

# Package ‘NVIcheckmate’

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**Title** Extension of checkmate with argument checking adapted for NVIverse

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**Description** Extends `checkmate` with functions for argument checking that are adapted for NVIverse. NVIcheckmate is intended to be used together with `checkmate`.

**URL** <https://github.com/NorwegianVeterinaryInstitute/NVIcheckmate>

**BugReports** <https://github.com/NorwegianVeterinaryInstitute/NVIcheckmate/issues>

**License** BSD\_3\_clause + file LICENSE

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**Collate** 'assert.R'  
'makeAssertionFunction.R'  
'assert\_character.R'  
'assert\_disjunct.R'  
'assert\_names.R'  
'check\_choice\_character.R'  
'check\_credentials.R'  
'check\_non\_null.R'  
'check\_odbc\_channel.R'

```
'check_package.R'
'check_subset_character.R'
'helper.R'
'match_arg.R'
```

**VignetteBuilder** knitr

## R topics documented:

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assert	<i>Combine multiple checks into one assertion</i>
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### Description

You can call this function with an arbitrary number of check\* functions, i.e. functions provided by this package or your own functions which return TRUE on success and the error message as character(1) otherwise. The resulting assertion is successful, if combine is “or” (default) and at least one check evaluates to TRUE or combine is “and” and all checks evaluate to TRUE. Otherwise, assert throws an informative error message.

### Usage

```
assert(..., combine = "or", .var.name = NULL, comment = NULL, add = NULL)
```

### Arguments

...	[any] List of calls to check functions.
combine	[character(1)] “or” or “and” to combine the check functions with an OR or AND, respectively.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

**Value**

Throws an error (or pushes the error message to an [AssertCollection](#) if add is not NULL) if the checks fail and invisibly returns TRUE otherwise.

**Examples**

```
x = 1:10
assert(checkmate::checkNull(x), checkmate::checkInteger(x, any.missing = FALSE))
collection <- checkmate::makeAssertCollection()
assert(checkmate::checkChoice(x, c("a", "b")), checkmate::checkDataFrame(x), add = collection)
collection$getMessages()
```

---

assert_character	<i>Check if an argument is a vector of type character</i>
------------------	---

---

**Description**

Performs assertions if an argument is a vector of type character.

**Usage**

```
assert_character(
  x,
  n.chars = NULL,
  min.chars = NULL,
  max.chars = NULL,
  pattern = NULL,
  fixed = NULL,
  ignore.case = FALSE,
  any.missing = TRUE,
  all.missing = TRUE,
  len = NULL,
  min.len = NULL,
  max.len = NULL,
  unique = FALSE,
  sorted = FALSE,
  names = NULL,
  null.ok = FALSE,
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

**Arguments**

x	[any] Object to check.
n.chars	[integer(1)] Exact number of characters for each element of x.
min.chars	[integer(1)] Minimum number of characters for each element of x.

max.chars	[integer(1)] Maximum number of characters for each element of x.
pattern	[character(1L)] Regular expression as used in <a href="#">grepl</a> . All non-missing elements of x must comply to this pattern.
fixed	[character(1)] Substring to detect in x. Will be used as pattern in <a href="#">grepl</a> with option fixed set to TRUE. All non-missing elements of x must contain this substring.
ignore.case	[logical(1)] See <a href="#">grepl</a> . Default is FALSE.
any.missing	[logical(1)] Are vectors with missing values allowed? Default is TRUE.
all.missing	[logical(1)] Are vectors with no non-missing values allowed? Default is TRUE. Note that empty vectors do not have non-missing values.
len	[integer(1)] Exact expected length of x.
min.len	[integer(1)] Minimal length of x.
max.len	[integer(1)] Maximal length of x.
unique	[logical(1)] Must all values be unique? Default is FALSE.
sorted	[logical(1)] Elements must be sorted in ascending order. Missing values are ignored.
names	[character(1)] Check for names. See <a href="#">checkNamed</a> for possible values. Default is “any” which performs no check at all. Note that you can use <a href="#">checkSubset</a> to check for a specific set of names.
null.ok	[logical(1)] If set to TRUE, x may also be NULL. In this case only a type check of x is performed, all additional checks are disabled.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

## Details

The assertions are based on `checkmate::checkCharacter`. `NVcheckmate::assert_character` differs from `checkmate::assert_character` in including the argument `comment = .`. The help is updated to reflect the changes.

This function does not distinguish between NA, NA\_integer\_, NA\_real\_, NA\_complex\_, NA\_character\_ and NaN.

**Value**

If the check is successful, the function `assert_character` return `x` invisibly.  
 If the check is not successful, `assert_character` throws an error message.

---

<code>assert_disjunct</code>	<i>Check if an argument is disjunct from a given set</i>
------------------------------	--

---

**Description**

Check if an argument is disjunct from a given set.

**Usage**

```
assert_disjunct(
  x,
  y,
  fmatch = FALSE,
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

**Arguments**

<code>x</code>	[any] Object to check.
<code>y</code>	[atomic] Other set.
<code>fmatch</code>	[logical(1)] Use the set operations implemented in <code>fmatch</code> in package <b>fastmatch</b> . If <b>fastmatch</b> is not installed, this silently falls back to <code>match</code> . <code>fastmatch::fmatch</code> modifies <code>y</code> by reference: A hash table is added as attribute which is used in subsequent calls.
<code>.var.name</code>	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <code>vname</code> .
<code>comment</code>	[character(1)] Extra information to be appended to the standard error message in assertions.
<code>add</code>	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

**Details**

The assertions are based on `checkmate::checkDisjunct`. `NVcheckmate::assert_disjunct` differs from `checkmate::assert_disjunct` in including the argument `comment = .`. The help is updated to reflect the changes.

**Value**

If the check is successful, the function `assert_disjunct` return `x` invisibly.  
 If the check is not successful, `assert_disjunct` throws an error message.

---

assert\_names

---

Check names to comply to specific rules

---

## Description

Performs assertions with various checks on character vectors, usually names.

## Usage

```
assert_names(
  x,
  type = "named",
  subset.of = NULL,
  must.include = NULL,
  permutation.of = NULL,
  identical.to = NULL,
  disjunct.from = NULL,
  what = "names",
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

## Arguments

x	[character    NULL] Names to check using rules defined via type.
type	[character(1)] Type of formal check(s) to perform on the names.  <b>unnamed:</b> Checks x to be NULL. <b>named:</b> Checks x for regular names which excludes names to be NA or empty (""). <b>unique:</b> Performs checks like with “named” and additionally tests for non-duplicated names. <b>strict:</b> Performs checks like with “unique” and additionally fails for names with UTF-8 characters and names which do not comply to R’s variable name restrictions. As regular expression, this is “ <code>^[.][a-zA-Z]+[a-zA-Z0-9._]\$\$</code> ”. <b>ids:</b> Same as “strict”, but does not enforce uniqueness. Note that for zero-length x, all these name checks evaluate to TRUE.
subset.of	[character] Names provided in x must be subset of the set subset.of.
must.include	[character] Names provided in x must be a superset of the set must.include.
permutation.of	[character] Names provided in x must be a permutation of the set permutation.of. Duplicated names in permutation.of are stripped out and duplicated names in x thus lead to a failed check. Use this argument instead of identical.to if the order of the names is not relevant.

identical.to	[character] Names provided in x must be identical to the vector identical.to. Use this argument instead of permutation.of if the order of the names is relevant.
disjunct.from	[character] Names provided in x must may not be present in the vector disjunct.from.
what	[character(1)] Type of name vector to check, e.g. “names” (default), “colnames” or “row-names”.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

### Details

The assertions are based on `checkmate::checkNames`. `NVcheckmate::assert_names` differs from `checkmate::assert_names` in including the argument `comment = .`. The help is updated to reflect the changes.

### Value

If the check is successful, the function `assert_names` return x invisibly.  
If the check is not successful, `assert_names` throws an error message.

---

check\_choice\_character

*Check if an object is an element of a given set ignoring case*

---

### Description

Check if an object is an element of a given set in the object name. The function is based on `code/checkmate::check_choice`, but includes the argument `ignore.case`.

### Usage

```
check_choice_character(
  x,
  choices,
  null.ok = FALSE,
  ignore.case = FALSE,
  fmatch = FALSE
)

assert_choice_character(
  x,
  choices,
  null.ok = FALSE,
```

```

    ignore.case = FALSE,
    fmatch = FALSE,
    .var.name = checkmate::vname(x),
    comment = NULL,
    add = NULL
  )

```

## Arguments

x	[any] Object to check.
choices	[character] Set of possible values.
null.ok	[logical(1)] If set to TRUE, x may also be NULL. In this case only a type check of x is performed, all additional checks are disabled.
ignore.case	[logical(1)] Case is ignored if TRUE. Default is FALSE.
fmatch	[logical(1)] Use the set operations implemented in fmatch in package <b>fastmatch</b> . If <b>fastmatch</b> is not installed, this silently falls back to <b>match</b> . <code>fastmatch::fmatch</code> modifies y by reference: A hash table is added as attribute which is used in subsequent calls.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <b>vname</b> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <b>AssertCollection</b> .

## Details

The object must be of type character. The check is intended for functions were using camelCase may make the argument easier to remember. Therefore, the input to the function is ignoring case.

## Value

Depending on the function prefix:

If the check is successful, the function `assert_choice_character` return x invisibly, whereas `check_choice_character` return TRUE.

If the check is not successful, `assert_choice_character` throws an error message and `check_choice_character` returns a string with the error message.

## Author(s)

Petter Hopp [Petter.Hopp@vetinst.no](mailto:Petter.Hopp@vetinst.no)



**Examples**

```
# returns TRUE
check_choice_character(x = "APPLE",
                      choices = c("Apple", "Pear", "Orange"),
                      null.ok = FALSE,
                      ignore.case = TRUE,
                      fmatch = FALSE)
```

---

check_credentials	<i>Check if an object is a service for which credentials are saved in the user profile</i>
-------------------	--

---

**Description**

Check if credentials are saved in the user profile for the service.

**Usage**

```
check_credentials(x)

assert_credentials(
  x,
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

**Arguments**

x	[any] Object to check.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

**Value**

Depending on the function prefix:

If the check is successful, the function `assert_credentials` return `x` invisibly, whereas `check_credentials` return `TRUE`.

If the check is not successful, `assert_credentials` throws an error message and `check_credentials` returns a string with the error message.

**Examples**

```
check_credentials(x = "PJS")
```

---

check_non_null	<i>Check if two or more arguments are NULL or NA</i>
----------------	--

---

### Description

Check whether two or more arguments that may replace each other both are NULL or NA.

### Usage

```
check_non_null(x)
```

```
assert_non_null(x, .var.name = checkmate::vname(x), comment = NULL, add = NULL)
```

### Arguments

x	[any] List with objects to check.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

### Details

In some functions, one argument may replace another. The check is used to ensure that at least one of the arguments have a value. Specific checks for each argument should be used in addition.

### Value

Depending on the function prefix:

If the check is successful, the function `assert_non_null` return x invisibly, whereas `check_non_null` return TRUE.

If the check is not successful, `assert_non_null` throws an error message and `check_non_null` returns a string with the error message.

### Examples

```
data <- NULL
nrows_in_data <- 56
check_non_null(x = list(data, nrows_in_data))
```

---

check_odbc_channel	<i>Check if an object is an open ODBC-channel</i>
--------------------	---

---

## Description

Check if an object is an open ODBC-channel.

## Usage

```
check_odbc_channel(x, dbservice = NULL)
```

```
assert_odbc_channel(
  x,
  dbservice = NULL,
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

## Arguments

x	[any] Object to check.
dbservice	[character(1)] The database the channel should be connect to.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

## Details

The check uses `RODBC:::odbcValidChannel` to check if the argument is an open ODBC-channel. Be aware that this function is an internal RODBC-function and may change within that package without warning.

## Value

Depending on the function prefix:

If the check is successful, the function `assert_odbc_channel` return `x` invisibly, whereas `check_odbc_channel` return `TRUE`.

If the check is not successful, `assert_odbc_channel` throws an error message and `check_odbc_channel` returns a string with the error message.

## Author(s)

Petter Hopp [Petter.Hopp@vetinst.no](mailto:Petter.Hopp@vetinst.no)

## Examples

```
## Not run:
# login to PJS
journal_rapp <- login("PJS")

# error check:
check_odbc_channel(x = "journal_rapp", dbservice = "PJS")

## End(Not run)
```

---

check_package	<i>Check if an object is an installed or attached package</i>
---------------	---

---

## Description

Check if a package is installed and if it is installed, check if the version is equal to or higher than the required version or check if a package is attached.

## Usage

```
check_package(x, version = NULL, type = "installed")

assert_package(
  x,
  version = NULL,
  type = "installed",
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

## Arguments

x	[any] Object to check.
version	[character(1)] The required version of the installed package. May be NULL.
type	[character(1)] Type of formal check(s) to perform on the package. <b>installed:</b> Checks if x is installed. <b>attached:</b> Checks if x is attached.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

**Value**

Depending on the function prefix:

If the check is successful, the function `assert_package` return `x` invisibly, whereas `check_package` return `TRUE`.

If the check is not successful, `assert_package` throws an error message and `check_package` returns a string with the error message.

**Examples**

```
# returns TRUE i.e. no error message
check_package(x = "checkmate", version = "2.0.0", type = "installed")

# returns an error message
check_package(x = "nopackage", type = "installed")
check_package(x = "nopackage", type = "attached")
```

---

check\_subset\_character

*Check if an argument is a subset of a given set ignoring case*

---

**Description**

Check if an object is a subset of a given set in the object name. The function is based on `code/checkmate::check_subset`, but includes the argument `ignore.case`.

**Usage**

```
check_subset_character(
  x,
  choices,
  ignore.case = FALSE,
  empty.ok = TRUE,
  fmatch = FALSE
)

assert_subset_character(
  x,
  choices,
  ignore.case = FALSE,
  empty.ok = TRUE,
  fmatch = FALSE,
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

**Arguments**

`x` [any]  
Object to check.

choices	[character] Set of possible values. May be empty.
ignore.case	[logical(1)] Case is ignored if TRUE. Default is FALSE.
empty.ok	[logical(1)] Treat zero-length x as subset of any set choices (this includes NULL)? Default is TRUE.
fmatch	[logical(1)] Use the set operations implemented in fmatch in package <b>fastmatch</b> . If <b>fastmatch</b> is not installed, this silently falls back to <a href="#">match</a> . <code>fastmatch::fmatch</code> modifies y by reference: A hash table is added as attribute which is used in subsequent calls.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

## Details

The object must be of type character. The check is intended for functions were using camelCase may make the argument easier to remember. Therefore, the input to the function is ignoring case.

## Value

Depending on the function prefix:

If the check is successful, the function `assert_subset_character` return x invisibly, whereas `check_subset_character` return TRUE.

If the check is not successful, `assert_subset_character` throws an error message and `check_subset_character` returns a string with the error message.

## Author(s)

Petter Hopp [Petter.Hopp@vetinst.no](mailto:Petter.Hopp@vetinst.no)

## Examples

```
# returns TRUE
check_subset_character(x = "Apple",
                      choices = c("apple", "pear", "orange", "banana"),
                      ignore.case = TRUE)
check_subset_character(x = c("Apple", "Pear"),
                      choices = c("apple", "pear", "orange", "banana"),
                      ignore.case = TRUE)

# returns a message
check_subset_character(x = "Tomato",
                      choices = c("apple", "pear", "orange", "banana"),
                      ignore.case = TRUE)
```

---

makeAssertionFunction *Turn a Check into an Assertion*

---

### Description

makeAssertionFunction can be used to automatically create an assertion function based on a check function (see example). This is a modification of `checkmate::makeAssertionFunction` that includes the argument comment in the assertion function.

### Usage

```
makeAssertionFunction(
  check.fun,
  c.fun = NULL,
  coerce = FALSE,
  env = parent.frame()
)
```

### Arguments

check.fun	[function] Function which checks the input. Must return TRUE on success and a string with the error message otherwise.
c.fun	[character(1)] If not NULL, instead of calling the function check.fun, use .Call to call a C function “c.fun” with the identical set of parameters. The C function must be registered as a native symbol, see <a href="#">CallExternal</a> . Useful if check.fun is just a simple wrapper.
coerce	[logical(1)] If TRUE, injects some lines of code to convert numeric values to integer after an successful assertion. Currently used in <a href="#">assertCount</a> , <a href="#">assertInt</a> and <a href="#">assertIntegerish</a> .
env	[environment] The environment of the created function. Default is the parent.frame, see <a href="#">sys.parent</a> .

### Details

The code is imported from checkmate. The modifications in the code is marked. The argument `use.namespace` is deleted as `checkmate::makeAssertion` and `checkmate::vname` always should be used.

---

match\_arg *Argument Verification Using Partial Matching*

---

### Description

match.arg matches arguments against a table of candidate values as specified by choices. Matching is done using [grep](#), and arguments may be abbreviated. If `ignore.case = TRUE`, case is ignored when performing the matching.

**Usage**

```
match_arg(
  x,
  choices,
  several.ok = FALSE,
  ignore.case = FALSE,
  .var.name = checkmate::vname(x),
  comment = NULL,
  add = NULL
)
```

**Arguments**

x	[character] User provided argument to match.
choices	[character()] Candidates to match x with.
several.ok	[logical(1)] If TRUE, x should be allowed to have more than one element.
ignore.case	[logical(1)] Case is ignored if TRUE. Default is FALSE.
.var.name	[character(1)] Name of the checked object to print in error messages. Defaults to the heuristic implemented in <a href="#">vname</a> .
comment	[character(1)] Extra information to be appended to the standard error message in assertions.
add	[AssertCollection] Collection to store assertions. See <a href="#">AssertCollection</a> .

**Details****Partial Argument Matching**

This is an extensions to [matchArg](#) with support for `ignore.case` and `comment`. [matchArg](#) is an extension of [match.arg](#) with support for [AssertCollection](#). The behavior is very similar to [match.arg](#), except that `NULL` is not a valid value for `x`. In addition, it is required that all values for `x` match a value in `choices` and that each value in `x` matches only one value in `choices`.

**Value**

Character vector with subset of `choices`.

**Examples**

```
match_arg("a", choices = c("Apple", "Banana"), ignore.case = TRUE)
match_arg(c("a", "Ban"), choices = c("Apple", "Banana"), several.ok = TRUE, ignore.case = TRUE)
```



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