

Package ‘sanityTracker’

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Type Package

Title Keeps Track of all Performed Sanity Checks

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Description During the preparation of data set(s) one usually performs some sanity checks. The idea is that irrespective of where the checks are performed, they are centralized by this package in order to list all at once with examples if a check failed.

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Encoding UTF-8

LazyData true

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Imports data.table (>= 1.12.2), checkmate (>= 2.0.0)

Suggests testthat, knitr, rmarkdown

VignetteBuilder knitr

URL <https://github.com/MarselScheer/sanityTracker>

BugReports <https://github.com/MarselScheer/sanityTracker/issues>

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Contents

.add_sanity_check	2
add_sanity_check	3
clear_sanity_checks	4
get_sanity_checks	5

h_add_sanity_check	6
h_collapse_char_vec	7
h_complete_list	7
h_deparsed_sys_call	8
sc_cols_bounded	9
sc_cols_bounded_above	10
sc_cols_bounded_below	10
sc_cols_non_NA	11
sc_cols_positive	12
sc_cols_unique	13
sc_col_elements	14
sc_left_join	14

Index

16

<code>.add_sanity_check</code>	<i>Adds a sanity check to the list of already performed sanity checks</i>
--------------------------------	---

Description

NOTE the also `add_sanity_check` calls this function, the parameters are documented in `add_sanity_check` because that function gets exported.

Usage

```
.add_sanity_check(  
  fail_vec,  
  description,  
  counter_meas,  
  data,  
  data_name,  
  example_size,  
  param_name,  
  call,  
  fail_callback,  
  .fail_vec_str,  
  .generated_desc  
)
```

Arguments

<code>fail_vec</code>	see add_sanity_check
<code>description</code>	see add_sanity_check
<code>counter_meas</code>	see add_sanity_check
<code>data</code>	see add_sanity_check
<code>data_name</code>	see add_sanity_check
<code>example_size</code>	see add_sanity_check

param_name	see add_sanity_check
call	see add_sanity_check
fail_callback	see add_sanity_check
.fail_vec_str	should capture what was used originally for fail_vec.
.generated_desc	for convenience functions like sc_col_elements to provide additional information about the check.

Value

see [add_sanity_check](#)

add_sanity_check	<i>Adds a sanity check to the list of already performed sanity checks</i>
------------------	---

Description

Adds a sanity check to the list of already performed sanity checks

Usage

```
add_sanity_check(
  fail_vec,
  description = "-",
  counter_meas = "-",
  data,
  data_name = checkmate::vname(x = data),
  example_size = 3,
  param_name = "-",
  call = h_deparsed_sys_call(which = -3),
  fail_callback
)
```

Arguments

fail_vec	logical vector where TRUE indicates that a fail has happend
description	(optional) of the sanity check. default is "-".
counter_meas	(optional) description of the counter measures that were applied to correct the problems. default is "-".
data	(optional) where the fails were found. Is used to store examples of failures. default is "-".
data_name	(optional) name of the data set that was used. defaults is the name of the object passed to data.
example_size	(optional) number failures to be extracted from the object passed to data. By default 3 random examples are extracted.

param_name	(optional) name of the parameter(s) that is used. This may be helpful for filtering the table of all performed sanity checks.
call	(optional) by default tracks the function that called add_sanity_check .
fail_callback	(optional) user-defined function that is called if any element of fail_vec is TRUE. This is helpful if an additional warning or error should be thrown or maybe a log-entry should be created.

Value

a list with three elements

entry_sanity_table invisibly the sanity check that is stored internally with the other sanity checks

fail_vec fail_vec as passed over to this function

fail TRUE if any element of fail is TRUE. Otherwise FALSE.

All performed sanity checks can be fetched via [get_sanity_checks](#)

Examples

```
d <- data.frame(person_id = 1:4, bmi = c(18,23,-1,35), age = 31:34)
dummy_call <- function(x) {
  add_sanity_check(
    x$bmi < 15,
    description = "bmi above 15",
    counter_meas = "none",
    data = x,
    param_name = "bmi")
  add_sanity_check(
    x$bmi > 30,
    description = "bmi below 30",
    counter_meas = "none")
}
dummy_call(x = d)
get_sanity_checks()
add_sanity_check(
  d$bmi < 15,
  description = "bmi above 15",
  fail_callback = warning)
```

clear_sanity_checks	<i>Removes all tracked sanity checks</i>
---------------------	--

Description

Removes all tracked sanity checks

Usage

```
clear_sanity_checks()
```

get_sanity_checks	Returns all performed sanity checks
-------------------	-------------------------------------

Description

Returns all performed sanity checks

Usage

```
get_sanity_checks()
```

Value

all sanity checks, i.e. a data.table with the following column

description character that was provided by the user through the parameter description

additional_desc character that provides additional information about the check that was generated by the convenience functions

data_name name of the data set that passed to the function that performed the sanity check. This can also be specified by the user

n a logical vector is the basis of all sanity checks. This is length of the logical vector that was used, which in general is the number of rows of the table that was checked

n_fail how often the logical vector was TRUE

n_na how often the logical vector was NA

counter_meas character provided by the user about how a fail will be addressed. Note that this never happens inside a function of sanityTracker but is realized by the user after the check was performed. It is only for documentation when the results of the checks are displayed.

fail_vec_str this captures how the actual logical vector of fails was build

param_name usually generated by the convenience functions and it also may be a composition of more than one parameter name. However this parameter could also have been provided by the user

call character of the call where the sanity check happend

example if a check failed and the table is available, then some examples of rows that lead to the fail are stored here

See Also

[add_sanity_check](#)

h_add_sanity_check	Wrapper for add_sanity_check for internal use
--------------------	---

Description

The convenience function usually provide some defaults like description that can be overwritten by the user through the ... argument of the convenience function. This function manages to set those values that were NOT overwritten by the user through the ... argument and then call [add_sanity_check](#).

Usage

```
h_add_sanity_check(
  ellipsis,
  fail_vec,
  .generated_desc,
  data,
  data_name = "",
  param_name = "",
  call = h_deparsed_sys_call(which = -2),
  .fail_vec_str = checkmate::vname(x = fail_vec)
)
```

Arguments

ellipsis	usually list(...) of the function that calls this function. It contains the parameters defined by the user for add_sanity_check .
fail_vec	logical vector where TRUE indicates that a fail has happend
.generated_desc	will be passed to .add_sanity_check if ellipsis does not contain a element with name 'description'
data	will be passed to .add_sanity_check if ellipsis does not contain a element with name 'data'
data_name	will be passed to .add_sanity_check if ellipsis does not contain a element with name 'data_name'
param_name	will be passed to .add_sanity_check if ellipsis does not contain a element with name 'param_name'
call	will be passed to .add_sanity_check if ellipsis does not contain a element with name 'call'
.fail_vec_str	usually not used by the user. Captures what was passed to fail_vec.

Value

see return value of [add_sanity_check](#)

Examples

```
d <- data.frame(type = letters[1:4], nmb = 1:4)
# h_add_sanity_check is used on sc_col_elements()
sc_col_elements(object = d, col = "type", feasible_elements = letters[2:4])
get_sanity_checks()
```

`h_collapse_char_vec` *Collapse a vector of characters to a string with separators*

Description

Collapse a vector of characters to a string with separators

Usage

```
h_collapse_char_vec(v, collapse = ", ", quote = "'')
```

Arguments

<code>v</code>	vector of chars to be collapsed
<code>collapse</code>	character that separates the elements in the returned object
<code>quote</code>	character that surrounds every element in <code>v</code> in the returned object

Value

collapsed version of `v`

Examples

```
cat(sanityTracker::h_collapse_char_vec(v = letters[1:4]))
```

`h_complete_list` *Extends a list with an named element if the element does not exist*

Description

Extends a list with an named element if the element does not exist

Usage

```
h_complete_list(ell, name, value)
```

Arguments

ell	list to be extended (usually an ellipsis as list(...))
name	character with the name for the element to be added
value	value that will be stored in ell[[el_name]]

Value

if ell already contained the element name, then ell is returned without being modified. Otherwise, ell is returned extended by a new element with name name and value value.

Examples

```
ell <- list(a = 1, b = 2)
sanityTracker::h_complete_list(ell = ell, name = "a", value = 100)
sanityTracker::h_complete_list(ell = ell, name = "d", value = Inf)
```

h_deparsed_sys_call	<i>Simply converts a call into a character</i>
---------------------	--

Description

Simply converts a call into a character

Usage

```
h_deparsed_sys_call(which)
```

Arguments

which	see sys.call . However the function bounds it by the number of enclosing environments.
-------	--

Value

the call of the corresponding environment as character

sc_cols_bounded	<i>Checks that all elements from the specified columns are in a certain range</i>
-----------------	---

Description

Checks that all elements from the specified columns are in a certain range

Usage

```
sc_cols_bounded(object, cols, rule = "(-Inf, Inf)", ...)
```

Arguments

object	table with a columns specified by cols
cols	vector of characters of columns that are checked against the specified range
rule	check as two numbers separated by a comma, enclosed by square brackets (endpoint included) or parentheses (endpoint excluded). For example, "[0, 3)" results in $\text{all}(x \geq 0 \ \& \ x < 3)$. The lower and upper bound may be omitted which is the equivalent of a negative or positive infinite bound, respectively. By definition [0,] contains Inf, while [0,) does not. The same holds for the left (lower) boundary and -Inf. This explanation was copied from <code>checkmate::qtest</code> . That function is also the backbone of the this function.
...	further parameters that are passed to add_sanity_check .

Value

list of logical vectors where TRUE indicates where the check failed. Every list entry represents one of the columns specified in cols. This might be helpful if one wants to apply a counter-measure

Examples

```
dummy_call <- function(x) {
  sc_cols_bounded(object = iris, cols = c("Sepal.Length", "Petal.Length"),
    rule = "[1, 7.9)")
}
dummy_call(x = d)
get_sanity_checks()
```

sc_cols_bounded_above	<i>Checks that all elements from the given columns are below a certain number</i>
-----------------------	---

Description

Checks that all elements from the given columns are below a certain number

Usage

```
sc_cols_bounded_above(
  object,
  cols,
  upper_bound,
  include_upper_bound = TRUE,
  ...
)
```

Arguments

object	table with a columns specified by cols
cols	vector of characters of columns that are checked against the specified range
upper_bound	elements of the specified columns must be below this bound
include_upper_bound	if TRUE (default), elements are allowed to be equal to the upper_bound
...	further parameters that are passed to add_sanitary_check .

Value

list of logical vectors where TRUE indicates where the check failed. Every list entry represents one of the columns specified in cols. This might be helpful if one wants to apply a counter-measure

sc_cols_bounded_below	<i>Checks that all elements from the given columns are above a certain number</i>
-----------------------	---

Description

Checks that all elements from the given columns are above a certain number

Usage

```
sc_cols_bounded_below(
  object,
  cols,
  lower_bound,
  include_lower_bound = TRUE,
  ...
)
```

Arguments

object table with a columns specified by cols

cols vector of characters of columns that are checked against the specified range

lower_bound elements of the specified columns must be above this bound

include_lower_bound if TRUE (default), elements are allowed to be equal to the lower_bound

... further parameters that are passed to [add_sanity_check](#).

Value

list of logical vectors where TRUE indicates where the check failed. Every list entry represents one of the columns specified in cols. This might be helpful if one wants to apply a counter-measure

Examples

```
d <- data.frame(a = c(0, 0.2, 3, Inf), b = c(1:4))
dummy_call <- function(x) {
  sc_cols_bounded_below(
    object = d, cols = c("a", "b"),
    lower_bound = 0.2,
    include_lower_bound = FALSE,
    description = "Measurements are expected to be bounded from below")
}
dummy_call(x = d)
get_sanity_checks()
```

sc_cols_non_NA	<i>Checks that all elements from the specified columns are not NA</i>
----------------	---

Description

Checks that all elements from the specified columns are not NA

Usage

```
sc_cols_non_NA(object, cols = names(object), ..., unk_cols_callback = stop)
```

Arguments

object	table with a columns specified by cols
cols	vector of characters of columns that are checked for NAs
...	further parameters that are passed to add_sanity_check .
unk_cols_callback	user-defined function that is called if some of the cols are not contained in the object. This is helpful if an additional warning or error should be thrown or maybe a log-entry should be created. Default is the function stop

Value

a list where every element is an object returned by [add_sanity_check](#) for each column specified in cols that exists in object

Examples

```
iris[c(1,3,5,7,9), 1] <- NA
dummy_call <- function(x) {
  sc_cols_non_NA(object = iris, description = "No NAs expected in iris")
}
dummy_call(x = iris)
get_sanity_checks()
```

sc_cols_positive	<i>Checks that all elements from the specified columns are positive</i>
------------------	---

Description

Checks that all elements from the specified columns are positive

Usage

```
sc_cols_positive(object, cols, zero_feasible = TRUE, ...)
```

Arguments

object	table with a columns specified by cols
cols	vector of characters of columns that are checked against the specified range
zero_feasible	if zero is in the range or not
...	further parameters that are passed to add_sanity_check .

Value

list of logical vectors where TRUE indicates where the check failed. Every list entry represents one of the columns specified in cols. This might be helpful if one wants to apply a counter-measure.

Examples

```
d <- data.frame(a = c(0, 0.2, 3, Inf), b = c(1:4))
dummy_call <- function(x) {
  sc_cols_positive(d, cols = c("a", "b"), zero_feasible = FALSE,
    description = "Measurements are expected to be positive")
}
dummy_call(x = d)
get_sanity_checks()
```

sc_cols_unique	<i>Checks that the combination of the specified columns is unique</i>
----------------	---

Description

Checks that the combination of the specified columns is unique

Usage

```
sc_cols_unique(object, cols = names(object), ...)
```

Arguments

object	table with a columns specified by cols
cols	vector of characters which combination is checked to be unique
...	further parameters that are passed to add_sanity_check .

Value

see return object of [add_sanity_check](#). Note that if a combination appears 3 times, then n_fail will increased by 3.

Examples

```
dummy_call <- function(x) {
  sc_cols_unique(
    object = x,
    cols = c("Species", "Sepal.Length",
      "Sepal.Width", "Petal.Length"))
}
dummy_call(x = iris)
get_sanity_checks()
get_sanity_checks()[["example"]]
```

sc_col_elements	<i>Checks that the elements of a column belong to a certain set</i>
-----------------	---

Description

Checks that the elements of a column belong to a certain set

Usage

```
sc_col_elements(object, col, feasible_elements, ...)
```

Arguments

object	table with a column specified by col
col	name as a character of the column which is checked
feasible_elements	vector with characters that are feasible for col. Note that an element that is NA it is always counted as a fail if feasible_elements does not explicitly contains NA.
...	further parameters that are passed to add_sanity_check .

Value

see return object of [add_sanity_check](#)

Examples

```
d <- data.frame(type = letters[1:4], nmb = 1:4)
dummy_call <- function(x) {
  sc_col_elements(object = d, col = "type", feasible_elements = letters[2:4])
}
dummy_call(x = d)
get_sanity_checks()
```

sc_left_join	<i>Performs various checks after a left-join was performed</i>
--------------	--

Description

One check is that no rows were duplicated during merge and the other check is that no columns were duplicated during merge.

Usage

```
sc_left_join(joined, left, right, by, ..., find_nonunique_key = TRUE)
```

Arguments

joined	the result of the left-join
left	the left table used in the left-join
right	the right table used in the left-join
by	the variables used for the left-join
...	further parameters that are passed to add_sanity_check .
find_nonunique_key	if TRUE a sanity-check is performed that finds keys (defined by by) that are non-unique. However this can be a time-consuming step.

Value

list with two elements for the two sanity checks performed by this function. The structure of each element is as the return object of [add_sanity_check](#).

Examples

```
ab <- data.table::data.table(a = 1:4, b = letters[1:4])
abc <- data.table::data.table(a = c(1:4, 2), b = letters[1:5], c = rnorm(5))
j <- merge(x = ab, y = abc, by = "a")
dummy_call <- function() {
  sc_left_join(joined = j, left = ab, right = abc, by = "a",
    description = "Left join outcome to main population")
}
dummy_call()
get_sanity_checks()
```

Index

`.add_sanity_check`, [2](#), [6](#)
`add_sanity_check`, [2](#), [3](#), [3](#), [4–6](#), [9–15](#)
`clear_sanity_checks`, [4](#)
`get_sanity_checks`, [4](#), [5](#)
`h_add_sanity_check`, [6](#)
`h_collapse_char_vec`, [7](#)
`h_complete_list`, [7](#)
`h_deparsed_sys_call`, [8](#)

`sc_col_elements`, [3](#), [14](#)
`sc_cols_bounded`, [9](#)
`sc_cols_bounded_above`, [10](#)
`sc_cols_bounded_below`, [10](#)
`sc_cols_non_NA`, [11](#)
`sc_cols_positive`, [12](#)
`sc_cols_unique`, [13](#)
`sc_left_join`, [14](#)
`sys.call`, [8](#)