

Description

The `print()` and `format()` methods for tibblify specifications provide the code necessary to generate the specification. Function names are color-coded to help visually distinguish different types of collectors.

Usage

```
## S3 method for class 'tib_collector'
print(x, width = NULL, ..., names = NULL)

## S3 method for class 'tib_scalar'
format(
  x,
  ...,
  .fill = NULL,
  .ptype_inner = NULL,
  .transform = NULL,
  multi_line = FALSE,
  nchar_indent = 0,
```

```
  width = NULL,
  names = FALSE
)

## S3 method for class 'tib_variant'
format(x, ..., multi_line = FALSE, nchar_indent = 0, width = NULL)

## S3 method for class 'tib_vector'
format(x, ..., multi_line = FALSE, nchar_indent = 0, width = NULL)

## S3 method for class 'tib_unspecified'
format(
  x,
  ...,
  .fill = NULL,
  .ptype_inner = NULL,
  .transform = NULL,
  multi_line = FALSE,
  nchar_indent = 0,
  width = NULL,
  names = FALSE
)

## S3 method for class 'tib_scalar_chr_date'
format(x, ..., multi_line = FALSE, nchar_indent = 0, width = NULL)

## S3 method for class 'tib_vector_chr_date'
format(x, ..., multi_line = FALSE, nchar_indent = 0, width = NULL)

## S3 method for class 'tib_row'
format(x, ..., width = NULL, names = NULL)

## S3 method for class 'tib_df'
format(x, ..., width = NULL, names = NULL)

## S3 method for class 'tib_recursive'
format(x, ..., width = NULL, names = NULL)

## S3 method for class 'tibblify_object'
print(x, ...)

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

## S3 method for class 'tspec_df'
format(x, width = NULL, ..., names = NULL)

## S3 method for class 'tspec_row'
```

```
format(x, width = NULL, ..., names = NULL)

## S3 method for class 'tspec_recursive'
format(x, width = NULL, ..., names = NULL)

## S3 method for class 'tspec_object'
format(x, width = NULL, ..., names = NULL)
```

Arguments

x	(any) The spec to format or print.
width	(integer(1)) The width (in number of characters) of text output to generate.
...	These dots are for future extensions and must be empty.
names	(logical(1)) Should names be printed even if they can be deduced from the spec?
.fill	(vector or NULL) Optionally, a value to use if the field does not exist. Note: this value must match the .ptype_inner of the field (the value *before* any transformation), not the .ptype.
.ptype_inner	(vector(0)) A prototype of the input field.
.transform	(function or NULL) A function to apply to the whole vector after casting to .ptype_inner.
multi_line	(logical(1)) Should the output be formatted across multiple lines? For example, should each element of even a short list be displayed on its own line?
nchar_indent	(integer(1)) The number of (additional) characters that will be used to indent the output when multi_line = TRUE. Primarily for internal use when formatting is applied recursively.

Value

For print() methods, x is returned invisibly. format() methods return a length-1 character vector.

Examples

```
spec <- tspec_df(
  a = tib_int("a"),
  new_name = tib_chr("b"),
  row = tib_row(
    "row",
    x = tib_int("x")
  )
)
print(spec, names = FALSE)
print(spec, names = TRUE)
```

get_spec *Examine the column specification*

Description

Examine the column specification

Usage

```
get_spec(x)
```

Arguments

x	(data.frame) The data frame to extract a spec from.

Value

A tibblify specification as returned by tspec_df(), tspec_row(), tspec_object(), or tspec_recursive().

Examples

```
df <- tibblify(list(list(x = 1, y = "a"), list(x = 2)))
get_spec(df)
```

guess_tspec *Guess the* tibblify() *specification*

Description

guess_tspec() automatically dispatches to the other guess_tspec_*() functions based on the shape of the input. If you are unhappy with its output, calling a specific guess_tspec_*() function may yield better results, or at least clearer error messages about why that type isn't supported.

- Use guess_tspec_df() if the input is a data frame.
- Use guess_tspec_object() if the input is an object (such as a JSON object that has been read into R as a named list).
- Use guess_tspec_object_list() if the input is a list of objects (such as a JSON object that has been read into R as a list of named lists).
- Use guess_tspec_list() if the input object is a list but you aren't sure how it should be processed.

See vignette("supported-structures") for a discussion of the input types supported by tibblify.

Usage

```
guess_tspec(
  x,
  ...,
  empty_list_unspecified = FALSE,
  simplify_list = FALSE,
  inform_unspecified = should_inform_unspecified(),
  call = rlang::caller_env()
)

guess_tspec_df(
  x,
  ...,
  empty_list_unspecified = FALSE,
  simplify_list = FALSE,
  inform_unspecified = should_inform_unspecified(),
  call = rlang::current_call(),
  arg = rlang::caller_arg(x)
)

guess_tspec_list(
  x,
  ...,
  empty_list_unspecified = FALSE,
  simplify_list = FALSE,
  inform_unspecified = should_inform_unspecified(),
  arg = caller_arg(x),
  call = current_call()
)

guess_tspec_object(
  x,
  ...,
  empty_list_unspecified = FALSE,
  simplify_list = FALSE,
  inform_unspecified = should_inform_unspecified(),
  call = rlang::current_call()
)

guess_tspec_object_list(
  x,
  ...,
  empty_list_unspecified = FALSE,
  simplify_list = FALSE,
  inform_unspecified = should_inform_unspecified(),
  arg = caller_arg(x),
  call = current_call()
)
```

Arguments

x	(list or data.frame) A nested list or a data frame.
...	These dots are for future extensions and must be empty.
empty_list_unspecified	(logical(1)) Treat empty lists as unspecified?
simplify_list	(logical(1)) Should scalar lists be simplified to vectors?
inform_unspecified	(logical(1)) Inform about fields whose type could not be determined?
call	(environment) The environment to use for error messages.
arg	(character(1)) An argument name. This name will be mentioned in error messages as the input that is at the origin of a problem.

Value

A specification object that can be used in tibblify().

Examples

```
guess_tspec(list(x = 1, y = "a"))
guess_tspec(list(list(x = 1), list(x = 2)))
```

---

nest_tree *Convert a data frame to a tree*

Description

Recursively nest data frame rows based on parent-child relationships, defined by an id column and a parent column. Children become sub-tibbles of their parent rows. This structure is intended for representing tree-like data, such as organizational charts, file systems, category trees, or any other hierarchical relationships.

Usage

```
nest_tree(x, id_col, parent_col, children_to)
```

Arguments

x	(data.frame) The data frame to nest.
id_col	(character(1), integer(1), or symbol) The column that uniquely identifies each observation.
parent_col	(character(1), integer(1), or symbol) The column that identifies the parent id of each observation. Each value must either be missing (for the root elements) or appear in the id_col column.
children_to	(character(1)) The column name in which to store the children.

Value

A tree-like, recursively nested data frame.

Examples

```
df <- tibble::tibble(
  id = 1:5,
  x = letters[1:5],
  parent = c(NA, NA, 1L, 2L, 4L)
)
df

# Only the root elements are in the top-level tibble.
out <- nest_tree(df, id, parent, "children")
out

# The children of each element are stored in the "children" column.
out$children

# "d" (id 4) is a child of "b" (id 2), and "e" (id 5) is a child of "d"
# (id 4).
out$children[[2]]$children
```

`parse_openapi_spec` *Parse an OpenAPI spec*

Description

[Experimental]

The OpenAPI Initiative is a Linux Foundation project to define an OpenAPI Specification, a formal standard for describing HTTP APIs. Use `parse_openapi_spec()` to parse such OpenAPI specs. You can also parse OpenAPI Schema Objects (which describe the structure of input and output datatypes) directly with `parse_openapi_schema()`.

Usage

```
parse_openapi_spec(file)

parse_openapi_schema(file)
```

Arguments

`file`	(`character(1)`) A path to a file, a connection, or literal data.

Value

For `parse_openapi_spec()`, a nested data frame with the columns

- `endpoint` (`character`) Name of the endpoint.
- `operations` (`list`) A list of data frames describing that endpoint. See the Paths Object in the OpenAPI spec for details. All references (`$ref`) in the spec are resolved.

For `parse_openapi_schema()`, a tibblify spec. All references (`$ref`) in the spec are resolved.

Shortcomings

This implementation is not complete, and there are some known shortcomings:

- We only tibblify the `paths` part of the spec, although we also parse the `components` part in order to resolve references.
- We do not yet support `summary` or `description` fields in path item objects.
- We do not yet incorporate `parameters` defined at the path item level into operation-level parameter parsing. We do, however, parse and include them in the `global_parameters` column of the operations tibble, so they are available even though they are not yet merged into each operation's parameters.
- We do not yet support `links` in response objects.
- We do not yet support `callbacks` in operation objects.
- We do not yet support OpenAPI extensions (fields starting with `x-`).
- Our implementation of `oneOf`, `anyOf`, and `allOf` is very basic and may not cover all cases.

Examples

```
file <- '{
  "$schema": "http://json-schema.org/draft-04/schema",
  "title": "Starship",
  "description": "A vehicle.",
  "type": "object",
  "properties": {
    "name": {
      "type": "string",
      "description": "The name of this vehicle. The common name, e.g. Sand Crawler."
    },
    "model": {
      "type": "string",
      "description": "The model or official name of this vehicle."
    },
    "url": {
      "type": "string",
      "format": "uri",
      "description": "The hypermedia URL of this resource."
    },
    "edited": {
      "type": "string",
      "format": "date-time",
```

```
      "description": "the ISO 8601 date format of the time this resource was edited."
    }
  },
  "required": [
    "name",
    "model",
    "edited"
  ]
}'
parse_openapi_schema(file)

# Spec example from
# https://swagger.io/docs/specification/v3_0/basic-structure/
spec_path <- system.file(
  "examples", "openapi", "sample_api.yaml", package = "tibblify"
)
spec <- parse_openapi_spec(spec_path)
spec
```

`politicians` *Politicians*

Description

A dataset containing some basic information about some politicians.

Usage

```
politicians
```

Format

A list of lists.

`should_inform_unspecified` *Determine whether to inform about unspecified fields in spec*

Description

Wrapper around `getOption("tibblify.show_unspecified")` to return `TRUE` unless the option is explicitly set to `FALSE`.

Usage

```
should_inform_unspecified()
```

Value

FALSE if the option is set to FALSE, TRUE otherwise.

Examples

```
should_inform_unspecified()
```

`tibblify` *Rectangle a nested list*

Description

Transform a nested list into a tibble or a list of objects according to a specification.

Usage

```
tibblify(x, spec = NULL, unspecified = NULL)
```

Arguments

x	(list) A nested list.
spec	(tspec) A specification of how to convert x. Generated with tspec_df(), tspec_row(), tspec_object(), tspec_recursive(), or guess_tspec(). If spec is NULL (the default), guess_tspec(x, inform_unspecified = TRUE) will be used to guess the spec.
unspecified	(character(1)) What to do with tib_unspecified() fields. Can be one of • "error": Throw an error. • "inform": Inform the user then parse as with tib_variant(). • "drop": Do not parse these fields. • "list": Parse unspecified fields into lists as with tib_variant().

Details

Fields specifically tagged as tib_unspecified() in the spec (or guessed as such) will be handled according to the unspecified argument. Fields that are present in x but not mentioned in the spec are ignored.

Value

Either a tibble or a list, depending on the specification.

See Also

Use untibblify() to undo the result of tibblify().

Examples

```
# List of Objects ------------------------------------------------------------
x <- list(
  list(id = 1, name = "Tyrion Lannister"),
  list(id = 2, name = "Victarion Greyjoy")
)
tibblify(x)

# Provide a specification
spec <- tspec_df(
  id = tib_int("id"),
  name = tib_chr("name")
)
tibblify(x, spec)

# Object ---------------------------------------------------------------------
# Provide a specification for a single object
tibblify(x[[1]], tspec_object(spec))

# Recursive Trees ------------------------------------------------------------
x <- list(
  list(
    id = 1,
    name = "a",
    children = list(
      list(id = 11, name = "aa"),
      list(id = 12, name = "ab", children = list(
        list(id = 121, name = "aba")
      ))
    ))
)
spec <- tspec_recursive(
  tib_int("id"),
  tib_chr("name"),
  .children = "children"
)
out <- tibblify(x, spec)
out
out$children
out$children[[1]]$children[[2]]
```

`tib_spec` *Create a field specification*

Description

Use the `tib_*()` functions to specify how to process the fields of an object.

Usage

```
tib_scalar(
  .key,
  .ptype,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = .ptype,
  .transform = NULL,
  key = deprecated(),
  ptype = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated()
)

tib_vector(
  .key,
  .ptype,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = .ptype,
  .transform = NULL,
  .elt_transform = NULL,
  .input_form = c("vector", "scalar_list", "object"),
  .values_to = NULL,
  .names_to = NULL,
  key = deprecated(),
  ptype = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated(),
  elt_transform = deprecated(),
  input_form = deprecated(),
  values_to = deprecated(),
  names_to = deprecated()
)

tib_unspecified(
  .key,
  ...,
  .required = TRUE,
  key = deprecated(),
  required = deprecated()
)
```

```
tib_lgl(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = logical(),
  .transform = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated()
)

tib_int(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = integer(),
  .transform = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated()
)

tib_dbl(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = double(),
  .transform = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated()
)

tib_chr(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
```

```
  .ptype_inner = character(),
  .transform = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated()
)

tib_date(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = vctrs::new_date(),
  .transform = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated()
)

tib_chr_date(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .format = "%Y-%m-%d",
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  format = deprecated()
)

tib_lgl_vec(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = logical(),
  .transform = NULL,
  .elt_transform = NULL,
  .input_form = c("vector", "scalar_list", "object"),
  .values_to = NULL,
  .names_to = NULL,
  key = deprecated(),
  required = deprecated(),
```

```
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated(),
  elt_transform = deprecated(),
  input_form = deprecated(),
  values_to = deprecated(),
  names_to = deprecated()
)

tib_int_vec(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = integer(),
  .transform = NULL,
  .elt_transform = NULL,
  .input_form = c("vector", "scalar_list", "object"),
  .values_to = NULL,
  .names_to = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated(),
  elt_transform = deprecated(),
  input_form = deprecated(),
  values_to = deprecated(),
  names_to = deprecated()
)

tib_dbl_vec(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = double(),
  .transform = NULL,
  .elt_transform = NULL,
  .input_form = c("vector", "scalar_list", "object"),
  .values_to = NULL,
  .names_to = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated(),
  elt_transform = deprecated(),
```

```
  input_form = deprecated(),
  values_to = deprecated(),
  names_to = deprecated()
)

tib_chr_vec(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = character(),
  .transform = NULL,
  .elt_transform = NULL,
  .input_form = c("vector", "scalar_list", "object"),
  .values_to = NULL,
  .names_to = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated(),
  elt_transform = deprecated(),
  input_form = deprecated(),
  values_to = deprecated(),
  names_to = deprecated()
)

tib_date_vec(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .ptype_inner = vctrs::new_date(),
  .transform = NULL,
  .elt_transform = NULL,
  .input_form = c("vector", "scalar_list", "object"),
  .values_to = NULL,
  .names_to = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  ptype_inner = deprecated(),
  transform = deprecated(),
  elt_transform = deprecated(),
  input_form = deprecated(),
  values_to = deprecated(),
  names_to = deprecated()
)
```

```
tib_chr_date_vec(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .input_form = c("vector", "scalar_list", "object"),
  .values_to = NULL,
  .names_to = NULL,
  .format = "%Y-%m-%d",
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  input_form = deprecated(),
  values_to = deprecated(),
  names_to = deprecated(),
  format = deprecated()
)

tib_variant(
  .key,
  ...,
  .required = TRUE,
  .fill = NULL,
  .transform = NULL,
  .elt_transform = NULL,
  key = deprecated(),
  required = deprecated(),
  fill = deprecated(),
  transform = deprecated(),
  elt_transform = deprecated()
)

tib_recursive(.key, ..., .children, .children_to = .children, .required = TRUE)

tib_row(.key, ..., .required = TRUE)

tib_df(.key, ..., .required = TRUE, .names_to = NULL)
```

Arguments

.key, key	(character) The path of names to the field in the object.
.ptype, ptype	(vector(0)) A prototype of the desired output type of the field.
...	These dots are for future extensions and must be empty.
.required, required	(logical(1)) Throw an error if the field does not exist?
.fill, fill	(vector or NULL) Optionally, a value to use if the field does not exist. Note: this

value must match the .ptype_inner of the field (the value *before* any transformation), not the .ptype.

.ptype_inner, ptype_inner
: (vector(0)) A prototype of the input field.

.transform, transform
: (function or NULL) A function to apply to the whole vector after casting to .ptype_inner.

.elt_transform, elt_transform
: (function or NULL) A function to apply to each element before casting to .ptype_inner.

.input_form, input_form
: (character(1)) The structure of the input field. Can be one of:
  - "vector": The field is a vector, e.g. c(1, 2, 3).
  - "scalar_list": The field is a list of scalars, e.g. list(1, 2, 3).
  - "object": The field is a named list of scalars, e.g. list(a = 1, b = 2, c = 3).

.values_to, values_to
: (character(1) or NULL) For NULL (the default), the field is converted to a .ptype vector. If a string is provided, the field is converted to a tibble and the values go into the specified column.

.names_to, names_to
: (character(1) or NULL) What to do with the inner names of the object. Can be one of:
  - NULL: the default. The inner names of the field are not used.
  - A string: Use only if the input form is "object" or "vector", and .values_to is a string. The inner names of the field will populate the specified column in the field's tibble.

.format, format
: (character(1) or NULL) Passed to the format argument of as.Date().

.children
: (character(1)) The name of the field that contains the children.

.children_to
: (character(1)) The column name in which to store the children.

Details

There are five families of tib_*() functions:

- tib_scalar(.ptype): Cast each instance of the field to a length-one vector of type .ptype. Inside tspec_df(), this results in a column of the specified .ptype.
- tib_vector(.ptype): Cast each instance of the field to an arbitrary length vector of type .ptype. Inside tspec_df(), this results in a list column of vectors of the specified .ptype.
- tib_variant(): Cast each instance of the field to a list. Inside tspec_df(), this results in a list column of lists.
- tib_row(): Cast each instance of the field to a 1-row tibble. Inside tspec_df(), this results in a list column of 1-row tibbles.
- tib_df(): Cast each instance of the field to a tibble. Inside tspec_df(), this results in a list column of tibbles (each of which can have multiple rows).

  There are some special shortcuts of tib_scalar() and tib_vector() for the most common prototypes:

- `logical()`: `tib_lgl()` and `tib_lgl_vec()`
- `integer()`: `tib_int()` and `tib_int_vec()`
- `double()`: `tib_dbl()` and `tib_dbl_vec()`
- `character()`: `tib_chr()` and `tib_chr_vec()`
- `Date`: `tib_date()` and `tib_date_vec()`

  Further, there are special shortcuts for dates encoded as character: `tib_chr_date()` and `tib_chr_date_vec()`.

  There are two other `tib_*()` functions for special cases:
- `tib_recursive()`: Cast each instance of the field to a tibble, within which columns can themselves contain the same sorts of tibble, etc. Inside `tspec_df()`, this results in a list column of tibbles, each row of which can itself contain a tibble, etc. This is intended for structures such as a directory tree.
- `tib_unspecified()`: Tag a field in the object as unspecified. The `unspecified` argument of `tibblify()` controls how such fields are handled. If you are constructing a specification manually (as opposed to using `guess_tspec()`), you should most likely specify such columns with `tib_variant()`, or leave them out of the spec entirely.

Value

A tibblify field collector. This specification can be used with `tspec_df()` or another `tspec_*()` function to specify how to process an object.

Examples

```
tib_int("int")
tib_int("int", .required = FALSE, .fill = 0)

# This is essentially how `tib_chr_date()` is implemented.
tib_scalar(
  "date",
  Sys.Date(),
  .transform = function(x) as.Date(x, format = "%Y-%m-%d")
)

tib_df(
  "data",
  .names_to = "id",
  age = tib_int("age"),
  name = tib_chr("name")
)
```

---

tspec_combine *Combine multiple specifications*

Description

Combine specifications created by `tspec_df()`, `tspec_row()`, or `tspec_object()`. The resulting specification includes all fields from the input specifications.

Usage

```
tspec_combine(...)
```

Arguments

`...`	(`tspec`) Specifications to combine.

Details

If a field is specified in multiple input specifications, the field specifications will be combined to produce a single field specification, using the most specific specification for each argument. See the examples for details.

Value

A tibblify specification.

Examples

```
# union of fields
tspec_combine(
  tspec_df(tib_int("a")),
  tspec_df(tib_chr("b"))
)

# unspecified + x -> x
tspec_combine(
  tspec_df(tib_unspecified("a")),
  tspec_df(tib_int("a"))
)

# scalar + vector -> vector
tspec_combine(
  tspec_df(tib_chr("a")),
  tspec_df(tib_chr_vec("a"))
)

# scalar/vector + variant -> variant
tspec_combine(
  tspec_df(tib_chr("a")),
  tspec_df(tib_chr_vec("a")),
  tspec_df(tib_variant("a"))
)
```

tspec_df *Create a tibblify specification*

Description

Use `tspec_df()` to specify how to convert a list of objects to a tibble. Use `tspec_row()` to specify how to convert an object to a one-row tibble. Use `tspec_object()` to specify how to convert an object to a list.

Usage

```
tspec_df(
  ...,
  .input_form = c("rowmajor", "colmajor"),
  .names_to = NULL,
  .vector_allows_empty_list = FALSE,
  vector_allows_empty_list = deprecated()
)

tspec_object(
  ...,
  .input_form = c("rowmajor", "colmajor"),
  .vector_allows_empty_list = FALSE,
  vector_allows_empty_list = deprecated()
)

tspec_row(
  ...,
  .input_form = c("rowmajor", "colmajor"),
  .vector_allows_empty_list = FALSE,
  vector_allows_empty_list = deprecated()
)

tspec_recursive(
  ...,
  .children,
  .children_to = .children,
  .input_form = c("rowmajor", "colmajor"),
  .vector_allows_empty_list = FALSE,
  vector_allows_empty_list = deprecated()
)
```

Arguments

`...`	(`tib_collector` or `tspec`) Column specifications created by `tib_*()` or `tspec_*()`. If the dots are named, the name will be used for the resulting column. Otherwise, the name of the input will be used for the column name.

`.input_form` (`character(1)`) The input form of data-frame-like lists. Can be one of:

- `"rowmajor"`: The default. The input is a named list of rows.
- `"colmajor"`: The input is a named list of columns.

`.names_to` (`character(1)` or `NULL`) The name of the column in the output which will contain the names of top-level elements of the input named list. If `NULL`, the default, no name column is created.

`.vector_allows_empty_list`, `vector_allows_empty_list` (`logical(1)`) Should empty lists for columns with `.input_form = "vector"` be accepted and treated as empty vectors?

`.children` (`character(1)`) The name of the field that contains the children.

`.children_to` (`character(1)`) The column name in which to store the children.

Details

In column-major format, all fields are required, regardless of the `.required` argument.

Value

A tibblify specification.

Examples

```
tspec_df(
  id = tib_int("id"),
  name = tib_chr("name"),
  aliases = tib_chr_vec("aliases")
)

# Equivalent to
tspec_df(
  tib_int("id"),
  tib_chr("name"),
  tib_chr_vec("aliases")
)

# To create multiple columns of the same type use the bang-bang-bang (`!!!`)
# operator together with `purrr::map()`
tspec_df(
  !!!purrr::map(rlang::set_names(c("id", "age")), tib_int),
  !!!purrr::map(rlang::set_names(c("name", "title")), tib_chr)
)

# The `tspec_*()` functions can also be nested
spec1 <- tspec_object(
  int = tib_int("int"),
  chr = tib_chr("chr")
)
spec2 <- tspec_object(
  int2 = tib_int("int2"),
  chr2 = tib_chr("chr2")
```

```
)

tspec_df(spec1, spec2)
```

`unnest_tree` *Unnest a recursive data frame*

Description

Unnest a recursive data frame

Usage

```
unnest_tree(
  x,
  id_col,
  child_col,
  level_to = "level",
  parent_to = "parent",
  ancestors_to = NULL
)
```

Arguments

`x`	(`data.frame`) The data frame to unnest.
`id_col`	(`character(1)`, `integer(1)`, or `symbol`) The column that uniquely identifies each observation.
`child_col`	(`character(1)`, `integer(1)`, or `symbol`) The column that contains the children of an observation. This column must be a list where each element is either `NULL` or a data frame with the same columns as `x`.
`level_to`	(`character(1)`) The column name (`"level"` by default) in which to store the level of an observation. Use `NULL` if you don't need this information.
`parent_to`	(`character(1)`) The column name (`"parent"` by default) in which to store the parent id of an observation. Use `NULL` if you don't need this information.
`ancestors_to`	(`character(1)`) The column name (`NULL` by default) in which to store the ids of the ancestors of a deeply nested child. Use `NULL` if you don't need this information.

Value

A "flat" data frame.

Examples

```
df <- tibble(
  id = 1L,
  name = "a",
  children = list(
    tibble(
      id = 11:12,
      name = c("b", "c"),
      children = list(
        NULL,
        tibble(
          id = 121:122,
          name = c("d", "e")
        )
      )
    )
  )
)
df

unnest_tree(
  df,
  id_col = "id",
  child_col = "children",
  level_to = "level",
  parent_to = "parent",
  ancestors_to = "ancestors"
)
```

---

unpack_tspec *Unpack a tibblify specification*

Description

`tidyr::unpack()` makes data wider by expanding df-columns into individual columns. Analogously, unpacking a tibblify specification makes a specification which will result in a wider tibble by expanding `tib_row()` specifications into their individual fields.

Usage

```
unpack_tspec(
  spec,
  ...,
  fields = NULL,
  recurse = TRUE,
  names_sep = NULL,
  names_repair = c("unique", "universal", "check_unique", "unique_quiet",
    "universal_quiet"),
  names_clean = NULL
```

```
)

camel_case_to_snake_case(x)
```

Arguments

spec	(tspec) A tibblify specification.
...	These dots are for future extensions and must be empty.
fields	(character or NULL) The fields to unpack. If fields is NULL (default), all fields are unpacked.
recurse	(logical(1)) Should fields inside other fields be unpacked?
names_sep	(character(1) or NULL) If NULL, the default, the inner names of fields are used. If a string, the outer and inner names are pasted together, separated by names_sep.
names_repair	(character(1) or function) Passed to the repair argument of vctrs::vec_as_names() to check that the output data frame has valid names. Must be one of the following options: • "unique" (the default) or "unique_quiet": make sure names are unique and not empty, • "universal" or "universal_quiet": make the names unique and syntactic • "check_unique": no name repair, but check they are unique, • a function: apply custom name repair.
names_clean	(function) A one-argument function to clean names after repairing. For example use camel_case_to_snake_case().
x	(character) CamelCase text to convert to snake_case.

Value

A tibblify spec.

Examples

```
spec <- tspec_df(
  tib_lgl("a"),
  tib_row("x", tib_int("b"), tib_chr("c")),
  tib_row("y", tib_row("z", tib_chr("d")))
)
unpack_tspec(spec)
# only unpack `x`
unpack_tspec(spec, fields = "x")
# do not unpack the fields in `y`
unpack_tspec(spec, recurse = FALSE)
camel_case_to_snake_case(c("ExampleText", "otherTextToConvert"))
```

untibblify *Convert a data frame or object into a nested list*

Description

Convert a data frame or an object into a nested list. This is the inverse operation of `tibblify()`. See `vignette("supported-structures")` for a description of objects recognized by tibblify.

Usage

```
untibblify(x, spec = get_spec(x))
```

Arguments

x	(`data.frame` or `object`) An object to convert into a nested list.
spec	(`tspec`) Optional. A spec object which was used to create `x`. Defaults to the spec stored as the `tib_spec` attribute of `x`, if present.

Value

A nested list.

Examples

```
x <- tibble(
  a = 1:2,
  b = tibble(
    x = c("a", "b"),
    y = c(1.5, 2.5)
  )
)
untibblify(x)
```

Index