

# Package ‘nonmemica’

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**Type** Package

**Title** Create and Evaluate NONMEM Models in a Project Context

**Version** 1.0.8

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**Description** Systematically creates and modifies NONMEM(R) control streams. Harvests NONMEM output, builds run logs, creates derivative data, generates diagnostics. NONMEM (ICON Development Solutions <<https://www.iconplc.com/>>) is software for nonlinear mixed effects modeling. See 'package?nonmemica'.

**License** GPL-3

**LazyData** TRUE

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---

absolute	<i>Check if File Path is Absolute</i>
----------	---------------------------------------

---

### Description

Checks if file path is absolute.

### Usage

```
absolute(x)
```

### Arguments

x	character (a file path)
---	-------------------------

**Value**

logical; TRUE if x starts with / or .: (e.g. C:)

---

as.best.default	<i>Convert Vector to Best of Numeric or Character</i>
-----------------	---

---

**Description**

Convert vector to best of numeric or character.

**Usage**

```
## Default S3 method:
as.best(x, prefix = "", na.strings = c(".", "NA", ""), ...)
```

**Arguments**

x	default
prefix	prefix for viewing numerics
na.strings	strings that should be treated as NA
...	ignored

**Details**

Converts vector to numeric if doing so creates no new NA; otherwise to character. Number-like vectors that are nevertheless character are prefixed by default to make this explicit when viewing only a few rows.

**See Also**

Other util: [%contains%](#), [as.best\(\)](#), [enclose\(\)](#), [locf\(\)](#), [padded\(\)](#), [parens\(\)](#), [pool\(\)](#), [runhead\(\)](#), [text2decimal\(\)](#)

---

as.bootstrap.bootstrap	<i>Create Bootstrap from Bootstrap</i>
------------------------	--

---

**Description**

Creates bootstrap from bootstrap.

**Usage**

```
## S3 method for class 'bootstrap'
as.bootstrap(x, ...)
```

**Arguments**

x	bootstrap
...	ignored

**Value**

data.frame

**See Also**

Other `as.bootstrap`: [as.bootstrap.numeric\(\)](#), [as.bootstrap\(\)](#)

---

`as.halfmatrix.default` *Coerce to Half Matrix by Default*

---

**Description**

Coerces to half matrix. Treats `x` as `halfmatrix`, coerces to `matrix` and takes `half`.

**Usage**

```
## Default S3 method:  
as.halfmatrix(x, ...)
```

**Arguments**

x	object
...	passed arguments

**See Also**

Other `halfmatrix`: [as.data.frame.halfmatrix\(\)](#), [as.halfmatrix.halfmatrix\(\)](#), [as.halfmatrix\(\)](#), [as.matrix.halfmatrix\(\)](#), [half.matrix\(\)](#), [half\(\)](#), [is.square.matrix\(\)](#), [is.square\(\)](#), [offdiag.halfmatrix\(\)](#), [offdiag\(\)](#), [ord.halfmatrix\(\)](#), [ord.matrix\(\)](#), [ord\(\)](#), [print.halfmatrix\(\)](#)

---

as.init.init	<i>Coerce init to init</i>
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---

**Description**

Coerces init to init

**Usage**

```
## S3 method for class 'init'  
as.init(x = numeric(0), fixed = FALSE, comment = character(0), ...)
```

**Arguments**

x	init
fixed	logical
comment	character
...	passed arguments

**Value**

init

**See Also**

Other as.init: [as.init.numeric\(\)](#), [as.init\(\)](#)

---

as.inits.list	<i>Coerce list to inits</i>
---------------	-----------------------------

---

**Description**

Coerces list to inits.

**Usage**

```
## S3 method for class 'list'  
as.inits(x, comment = character(0), ...)
```

**Arguments**

x	list
comment	character
...	passed arguments

**Value**

inits

**See Also**Other as.inits: [as.inits.numeric\(\)](#), [as.inits\(\)](#)


---

as.matrix.halfmatrix    *Coerce Half Matrix to Matrix*


---

**Description**

Coerces half matrix to matrix.

**Usage**

```
## S3 method for class 'halfmatrix'
as.matrix(x, ...)
```

**Arguments**

x	object
...	passed arguments

**See Also**

Other halfmatrix: [as.data.frame.halfmatrix\(\)](#), [as.halfmatrix.default\(\)](#), [as.halfmatrix.halfmatrix\(\)](#), [as.halfmatrix\(\)](#), [half.matrix\(\)](#), [half\(\)](#), [is.square.matrix\(\)](#), [is.square\(\)](#), [offdiag.halfmatrix\(\)](#), [offdiag\(\)](#), [ord.halfmatrix\(\)](#), [ord.matrix\(\)](#), [ord\(\)](#), [print.halfmatrix\(\)](#)

---

as.model.character    *Coerce character to model*


---

**Description**

Coerces character to model.

**Usage**

```
## S3 method for class 'character'
as.model(
  x,
  pattern = "^\\s*\\$(\\S+)(\\s.*)?$",
  head = "\\1",
  tail = "\\2",
  parse = TRUE,
  ...
)
```

**Arguments**

x	character
pattern	pattern to identify record declarations
head	subpattern to identify declaration type
tail	subpattern remaining
parse	whether to convert thetas omegas and sigmas to inits, tables to items, and run-records to fields
...	ignored

**Value**

list

**See Also**

Other as.model: [\[.model\(\)\]](#), [\[\[.model\(\)\]](#), [as.model.numeric\(\)](#), [as.model\(\)](#), [read.model\(\)](#), [write.model\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% as.model
```

---

as.xml\_document

*Create an xml\_document in a Project Context*

---

**Description**

Creates an xml\_document in a project context.

Coerces xml\_document to xml\_document

**Usage**

```
as.xml_document(x, ...)
```

```
## S3 method for class 'xml_document'
as.xml_document(x, ...)
```

**Arguments**

x	xml_document
...	ignored



**Value**

xml\_document  
xml\_document

**Methods (by class)**

- as.xml\_document(xml\_document): xml\_document method

**See Also**

[xpath](#)

Other xpath: [as.xml\\_document.character\(\)](#), [as.xml\\_document.numeric\(\)](#), [xpath.default\(\)](#), [xpath.xml\\_document\(\)](#), [xpath\(\)](#)

Other xpath: [as.xml\\_document.character\(\)](#), [as.xml\\_document.numeric\(\)](#), [xpath.default\(\)](#), [xpath.xml\\_document\(\)](#), [xpath\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% as.xml_document
```

---

as.xml\_document.character

*Create xml\_document From Character*

---

**Description**

Creates an xml\_document from character (modelname or filepath).

**Usage**

```
## S3 method for class 'character'
as.xml_document(x, strip.namespace = TRUE, ...)
```

**Arguments**

x	file path or run name
strip.namespace	whether to strip e.g. nm: from xml elements
...	passed to modelpath()

**Value**

xml\_document

**See Also**

Other xpath: [as.xml\\_document.numeric\(\)](#), [as.xml\\_document\(\)](#), [xpath.default\(\)](#), [xpath.xml\\_document\(\)](#), [xpath\(\)](#)

---

as\_nms\_canonical      *Coerce to 'nms\_canonical'*

---

**Description**

Coerces character to 'nms\_canonical'.

**Usage**

```
as_nms_canonical(x, ...)
```

**Arguments**

x	character
...	ignored

**See Also**

Other nms: [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

---

as\_nms\_nonmem      *Coerce to 'nms\_nonmem'*

---

**Description**

Coerces character to 'nms\_nonmem'.

**Usage**

```
as_nms_nonmem(x, ...)
```

**Arguments**

x	character
...	ignored

**See Also**

Other nms: `as_nms_canonical()`, `as_nms_pmx()`, `as_nms_psn()`, `nms_canonical.character()`, `nms_canonical.model()`, `nms_canonical.nms_nonmem()`, `nms_canonical.nms_pmx()`, `nms_canonical.numeric()`, `nms_canonical()`, `nms_nonmem.character()`, `nms_nonmem.model()`, `nms_nonmem.nms_canonical()`, `nms_nonmem.nms_pmx()`, `nms_nonmem.numeric()`, `nms_nonmem()`, `nms_pmx.nms_canonical()`, `nms_pmx.nms_nonmem()`, `nms_pmx()`, `nms_psn.character()`, `nms_psn.model()`, `nms_psn.numeric()`, `nms_psn()`

---

as_nms_pmx	<i>Coerce to 'nms_pmx'</i>
------------	----------------------------

---

**Description**

Coerces character to 'nms\_pmx'.

**Usage**

```
as_nms_pmx(x, ...)
```

**Arguments**

x	character
...	ignored

**See Also**

Other nms: `as_nms_canonical()`, `as_nms_nonmem()`, `as_nms_psn()`, `nms_canonical.character()`, `nms_canonical.model()`, `nms_canonical.nms_nonmem()`, `nms_canonical.nms_pmx()`, `nms_canonical.numeric()`, `nms_canonical()`, `nms_nonmem.character()`, `nms_nonmem.model()`, `nms_nonmem.nms_canonical()`, `nms_nonmem.nms_pmx()`, `nms_nonmem.numeric()`, `nms_nonmem()`, `nms_pmx.nms_canonical()`, `nms_pmx.nms_nonmem()`, `nms_pmx()`, `nms_psn.character()`, `nms_psn.model()`, `nms_psn.numeric()`, `nms_psn()`

---

as_nms_psn	<i>Coerce to 'nms_psn'</i>
------------	----------------------------

---

**Description**

Coerces character to 'nms\_psn'.

**Usage**

```
as_nms_psn(x, ...)
```

**Arguments**

x	character
...	ignored

**See Also**

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

---

 comments.inits

*Extract Comments from Inits*


---

**Description**

Extracts comments from inits.

**Usage**

```
## S3 method for class 'inits'
comments(x, type, prior, ...)
```

**Arguments**

x	inits
type	item type: theta, omega, sigma (tables give items not inits)
prior	number of prior items of this type (maybe imporant for numbering)
...	ignored

**Value**

data.frame

**See Also**

Other comments: [comments.items\(\)](#), [comments.model\(\)](#), [comments\(\)](#)

---

comments.items	<i>Extract Comments from Items</i>
----------------	------------------------------------

---

**Description**

Extracts comments from items.

**Usage**

```
## S3 method for class 'items'  
comments(x, ...)
```

**Arguments**

x	items
...	ignored

**Value**

data.frame

**See Also**

Other comments: [comments.inits\(\)](#), [comments.model\(\)](#), [comments\(\)](#)

---

comments.model	<i>Extract Comments from Model</i>
----------------	------------------------------------

---

**Description**

Extracts comments from model.

**Usage**

```
## S3 method for class 'model'  
comments(  
  x,  
  fields = c("symbol", "unit", "label"),  
  expected = character(0),  
  na = NA_character_,  
  tables = TRUE,  
  ...  
)
```

**Arguments**

x	model
fields	data items to scavenge from control stream comments
expected	parameters known from NONMEM output
na	string to use for NA values when writing default metafile
tables	whether to include table comments
...	passed arguments

**Value**

data.frame

**See Also**

Other comments: [comments.inits\(\)](#), [comments.items\(\)](#), [comments\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% as.model %>% comments
```

---

contains

*Check Whether Text Contains Pattern*

---

**Description**

Checks whether text contains pattern.

**Usage**

```
contains(pattern, text, ...)
```

**Arguments**

pattern	regular expression
text	character vector to check
...	arguments to methods

**Value**

logical

**See Also**

[%contains%](#)

---

datafile.character      *Identify the Datafile for a Model*

---

## Description

Identifies the datafile used by a model. Expresses it relative to current working directory.

## Usage

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

## Arguments

x                      the model name or path to a control stream  
...                    ext can be passed to modelfile, etc.

## Value

character

## See Also

Other path: [datafile.numeric\(\)](#), [datafile\(\)](#), [modeldir\(\)](#), [modelfile\(\)](#), [modelpath.character\(\)](#), [modelpath.numeric\(\)](#), [modelpath\(\)](#), [psn\\_options\(\)](#), [specfile.character\(\)](#), [specfile.numeric\(\)](#), [specfile\(\)](#)

## Examples

```
library(spec)  
source <- system.file(package = 'nonmemica', 'project')  
target <- tempdir()  
target <- gsub('\\\\\\', '/', target) # for windows  
file.copy(source, target, recursive = TRUE)  
project <- file.path(target, 'project', 'model')  
options(project = project)  
library(magrittr)  
1001 %>% datafile  
datafile(1001) %matches% specfile(1001)  
1001 %>% specfile  
1001 %>% specfile %>% read.spec
```

---

 definitions

*Harvest Model Item Definitions*


---

**Description**

Harvests model item definitions.  
 Create Item Definitions from Model Name

**Usage**

```
definitions(x, ...)

## S3 method for class 'character'
definitions(
  x,
  verbose = FALSE,
  ctlfile = modelfile(x, ...),
  metafile = modelpath(x, "def", ...),
  fields = getOption("fields", default = c("symbol", "label", "unit")),
  read = length(metafile) == 1,
  write = FALSE,
  ...
)
```

**Arguments**

x	object of dispatch
...	arguments to methods
verbose	set FALSE to suppress messages
ctlfile	path to control stream (pass length-zero argument to ignore)
metafile	path to definitions file (pass length-zero argument to ignore)
fields	metadata fields to read from control stream if no metafile
read	whether to read the definitions file
write	whether to write the definitions file

**Details**

x can be numeric or character model name, assuming project is identified by argument or option.  
 Creates item definitions from a model name. Scavenges definitions optionally from the control stream and optionally from the definitions file. Optionally writes the result to the definitions file. Always returns a data.frame with at least the column 'item' but possibly no rows.

**Value**

object of class definitions, or path to metafile if write = TRUE.



**Methods (by class)**

- definitions(character): character method

**See Also**

[definitions.character](#)

[as.xml\\_document.character](#)

[as.bootstrap.character](#)

[as.model.character](#)

Other definitions: [definitions.definitions\(\)](#), [definitions.numeric\(\)](#)

Other definitions: [definitions.definitions\(\)](#), [definitions.numeric\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% definitions
```

---

definitions.definitions

*Create Model Item Definitions from definitions*

---

**Description**

Creates a model item definitions from a definitions object.

**Usage**

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

**Arguments**

x	definitions
...	ignored

**Details**

Just returns the object unmodified.

**See Also**

Other definitions: [definitions.numeric\(\)](#), [definitions\(\)](#)

---

depends.default      *Identify Model Dependencies*

---

### Description

Identify those models in the lineage of models in x.

### Usage

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

### Arguments

x	object
...	passed arguments

### Value

character

### See Also

Other depends: [depends\(\)](#)

---

errors.character      *Get Errors for Character*

---

### Description

Gets model asymptotic standard errors in canonical order, treating character as model names. See [parameters](#) for a less formal interface.

### Usage

```
## S3 method for class 'character'  
errors(  
  x,  
  xmlfile = modelpath(x, ext = "xml", ...),  
  strip.namespace = TRUE,  
  digits = 3,  
  ...  
)
```

**Arguments**

x                    character (modelname)  
xmlfile            path to xml file  
strip.namespace    whether to strip e.g. nm: from xml elements for easier xpath syntax  
digits             passed to signif  
...                dots

**Value**

numeric

**See Also**

nms\_canonical errors  
Other errors: [errors.numeric\(\)](#), [errors\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% errors
```

---

estimates.character    *Get Estimates for Character*

---

**Description**

Gets model parameter estimates in canonical order, treating character as model names. See [parameters](#) for a less formal interface.

**Usage**

```
## S3 method for class 'character'
estimates(
  x,
  xmlfile = modelpath(x, ext = "xml", ...),
  strip.namespace = TRUE,
  digits = 3,
  ...
)
```

**Arguments**

x	character (modelname)
xmlfile	path to xml file
strip.namespace	whether to strip e.g. nm: from xml elements for easier xpath syntax
digits	passed to signif
...	dots

**Value**

numeric

**See Also**

nms\_canonical errors  
 Other estimates: [estimates.numeric\(\)](#), [estimates\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% estimates
```

---

fixed.init

*Check if init is fixed*

---

**Description**

Checks if init is fixed.

**Usage**

```
## S3 method for class 'init'
fixed(x, ...)
```

**Arguments**

x	init
...	ignored

**Value**

logical

**See Also**

Other fixed: [fixed.model\(\)](#), [fixed<- .inits\(\)](#), [fixed<- .init\(\)](#), [fixed<- .model\(\)](#), [fixed<-\(\)](#), [fixed\(\)](#)

---

fixed.model	<i>Check If Model is Fixed</i>
-------------	--------------------------------

---

**Description**

Checks if model is fixed. Returns a logical vector with element for each init, in canonical order.

**Usage**

```
## S3 method for class 'model'  
fixed(x, ...)
```

**Arguments**

x	inits
...	ignored

**Value**

logical

**See Also**

Other fixed: [fixed.init\(\)](#), [fixed<- .inits\(\)](#), [fixed<- .init\(\)](#), [fixed<- .model\(\)](#), [fixed<-\(\)](#), [fixed\(\)](#)

**Examples**

```
library(magrittr)  
options(project = system.file('project/model', package='nonmemica'))  
1001 %>% as.model %>% fixed
```

---

generalize	<i>Generalize a Nonmissing Value</i>
------------	--------------------------------------

---

**Description**

#Generalize a nonmissing value. If there is only one such among zero or more NA, impute that value for all NA.

**Usage**

```
generalize(x, ...)
```

**Arguments**

x	vector
...	ignored

**See Also**

Other superset: [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

---

ignored	<i>Extract Index for Ignored Records</i>
---------	--

---

**Description**

Extracts index for ignored records, given a NONMEM control stream.

**Usage**

```
ignored(
  x,
  read.input = list(read.csv, header = TRUE, as.is = TRUE),
  ext = getOption("modex", "ctl"),
  project = getOption("project", getwd()),
  nested = getOption("nested", TRUE),
  ...
)
```

**Arguments**

x	length-one character: a model name
read.input	list of arguments representing a methodology for acquiring the data of interest: the first argument is not named and will be passed to <code>match.fun()</code> ; the other arguments will be passed to the result, and must include an argument named 'header'.
ext	model file extension, e.g. 'mod' or 'ctl'
project	project directory (can be expression)
nested	whether model files are nested in eponymous directories
...	passed to <code>modelfile</code> and <code>link{datafile}</code>

**Value**

logical

**See Also**

Other superset: [generalize\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

---

initial.model	<i>Get Model Initial Estimates</i>
---------------	------------------------------------

---

**Description**

Gets model initial estimates.

**Usage**

```
## S3 method for class 'model'
initial(x, ...)
```

**Arguments**

x	model
...	dots

**See Also**

Other initial: [initial<-.model\(\)](#), [initial<-\(\)](#), [initial\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% as.model %>% initial
```

---

initial<-.model	<i>Set Upper Bounds for Model Initial Estimates</i>
-----------------	---

---

**Description**

Sets upper bounds for model initial estimates.

**Usage**

```
## S3 replacement method for class 'model'
initial(x) <- value
```

**Arguments**

x	model
value	numeric

**See Also**

Other initial: `initial.model()`, `initial<-()`, `initial()`

---

likebut

---

*Modify a Model*


---

**Description**

Makes a copy of a model in a corresponding directory. Problem statement is updated to reflect that the model is LIKE the reference model BUT different in some fundamental way.

**Usage**

```
likebut(
  x,
  but = "better",
  y = NULL,
  project = getOption("project", getwd()),
  nested = getOption("nested", TRUE),
  overwrite = FALSE,
  ext = getOption("modex", "ctl"),
  include = "\\\\.def$",
  update = FALSE,
  ...
)
```

**Arguments**

x	a model name, presumably interpretable as numeric
but	a short description of the characteristic difference from x
y	optional name for model to be created, auto-incremented by default
project	project directory (can be expression)
nested	model files nested in run-specific directories
overwrite	whether to overwrite y if it exists
ext	extension for the model file
include	regular expressions for files to copy to new directory
update	use final estimates of x as initial estimates of y
...	passed arguments, including PsN runrecord elements (experimental)



**Value**

the value of y

**See Also**

[runlog.character](#)

**Examples**

```
# Create a working project.
source <- system.file(package = 'nonmemica', 'project')
target <- tempdir()
target <- gsub('\\', '/', target) # for windows
source
target
file.copy(source, target, recursive = TRUE)
project <- file.path(target, 'project', 'model')

# Point project option at working project
options(project = project)
library(magrittr)

# Derive models.
1001 %>% likebut('revised', y = 1002, overwrite=TRUE )

# At this point, edit 1002.ct1 to match whatever 'revised' means.
# Then run it with NONMEM.
```

---

lower.model

*Get Lower Bounds for Model Initial Estimates*

---

**Description**

Gets lower bounds for model initial estimates.

**Usage**

```
## S3 method for class 'model'
lower(x, ...)
```

**Arguments**

x	model
...	dots

**See Also**

Other lower: [lower<- .model\(\)](#), [lower<-\(\)](#), [lower\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% as.model %>% lower
```

---

```
lower<- .model          Set Lower Bounds for Model Initial Estimates
```

---

**Description**

Sets lower bounds for model initial estimates.

**Usage**

```
## S3 replacement method for class 'model'
lower(x) <- value
```

**Arguments**

x	model
value	numeric

**See Also**

Other lower: [lower.model\(\)](#), [lower<-\(\)](#), [lower\(\)](#)

---

```
meta.character          Get Metadata for Character
```

---

**Description**

Gets metadata for character, treating it as a model name. Blends metadata from specfile with metadata from control stream, removing both exact duplicates as well as redefined values (with warning).

**Usage**

```
## S3 method for class 'character'
meta(x, simplify = TRUE, ...)
```

**Arguments**

x	object
simplify	logical: remove range information from guide text
...	passed arguments

**Value**

data.frame

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% meta
```

---

metaplot.character      *Metaplot Character*

---

**Description**

Plots character by treating as model name. A dataset is constructed by combining the meta version of the model input with a meta version of the model output and calling metaplot with the result.

**Usage**

```
## S3 method for class 'character'
metaplot(x, ..., groups, meta = match.fun("meta")(x), subset)
```

**Arguments**

x	object
...	unquoted names of variables to plot, or other named arguments (passed)
groups	columns by which to group the dataset
meta	metadata; meta(x) by default
subset	a condition for filtering data

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

**Examples**

```

library(magrittr)
library(metaplot)
options(project = system.file('project/model',package='nonmemica'))
## Not run:
1001 %>% metaplot(
  CWRESI, TAD, SEX,
  groups = c('ID', 'TIME'),
  subset = 'MDV == 0',
  yref = 0,
  ysmooth = TRUE
)

## End(Not run)

```

---

metaplot\_character      *Metaplot Character, Standard Evaluation*

---

**Description**

Plots character by treating as model name. A dataset is constructed by combining the model input with a the model output and calling metaplot with the result.

**Usage**

```
metaplot_character(x, groups, meta = NULL, subset, var, ...)
```

**Arguments**

x	object
groups	columns by which to group the dataset
meta	metadata; meta(x) by default
subset	a condition for filtering data
var	variables to plot
...	passed arguments

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

---

`metasuperset`*Retrieve Model Outputs with Metadata*

---

## Description

Retrieves model outputs with metadata.

## Usage

```
metasuperset(  
  x,  
  groups,  
  meta = match.fun("meta")(x, ...),  
  subset = getOption("metasuperset_subset", NULL),  
  ...  
)
```

## Arguments

<code>x</code>	model name
<code>groups</code>	vector of key column names in superset, e.g. USUBJID, TIME
<code>meta</code>	metadata with column 'item' and possibly attributes such as 'label' and 'guide'
<code>subset</code>	length-one character: a condition for filtering results, e.g. 'EVID == 0'
<code>...</code>	passed arguments

## Value

data.frame

## See Also

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

## Examples

```
library(magrittr)  
options(project = system.file('project/model', package='nonmemica'))  
1001 %>% metasuperset(c('ID', 'TIME')) %>% head
```

modeldir *Identify the Directory for a Model*

---

**Description**

Identifies the directory used by a model.

**Usage**

```
modeldir(x, ext, ...)
```

**Arguments**

x	the model name
ext	model file extension
...	passed arguments

**Value**

character

**See Also**

Other path: [datafile.character\(\)](#), [datafile.numeric\(\)](#), [datafile\(\)](#), [modelfile\(\)](#), [modelpath.character\(\)](#), [modelpath.numeric\(\)](#), [modelpath\(\)](#), [psn\\_options\(\)](#), [specfile.character\(\)](#), [specfile.numeric\(\)](#), [specfile\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% modeldir
```

---

modelfile *Identify the Modelfile for a Model*

---

**Description**

Identifies the modelfile used by a model.

**Usage**

```
modelfile(x, ext = getOption("modex", "ctl"), ...)
```

**Arguments**

x	the model name
ext	model file extension
...	passed arguments

**Value**

character

**See Also**

Other path: [datafile.character\(\)](#), [datafile.numeric\(\)](#), [datafile\(\)](#), [modeldir\(\)](#), [modelpath.character\(\)](#), [modelpath.numeric\(\)](#), [modelpath\(\)](#), [psn\\_options\(\)](#), [specfile.character\(\)](#), [specfile.numeric\(\)](#), [specfile\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% modelfile('xml')
```

---

modelpath

*Resolve A Path to a Model-related File*

---

**Description**

Resolves a path to a model-related file.

**Usage**

```
modelpath(x, ...)
```

**Arguments**

x	object
...	passed arguments

**Value**

character

**See Also**

Other path: [datafile.character\(\)](#), [datafile.numeric\(\)](#), [datafile\(\)](#), [modeldir\(\)](#), [modelfile\(\)](#), [modelpath.character\(\)](#), [modelpath.numeric\(\)](#), [psn\\_options\(\)](#), [specfile.character\(\)](#), [specfile.numeric\(\)](#), [specfile\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model',package='nonmemica'))
1001 %>% modelpath
```

---

modelpath.character     *Resolve A Path to a Model-related File for Character*

---

**Description**

Resolves a path to a model-related file, treating `x` as a model name. By default (`ext` is `NULL`) the run directory is returned. As of version 0.9.2, `nested` can be a function of `ext` and `...` That returns logical.

**Usage**

```
## S3 method for class 'character'
modelpath(
  x,
  ext = NULL,
  project = getOption("project", getwd()),
  nested = getOption("nested", TRUE),
  ...
)
```

**Arguments**

<code>x</code>	object
<code>ext</code>	file extension, no leading dot
<code>project</code>	project directory (can be expression)
<code>nested</code>	whether model files are nested in eponymous directories
<code>...</code>	passed arguments

**Value**

character

**See Also**

Other path: [datafile.character\(\)](#), [datafile.numeric\(\)](#), [datafile\(\)](#), [modeldir\(\)](#), [modelfile\(\)](#), [modelpath.numeric\(\)](#), [modelpath\(\)](#), [psn\\_options\(\)](#), [specfile.character\(\)](#), [specfile.numeric\(\)](#), [specfile\(\)](#)



---

ninput	<i>Calculate Number of Inputs</i>
--------	-----------------------------------

---

**Description**

Calculates number of inputs.

**Usage**

```
ninput(x, ...)
```

**Arguments**

x	object
...	passed arguments

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

---

ninput.character	<i>Calculate Number of Inputs for Character</i>
------------------	---

---

**Description**

Calculates number of inputs for character by treating as a model name.

**Usage**

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

**Arguments**

x	character
...	passed arguments

**Value**

integer

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

---

ninput.numeric	<i>Calculate Number of Inputs for Numeric</i>
----------------	---

---

**Description**

Calculates number of inputs for numeric by coercing to character.

**Usage**

```
## S3 method for class 'numeric'
ninput(x, ...)
```

**Arguments**

x	numeric
...	passed arguments

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

---

nms_canonical.character	<i>Generate Canonical Names for Character</i>
-------------------------	---

---

**Description**

Generates canonical names for character by converting to parsed model.

**Usage**

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

**Arguments**

x                    object of dispatch  
 ...                  passed arguments

**See Also**

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% nms_canonical
```

---

nms\_canonical.model    *Generate Canonical Names for Model*

---

**Description**

Generates canonical names for a NONMEM control stream object. Canonical names indicate all and only the declared model parameters in lower-case conventional order (theta, omega row-major, sigma) with underscores and two-digit (or more) indices. E.g. theta\_01, theta\_02, omega\_01\_01, omega\_02\_01, omega\_02\_02, omega\_01\_01.

**Usage**

```
## S3 method for class 'model'
nms_canonical(x, ...)
```

**Arguments**

x                    a model designator  
 ...                  passed arguments

**Value**

nms\_canonical (character)

**See Also**

as.model

Other nms: `as_nms_canonical()`, `as_nms_nonmem()`, `as_nms_pmx()`, `as_nms_psn()`, `nms_canonical.character()`, `nms_canonical.model()`, `nms_canonical.nms_pmx()`, `nms_canonical.numeric()`, `nms_canonical()`, `nms_nonmem.character()`, `nms_nonmem.model()`, `nms_nonmem.nms_canonical()`, `nms_nonmem.nms_pmx()`, `nms_nonmem.numeric()`, `nms_nonmem()`, `nms_pmx.nms_canonical()`, `nms_pmx.nms_nonmem()`, `nms_pmx()`, `nms_psn.character()`, `nms_psn.model()`, `nms_psn.numeric()`, `nms_psn()`

---

`nms_canonical.nms_nonmem`

*Convert NONMEM Parameter Names to Canonical*

---

**Description**

Converts `nms_nonmem` to `nms_canonical`.

**Usage**

```
## S3 method for class 'nms_nonmem'
nms_canonical(x, ...)
```

**Arguments**

<code>x</code>	<code>nms_nonmem</code>
<code>...</code>	ignored

**Value**

`nms_canonical`

**See Also**

Other nms: `as_nms_canonical()`, `as_nms_nonmem()`, `as_nms_pmx()`, `as_nms_psn()`, `nms_canonical.character()`, `nms_canonical.model()`, `nms_canonical.nms_pmx()`, `nms_canonical.numeric()`, `nms_canonical()`, `nms_nonmem.character()`, `nms_nonmem.model()`, `nms_nonmem.nms_canonical()`, `nms_nonmem.nms_pmx()`, `nms_nonmem.numeric()`, `nms_nonmem()`, `nms_pmx.nms_canonical()`, `nms_pmx.nms_nonmem()`, `nms_pmx()`, `nms_psn.character()`, `nms_psn.model()`, `nms_psn.numeric()`, `nms_psn()`

---

nms\_nonmem.character     *Generate NONMEM Names for Character*

---

### Description

Generates NONMEM names for numeric by converting to parsed model.

### Usage

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

### Arguments

x	object of dispatch
...	passed arguments

### See Also

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

### Examples

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% nms_nonmem
```

---

nms\_nonmem.model     *Generate NONMEM Names for Model*

---

### Description

Generates NONMEM names for parameters declared in a NONMEM control stream object.

### Usage

```
## S3 method for class 'model'
nms_nonmem(x, ...)
```

### Arguments

x	a model designator
...	passed arguments

**Value**

nms\_nonmem (character)

**See Also**

as.model

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% as.model %>% nms_nonmem
```

---

nms\_nonmem.nms\_canonical

*Convert Canonical Parameter Names to NONMEM*

---

**Description**

Converts nms\_canonical to nms\_nonmem.

**Usage**

```
## S3 method for class 'nms_canonical'
nms_nonmem(x, ...)
```

**Arguments**

x	nms_canonical
...	ignored

**Value**

nms\_nonmem

**See Also**

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

**Examples**

```
# example code
```

---

```
nms_nonmem.nms_pmx      Convert pmxTools Names to NONMEM
```

---

**Description**

Converts nms\_pmx to nms\_nonmem. I.e., THETA1 stays THETA1, but OM1,1 becomes OMEGA(1,1).

**Usage**

```
## S3 method for class 'nms_pmx'
nms_nonmem(x, ...)
```

**Arguments**

```
x          nms_pmx
...        ignored
```

**Value**

nms\_nonmem (character)

**See Also**

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

Other nm: [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#)

**Examples**

```
library(magrittr)
c(
  'THETA1',
  'OM1,1',
  'OM1,2',
  'SG1,1',
  'SG1,2'
) %>%
as_nms_pmx %>%
nms_canonical
```

---

nms\_pmx.nms\_canonical *Convert Canonical Names to pmxTools*

---

## Description

Converts nms\_canonical to nms\_pmx. I.e., theta\_01 becomes THETA1, and omega\_01\_01 becomes OM1,1.

## Usage

```
## S3 method for class 'nms_canonical'
nms_pmx(x, ...)
```

## Arguments

x	nms_canonical
...	ignored

## Value

nms\_pmx (character)

## See Also

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.character\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

## Examples

```
library(magrittr)
c(
  'theta_15',
  'omega_01_01',
  'omega_01_02',
  'sigma_01_01',
  'sigma_02_01'
) %>%
as_nms_canonical %>%
nms_pmx
```



---

nms\_pmx.nms\_nonmem      *Convert NONMEM Names to pmxTools*

---

## Description

Converts nms\_nonmem to nms\_pmx. I.e., THETA1 stays THETA1, but OMEGA(1,1) becomes OM1,1.

## Usage

```
## S3 method for class 'nms_nonmem'
nms_pmx(x, ...)
```

## Arguments

x	nms_pmx
...	ignored

## Value

nms\_nonmem (character)

## See Also

Other nms: `as_nms_canonical()`, `as_nms_nonmem()`, `as_nms_pmx()`, `as_nms_psn()`, `nms_canonical.character()`, `nms_canonical.model()`, `nms_canonical.nms_nonmem()`, `nms_canonical.nms_pmx()`, `nms_canonical.numeric()`, `nms_canonical()`, `nms_nonmem.character()`, `nms_nonmem.model()`, `nms_nonmem.nms_canonical()`, `nms_nonmem.nms_pmx()`, `nms_nonmem.numeric()`, `nms_nonmem()`, `nms_pmx.nms_canonical()`, `nms_pmx()`, `nms_psn.character()`, `nms_psn.model()`, `nms_psn.numeric()`, `nms_psn()`

Other nm: `nms_canonical.nms_pmx()`, `nms_nonmem.nms_pmx()`

## Examples

```
library(magrittr)
c(
  'THETA1',
  'OMEGA(1,1)',
  'OMEGA(1,2)',
  'SIGMA(1,1)',
  'SIGMA(1,2)'
) %>%
as_nms_pmx %>%
nms_canonical
```

---

nms\_psn.character      *Generate PsN-style Names for Character*

---

### Description

Generates PsN-style names for numeric by converting to parsed model.

### Usage

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

### Arguments

x                    object of dispatch  
 ...                  passed arguments

### See Also

Other nms: [as\\_nms\\_canonical\(\)](#), [as\\_nms\\_nonmem\(\)](#), [as\\_nms\\_pmx\(\)](#), [as\\_nms\\_psn\(\)](#), [nms\\_canonical.character\(\)](#), [nms\\_canonical.model\(\)](#), [nms\\_canonical.nms\\_nonmem\(\)](#), [nms\\_canonical.nms\\_pmx\(\)](#), [nms\\_canonical.numeric\(\)](#), [nms\\_canonical\(\)](#), [nms\\_nonmem.character\(\)](#), [nms\\_nonmem.model\(\)](#), [nms\\_nonmem.nms\\_canonical\(\)](#), [nms\\_nonmem.nms\\_pmx\(\)](#), [nms\\_nonmem.numeric\(\)](#), [nms\\_nonmem\(\)](#), [nms\\_pmx.nms\\_canonical\(\)](#), [nms\\_pmx.nms\\_nonmem\(\)](#), [nms\\_pmx\(\)](#), [nms\\_psn.model\(\)](#), [nms\\_psn.numeric\(\)](#), [nms\\_psn\(\)](#)

### Examples

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% nms_psn
```

---

nms\_psn.model      *Generate PsN-style Names for Model*

---

### Description

Generates PsN-style names for parameters declared in a NONMEM control stream object. PsN uses NONMEM-style names, substituting a comment, if any: everything after the first semicolon, up to the second semicolon if present, without leading/trailing spaces/tabs.

### Usage

```
## S3 method for class 'model'
nms_psn(x, ...)
```

**Arguments**

x                    a model designator  
 . . .                passed arguments

**Value**

nms\_psn (character)

**See Also**

as.model

Other nms: `as_nms_canonical()`, `as_nms_nonmem()`, `as_nms_pmx()`, `as_nms_psn()`, `nms_canonical.character()`, `nms_canonical.model()`, `nms_canonical.nms_nonmem()`, `nms_canonical.nms_pmx()`, `nms_canonical.numeric()`, `nms_canonical()`, `nms_nonmem.character()`, `nms_nonmem.model()`, `nms_nonmem.nms_canonical()`, `nms_nonmem.nms_pmx()`, `nms_nonmem.numeric()`, `nms_nonmem()`, `nms_pmx.nms_canonical()`, `nms_pmx.nms_nonmem()`, `nms_pmx()`, `nms_psn.character()`, `nms_psn.numeric()`, `nms_psn()`

---

nonmemica

*Create and Evaluate NONMEM Models in a Project Context*

---

**Description**

Nonmemica (emphasis like 'America') creates and evaluates NONMEM models in a project context.

**Details**

NONMEM (ICON Development Solutions) is software for nonlinear mixed effects modeling. The fundamental interface is a text file (control stream, typ. \*.mod or \*.ctl) that specifies model input, structure, and output. There are many add-on interfaces for NONMEM (see references for a few examples). However, much day-to-day modeling, even for R users, involves substantial manual interventions.

Nonmemica streamlines interactions with NONMEM. It adopts some established conventions and techniques (e.g. from PsN and metrumrg), but introduces others that may be useful. Principally, it parses existing control streams for systematic analysis and alteration. Relatively simple, single-problem control streams are supported; see the example.

Of course, NONMEM itself is licensed software that must be installed independently. Nonmemica is largely indifferent to how NONMEM is installed or invoked. However, several features depend on the \*.xml output that NONMEM creates; make sure it is available. Also, the best-supported directory structure is that which has numbers for model names, with all model-specific files in eponymous subdirectories of a "project" directory. An example is given below.

Nonmemica adopts three control stream encoding conventions that merit special mention. First, the problem statement is encoded in the form //like/x//but/y// where x is a reference model name and y is a feature difference from the reference model (see likebut() ). This allows any given model to be described by chaining together its legacy of features (use runlog(dependencies = TRUE, ...) ), which

generally works better than trying to describe it exhaustively in the model name. As of version 0.9.2, experimental support is available for natural-language problem statements of the form "like run1001 but fixed additive error".

Second, Nonmemica only needs a single output table (\$TABLE record). Be sure to use ONE-HEADER but avoid FIRSTONLY. Nonmemica will integrate model inputs and outputs, regardless of table counts, into one data.frame (see `superset()`).

Third, Nonmemica supports integrated metadata. With respect to model inputs, use package `spec` to store column metadata in a companion file (a data specification, e.g. \*.spec). Keep the data file and data specification in a central location, not copied to the model directory. For model outputs (tabled items) supply column metadata directly in the control stream (or a \*.def file; see example and help).

Nonmemica supports three global options: `'project'` (default `getwd()`) is the parent directory of model-specific files or directories; `'nested'` (default `TRUE`) tells whether model-specific files are nested within eponymous directories; `'modex'` (default `'ctl'`) gives the file extension for control streams. In many cases you can pass these options to the relevant functions; but since they likely won't change for the scope of a given project, it saves effort to set them as global options (if they differ from the defaults) using e.g. `options(project=)`.

Numbers make good names for models because it is never hard for you or the software to think of a new one. That said, model names are typically processed as character in Nonmemica. There are many generic functions with both numeric and character methods that simply assume the (length-one) argument you supply is a model name.

## References

[NONMEM](#)

[Icon](#)

[PsN](#)

[Xpose](#)

[Wings for NONMEM](#)

[metrumrg](#)

## Examples

```
# Create a working project.
source <- system.file(package = 'nonmemica', 'project')
target <- tempdir()
target <- gsub('\\\\\\', '/', target) # for windows
source
target
file.copy(source, target, recursive = TRUE)
project <- file.path(target, 'project', 'model')

# Point project option at working project
options(project = project)

# Load some packages
```

```
library(magrittr)
library(metaplot)
library(wrangle)
library(spec)
library(dplyr, warn.conflicts = FALSE)

# Identify features of a model.
1001 %>% modelpath
1001 %>% modeldir
1001 %>% modelfile
1001 %>% modelpath('xml')
1001 %>% datafile
datafile(1001) %matches% specfile(1001)
1001 %>% specfile
1001 %>% specfile %>% read.spec
1001 %>% as.model
1001 %>% as.model %>% comments
1001 %>% definitions
1001 %>% runlog(TRUE)
1001 %>% runlog
1001 %>% partab
1001 %>% num_parameters
1001 %>% nms_canonical
1001 %>% nms_psn
1001 %>% nms_nonmem
1001 %>% parameters
1001 %>% errors
1001 %>% as.model %>% initial
1001 %>% as.model %>% lower
1001 %>% as.model %>% upper
1001 %>% as.model %>% fixed
1001 %>% meta %>% class
1001 %>% meta

# Derive datasets.
1001 %>% superset %>% head
1001 %>% superset %>% filter(VISIBLE == 1) %>% group_by(ID, TIME) %>% status
1001 %>% metasuperset(c('ID', 'TIME')) %>% head
1001 %>% metasuperset(c('ID', 'TIME')) %>% sapply(attr, 'label')

# Make diagnostic plots.
1001 %>% metaplot(
  CWRESI, TAD, SEX,
  groups = c('ID', 'TIME'),
  subset = 'MDV == 0',
  yref=0,
  ysmooth = TRUE
)
1001 %>% metaplot(
  ETA1, SEX,
  ref = 0,
  groups = c('ID', 'TIME'),
  subset = 'MDV == 0'
```

```

)
1001 %>% metaplot(
  SEX, ETA1,
  ref = 0,
  groups = c('ID', 'TIME'),
  subset = 'MDV == 0'
)
1001 %>% metaplot(
  ETA1, ETA2, ETA3,
  groups = c('ID', 'TIME'),
  subset = 'MDV == 0'
)

# Derive models.
1001 %>% likebut('revised', y = 1002, overwrite=TRUE )
# At this point, edit 1002.ct1 to match whatever 'revised' means.
# Then run it with NONMEM and post-process results as above.

# Make ten new models with slightly different initial estimates.
1001 %>% tweak

```

---

offdiag.halfmatrix      *Isolate Off-diagonal of Half Matrix*

---

## Description

Isolates off-diagonal of halfmatrix.

## Usage

```
## S3 method for class 'halfmatrix'
offdiag(x, ...)
```

## Arguments

x	object
...	passed arguments

## See Also

Other halfmatrix: [as.data.frame.halfmatrix\(\)](#), [as.halfmatrix.default\(\)](#), [as.halfmatrix.halfmatrix\(\)](#), [as.halfmatrix\(\)](#), [as.matrix.halfmatrix\(\)](#), [half.matrix\(\)](#), [half\(\)](#), [is.square.matrix\(\)](#), [is.square\(\)](#), [offdiag\(\)](#), [ord.halfmatrix\(\)](#), [ord.matrix\(\)](#), [ord\(\)](#), [print.halfmatrix\(\)](#)

---

parameters.character *Get Parameters for Character*

---

### Description

Gets parameters, treating character as model names. If `x` is length one, slightly more details are returned such as datafile, reference model, and feature. Otherwise results are bound together, one model per column. See [estimates](#) and [errors](#) for a more formal interface to model estimates and asymptotic standard errors.

### Usage

```
## S3 method for class 'character'
parameters(x, simplify = FALSE, ...)
```

### Arguments

<code>x</code>	object
<code>simplify</code>	if <code>x</code> is length one and <code>simplify</code> is TRUE, return a named vector
<code>...</code>	passed arguments

### Value

data.frame

### See Also

Other parameters: [parameters.numeric\(\)](#), [parameters\(\)](#)

### Examples

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% parameters
```

---

partab *Create Parameter Table*

---

### Description

Creates a parameter table.

Creates a model parameter table from a partab object.

**Usage**

```
partab(x, ...)

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

**Arguments**

```
x          partab
...        ignored
```

**Details**

x can be numeric or character model name, assuming project is identified by argument or option.  
Just returns the object unmodified.

**Methods (by class)**

- partab(partab): partab method

**See Also**

[partab.character](#)  
Other partab: [partab.character\(\)](#), [partab.numeric\(\)](#)  
Other partab: [partab.character\(\)](#), [partab.numeric\(\)](#)

---

partab.character	<i>Create a Parameter Table from Model Name</i>
------------------	---

---

**Description**

Creates a parameter table from a model name. Pass the project argument or set the project option.

**Usage**

```
## S3 method for class 'character'
partab(
  x,
  verbose = FALSE,
  lo = "5",
  hi = "95",
  metafile = modelpath(x, "def", ...),
  xmlfile = modelpath(x, "xml", ...),
  ctlfile = modelfile(x, ...),
  bootcsv,
  strip.namespace = TRUE,
```



```

    skip = 28,
    check.names = FALSE,
    digits = 3,
    ci = TRUE,
    open = "(",
    close = ")",
    sep = ", ",
    format = TRUE,
    fields = getOption("fields", default = c("symbol", "label", "unit")),
    relative = TRUE,
    percent = relative,
    nonzero = TRUE,
    shrinkage = FALSE,
    correlation = FALSE,
    ...
)

```

### Arguments

x	a model name (numeric or character)
verbose	set FALSE to suppress messages
lo	the PsN bootstrap lower confidence limit (%)
hi	the PsN bootstrap upper confidence limit (%)
metafile	optional metadata for parameter table (see also: fields)
xmlfile	path to xml file
ctlfile	path to control stream
bootcsv	path to PsN bootstrap_results.csv
strip.namespace	whether to strip e.g. nm: from xml elements for easier xpath syntax
skip	number of lines to skip in bootstrap_results.csv
check.names	passed to bootstrap reader
digits	limits numerics to significant digits (use NULL to suppress)
ci	combine bootstrap lo and hi into an enclosed interval
open	first character for bootstrap interval
close	last character for bootstrap interval
sep	separator for bootstrap interval
format	format numerics as character
fields	metadata fields to read from control stream. See details.
relative	transform standard errors to relative standard errors: rse replaces se
percent	if relative is true, express as percent (else ignore): prse replaces se
nonzero	limit random effects to those with nonzero estimates
shrinkage	whether to include percent shrinkage on random effects
correlation	whether to include correlation of random effects (as percent if percent is true)
...	passed to other functions

**Details**

Normally you can just call the generic. Suitable defaults are supplied, but much customization is supported by means of arguments documented here and in called functions.

Metadata can be added to the parameter table two ways: as markup in the control stream, and as a \*.def file in the model directory. See vignette('parameter-table') for details.

**Value**

object of class partab, data.frame

**See Also**

[as.xml\\_document.character](#)

[as.bootstrap.character](#)

[as.model.character](#)

[as.csv](#)

Other partab: [partab.numeric\(\)](#), [partab\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% partab
1001 %>% partab(shrinkage = TRUE, correlation = TRUE)
```

---

problem.character

*Identify the Model Problem Statement for Character*

---

**Description**

Identifies the model problem statement for character (model name).

**Usage**

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

**Arguments**

x	object
...	passed arguments

**Value**

character

**See Also**

Other problem: [as.problem\(\)](#), [problem.numeric\(\)](#), [problem\\_\(\)](#), [problem\(\)](#)

---

psn\_nested

*PsN Model File is Nested*


---

**Description**

Check whether a particular file extension corresponds to a file that is nested within a subdirectory using default PsN conventions.

**Usage**

```
psn_nested(x, ...)
```

**Arguments**

x	character, a file extension, without dot.
...	ignored

**Value**

logical

**Examples**

```
psn_nested('mod')
```

---

psn\_options

*Set PsN Options*


---

**Description**

Sets PsN-style directory and control stream options. Supports control streams with semicolon-delimited metadata including symbol, unit, transform, and label. Expects model files to be found in nested directory, except for \*.mod and \*.lst.

**Usage**

```
psn_options(
  project = "NONMEM",
  modex = "mod",
  fields = c("symbol", "unit", "transform", "label"),
  nested = psn_nested,
  ...
)
```

**Arguments**

project	character, path to project directory
modex	character, extension for model control stream (no dot)
fields	character
nested	logical, or function of file extension returning logical
...	ignored

**Value**

used for side-effects (sets options 'fields' and 'nested')

**See Also**

Other path: [datafile.character\(\)](#), [datafile.numeric\(\)](#), [datafile\(\)](#), [modeldir\(\)](#), [modelfile\(\)](#), [modelpath.character\(\)](#), [modelpath.numeric\(\)](#), [modelpath\(\)](#), [specfile.character\(\)](#), [specfile.numeric\(\)](#), [specfile\(\)](#)

**Examples**

```
## Not run:
psn_options()

## End(Not run)
```

---

relativizePath	<i>Relativize a Path</i>
----------------	--------------------------

---

**Description**

Relativizes a path.

**Usage**

```
relativizePath(x, dir = getwd(), sep = "/", ...)
```

**Arguments**

x	a file path
dir	a reference directory
sep	path separator
...	ignored arguments

**Details**

x and dir are first normalized, then x is expressed relative to dir. If x and dir are on different drives (i.e. C:/ D:/) x is returned as an absolute path.

---

resolve	<i>Resolve File Path</i>
---------	--------------------------

---

**Description**

Resolves a file path. Returns the path if absolute. If relative, concatenates the directory and file.

**Usage**

```
resolve(file, dir)
```

**Arguments**

file	path to a file
dir	reference directory for a relative file path

**Value**

character

---

rosetta	<i>Translate Parameter Names</i>
---------	----------------------------------

---

**Description**

Translate among various idioms for expressing parameter names

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))

# we generate some nonmem parameter names in nonmem format
1001 %>% nms_nonmem -> nonmem
nonmem

# from these we generate canonical and pmxTools equivalents
canonical <- nms_canonical(nonmem)
pmxtools <- nms_pmx(nonmem)
canonical
pmxtools

# We demonstrate equivalence
stopifnot(identical(nonmem, nms_nonmem(canonical)))
stopifnot(identical(nonmem, nms_nonmem(pmxtools)))
stopifnot(identical(canonical, nms_canonical(nonmem)))
stopifnot(identical(canonical, nms_canonical(pmxtools)))
```

```

stopifnot(identical(pmxtools, nms_pmx(nonmem)))
stopifnot(identical(pmxtools, nms_pmx(canonical)))

# on-the-fly conversions
nonmem %>% class
nonmem %>% nms_pmx
nonmem %>% nms_canonical
nonmem %>% nms_canonical %>% nms_pmx
nonmem %>% nms_canonical %>% nms_pmx %>% nms_nonmem

# comparison
data.frame(
  can = I(canonical),
  non = I(nonmem),
  pmx = I(pmxtools),
  psn = I(nms_psn(1001))
)

```

---

runlog.character      *Create a Runlog for Character*

---

## Description

Creates a Runlog for character by treating x as modelname(s).

## Usage

```

## S3 method for class 'character'
runlog(x, dependencies = FALSE, digits = 3, places = 0, ...)

```

## Arguments

x	object
dependencies	whether to log runs in lineage(s) as well
digits	significance for parameters
places	rounding for objective function
...	passed arguments

## Value

data.frame

## See Also

[likebut](#)

Other runlog: [runlog.numeric\(\)](#), [runlog\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model',package='nonmemica'))
# likebut(2001,'2 cmt', 2002)          # edit manually, then ...
# likebut(2002,'add. err.', 2003)     # edit manually, then ...
# likebut(2003,'allo. WT on CL',2004) # edit manually, then ...
# likebut(2004,'estimate allometry', 2005) # edit manually, then ...
# likebut(2005,'SEX on CL', 2006)     # edit manually, then ...
# likebut(2006,'full block omega', 2007) # edit manually, then run all
2007 %>% runlog(dependencies = TRUE)
```

---

safe_join	<i>Join Data Safely</i>
-----------	-------------------------

---

**Description**

Joins data safely. Generic, with method for data.frame.

**Usage**

```
safe_join(x, ...)
```

**Arguments**

x	object of dispatch
...	arguments to methods

**See Also**

[safe\\_join.data.frame](#)

Other safe\_join: [safe\\_join.data.frame\(\)](#)

---

safe_join.data.frame	<i>Join Data Frames Safely</i>
----------------------	--------------------------------

---

**Description**

Joins data frames safely. I.e., a left join that cannot alter row order or number. Supports the case where you only intend to augment existing rows with additional columns and are expecting singular matches. Gives an error if row order or number would have been altered by a left join.

**Usage**

```
## S3 method for class 'data.frame'
safe_join(x, y, ...)
```

**Arguments**

x	data.frame
y	data.frame
...	passed to dplyr::left_join

**See Also**

Other safe\_join: [safe\\_join\(\)](#)

**Examples**

```
library(magrittr)
x <- data.frame(code = c('a','b','c'), value = c(1:3))
y <- data.frame(code = c('a','b','c'), roman = c('I','II','III'))
x %>% safe_join(y)
try(
  x %>% safe_join(rbind(y,y))
)
```

---

 shuffle

---

*Move the Columns of a Data Frame Relative to Each Other*


---

**Description**

Move the columns of a data.frame relative to each other.

**Usage**

```
shuffle(x, who, after = NA, ...)
```

**Arguments**

x	data.frame
who	a character vector of column names to move, or a logical vector of length names(x), or a vector of indices
after	column after which to put who: may be character, integer, NA, or NULL
...	ignored

**Value**

data.frame

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot.character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)



---

specfile.character      *Identify the Data Specification File for a Model*

---

## Description

Identifies the data specification file associated with the datafile used by a model. Locates the datafile specified in the control stream, and substitutes a different extension.

## Usage

```
## S3 method for class 'character'  
specfile(x, find = "\\\.csv$", use = ".spec", ...)
```

## Arguments

x	the model name
find	file extension to replace
use	file extension to use
...	pass ext over-ride default file extension in datafile()

## Value

character

## See Also

datafile

Other path: [datafile.character\(\)](#), [datafile.numeric\(\)](#), [datafile\(\)](#), [modeldir\(\)](#), [modelfile\(\)](#), [modelpath.character\(\)](#), [modelpath.numeric\(\)](#), [modelpath\(\)](#), [psn\\_options\(\)](#), [specfile.numeric\(\)](#), [specfile\(\)](#)

## Examples

```
library(spec)  
source <- system.file(package = 'nonmemica', 'project')  
target <- tempdir()  
target <- gsub('\\\\\\', '/', target) # for windows  
file.copy(source, target, recursive = TRUE)  
project <- file.path(target, 'project', 'model')  
options(project = project)  
library(magrittr)  
1001 %>% datafile  
datafile(1001) %matches% specfile(1001)  
1001 %>% specfile  
1001 %>% specfile %>% read.spec
```

---

superset.character      *Coerce to Superset from Character*

---

## Description

Coerces to superset from character, treating x as a model name.

## Usage

```
## S3 method for class 'character'
superset(
  x,
  read.input = list(read.csv, header = TRUE, as.is = TRUE),
  read.output = list(read.table, header = TRUE, as.is = TRUE, skip = 1, comment.char =
    "", check.names = FALSE, na.strings = c("", "\\s", ".", "NA")),
  include = character(0),
  exclude = character(0),
  rename = NULL,
  digits = 5,
  visible = "VISIBLE",
  after = NULL,
  groups = character(0),
  imputation = generalize,
  ...
)
```

## Arguments

x	object
read.input	a methodology for acquiring the input
read.output	a methodology for acquiring the output
include	column names in output to consider adding
exclude	column names in output to reject
rename	logical: whether to keep and rename columns with re-used names
digits	significant digits for assessing informativeness when exclusive=NULL
visible	a name for the flag column indicating visibility
after	place new columns after this column; at end by default (NULL); TRUE places them after last model-visible column (see input statement)
groups	character vector of groupings within which any imputations will be performed
imputation	a list of functions (or arguments to match.fun()) to perform imputations within cells defined by groups: e.g. generalize, forbak, etc (to be tried in succession for new columns only).
...	passed arguments

## Details

Given a model name, (project passed or set as global option) `superset()` figures out the run directory and location of a NONMEM control stream. It reads the control stream to identify the run-time location of input and output files, as well as the "ignore" (and/or "accept") criteria that relate extent of input records to extent of output records. 'read.input' and 'read.output' are lists consisting of functions and arguments appropriate for reading input and output file formats, respectively. The ignore criteria will be reconstructed per row so that output can be mapped unambiguously to input. A column named `VISIBLE` is bound to the input data, showing 1 where a record was visible to NONMEM, and 0 otherwise. During integration, naming convention of the input is retained, and output column names are mapped by position, using the control stream input criteria. Output tables are restored to input dimensions using the "ignore" criteria, then checked for length: currently, `superset` ignores output tables having fewer rows than the input, as well as output tables whose row count is not a multiple of input row count. Output tables may contain versions of input columns. Disposition depends on the values of `include`, `exclude`, and `rename`. If `include` has length, other columns are excluded. Then, if `exclude` has length, these columns are excluded. Then, if `rename` is `FALSE` all remaining columns with re-used names will be dropped. If `TRUE`, such columns will be renamed (`*.n`, where `n` is table number). If `NULL`, only informative columns will be retained and renamed. A column is informative if any element is informative. An element is informative if it is newly generated (not NA and not zero, but original is NA) or if it is an alteration (non-NA, and different from non-NA original). If the column pair can be interpreted as numeric, "different" is determined using only the first `digits` digits. Only the first instance of any column among successive output tables is retained. In the control stream, avoid use of `FIRSTONLY`, as this alters the number of rows.

## Value

`superset`: a data.frame where row count is a multiple of (typically equal to) input row count.

## See Also

Other `superset`: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

## Examples

```
library(magrittr)
library(dplyr)
library(wrangle)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% superset %>% head
1001 %>% superset %>% filter(VISIBLE == 1) %>% group_by(ID, TIME) %>% status
1001 %>% ignored %>% table
```

---

superspec

*Create Specification for Model Inputs and Outputs*


---

**Description**

Create a specification for the result of `superset()`.

**Usage**

```
superspec(x, ...)
```

**Arguments**

x	object
...	passed arguments

**See Also**

[superspec.character](#)

Other `superset`: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superspec.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec.numeric\(\)](#)

---

superspec.character

*Create Specification for Model Inputs and Outputs From Character*


---

**Description**

Create a specification for the result of `superset()` from `character` by treating as a model name. By default, gives a spec template for `superset(x)`. Tries to supplement with labels and units from parent specification, if it exists. Tries to supplement with any additional labels and units in `definitions(x)`. Defers to actual data if provided. Specify `exclusive`, `visible`, and `after` as for `superset`.

**Usage**

```
## S3 method for class 'character'
superspec(
  x,
  include = character(0),
  exclude = character(0),
  rename = NULL,
  visible = "VISIBLE",
  after = NULL,
  data = NULL,
  ...
)
```

**Arguments**

x	character
include	column names in output to consider adding
exclude	column names in output to reject
rename	logical: whether to keep and rename columns with re-used names
visible	a name for the flag column indicating visibility
after	place new columns after this column; at end by default (NULL); TRUE places them after
data	an alternative dataset on which to model the specification
...	passed arguments

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.numeric\(\)](#), [superspec\(\)](#)

---

superspec.numeric      *Create Specification for Model Inputs and Outputs From Numeric*

---

**Description**

Create a specification for the result of `superset()` from numeric by coercing to character.

**Usage**

```
## S3 method for class 'numeric'
superspec(x, ...)
```

**Arguments**

x	numeric
...	passed arguments

**See Also**

Other superset: [generalize\(\)](#), [ignored\(\)](#), [meta.character\(\)](#), [meta.numeric\(\)](#), [metaplot.character\(\)](#), [metaplot.numeric\(\)](#), [metaplot\\_character\(\)](#), [metasuperset\(\)](#), [meta\(\)](#), [ninput.character\(\)](#), [ninput.numeric\(\)](#), [ninput\(\)](#), [shuffle\(\)](#), [superset.character\(\)](#), [superset.numeric\(\)](#), [superset\(\)](#), [superspec.character\(\)](#), [superspec\(\)](#)

---

tad	<i>Calculate Time Since Most Recent Dose</i>
-----	--

---

**Description**

Calculate time since most recent dose. Considers ADDL, but may not work with simultaneous dose records.

**Usage**

```
tad(
  x,
  dose = rep(FALSE, length(x)),
  addl = rep(0, length(x)),
  ii = rep(0, length(x)),
  index = rep(1, length(x)),
  pre = TRUE,
  ...
)
```

**Arguments**

<code>x</code>	a numeric vector of event times
<code>dose</code>	length <code>x</code> logical indicating which of <code>x</code> are dose times
<code>addl</code>	length <code>x</code> integer: number of additional doses
<code>ii</code>	length <code>x</code> numeric: interdose interval for <code>addl</code>
<code>index</code>	length <code>x</code> factor (optional) indicating subgroups to evaluate
<code>pre</code>	assume that simultaneous sample precedes implied dose
<code>...</code>	passed to <code>tod()</code>

**Value**

numeric

**See Also**

[tod](#)

Other `tad`: [tod\(\)](#)

**Examples**

```
data(tad1)
x <- tad1
head(x)
x$tad <- tad(
  x = x$TIME,
```

```
dose = x$EVID %in% c(1,4) & is.na(x$C),
addl = x$ADDL,
ii = x$II,
index = x$ID
)
head(x)
```

---

tad1

*A NONMEM-like Dataset*


---

### Description

A dataset showing dose and observation records for several subjects. Doses are duplicated across compartments 1 and 2 as for mixed absorption modeling.

### Usage

```
data(tad1)
```

### Details

- C. An exclusion flag, NA by default, or 'C'.
- ID. Integer subject identifier.
- TIME. Numeric event time (h).
- EVID. Event type identifier: observation (0) or dose (1).
- CMT. Event compartment: dose (1), central (2) or peripheral (4).
- AMT. Amount of dose (mg).
- RATE. NONMEM RATE item.
- ADDL. Number of additional doses, or NA for observations.
- II. Interdose interval for additional doses, or NA for observations.
- DV. Observation placeholder.

---

tod

*Calculate Time of Most Recent Dose*


---

### Description

Calculates time of most recent dose.

### Usage

```
tod(x, ref, addl, ii, pre = T, ...)
```

**Arguments**

x	a numeric vector of event times
ref	length x vector of reference dose times
addl	length x integer: number of additional doses
ii	length x numeric: interdose interval for addl
pre	assume that simultaneous sample precedes implied dose
...	ignored

**Value**

numeric

**See Also**

[tad](#)

Other tad: [tad\(\)](#)

---

tweak.default

*Tweak a Model by Default*

---

**Description**

Tweaks a model by jittering initial estimates. Creates a new model directory in project context and places the model there. Copies helper files as well. Expects that x is a number. Assumes nested directory structure (run-specific directories).

**Usage**

```
## Default S3 method:
tweak(
  x,
  project = getOption("project", getwd()),
  ext = getOption("modex", "ctl"),
  start = NULL,
  n = 10,
  include = ".def$",
  ...
)
```



**Arguments**

x	object
project	project directory (can be expression)
ext	file extension for control streams
start	a number to use as the first modelname
n	the number of variants to generate (named start:n)
include	regular expressions for files to copy to new directory
...	pass ext to over-ride default model file extension

**Value**

character: vector of names for models created

**See Also**

Other tweak: [tweak.inits\(\)](#), [tweak.init\(\)](#), [tweak.model\(\)](#), [tweak\(\)](#)

---

tweak.model

*Tweak Model*


---

**Description**

Tweaks model.

**Usage**

```
## S3 method for class 'model'
tweak(x, sd = 0.13, digits = 3, ...)
```

**Arguments**

x	model
sd	numeric
digits	integer
...	passed arguments

**Value**

model

**See Also**

Other tweak: [tweak.default\(\)](#), [tweak.inits\(\)](#), [tweak.init\(\)](#), [tweak\(\)](#)

**Examples**

```

# Create a working project.
source <- system.file(package = 'nonmemica', 'project')
target <- tempdir()
target <- gsub('\\\\', '/', target) # for windows
source
target
file.copy(source, target, recursive = TRUE)
project <- file.path(target, 'project', 'model')

# Point project option at working project
options(project = project)
library(magrittr)

# Make ten new models with slightly different initial estimates.
1001 %>% tweak

```

---

updated.character      *Create the Updated Version of Character*

---

**Description**

Creates the updated version of character by treating as a modelname. Parses the associated control stream and ammends the initial estimates to reflect model results (as per xml file).

**Usage**

```

## S3 method for class 'character'
updated(x, initial = estimates(x, ...), parse = TRUE, verbose = FALSE, ...)

```

**Arguments**

x	character
initial	values to use for initial estimates (numeric)
parse	whether to parse the initial estimates, etc.
verbose	extended messaging
...	passed arguements

**Value**

model

**See Also**

Other updated: [updated.numeric\(\)](#), [updated\(\)](#)

---

upper.model	<i>Get Upper Bounds for Model Initial Estimates</i>
-------------	---

---

**Description**

Gets upper bounds for model initial estimates.

**Usage**

```
## S3 method for class 'model'
upper(x, ...)
```

**Arguments**

x	model
...	dots

**See Also**

Other upper: [upper<-.model\(\)](#), [upper<-\(\)](#), [upper\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% as.model %>% upper
```

---

upper<-.model	<i>Set Upper Bounds for Model Initial Estimates</i>
---------------	---

---

**Description**

Sets upper bounds for model initial estimates.

**Usage**

```
## S3 replacement method for class 'model'
upper(x) <- value
```

**Arguments**

x	model
value	numeric

**See Also**

Other upper: [upper.model\(\)](#), [upper<-\(\)](#), [upper\(\)](#)

---

xpath	<i>Evaluate Xpath Expression</i>
-------	----------------------------------

---

**Description**

Evaluates an xpath expression.

**Usage**

```
xpath(x, ...)
```

**Arguments**

x	xml_document
...	passed arguments

**Details**

The resulting nodeset is scavenged for text, and coerced to best of numeric or character.

**See Also**

Other xpath: [as.xml\\_document.character\(\)](#), [as.xml\\_document.numeric\(\)](#), [as.xml\\_document\(\)](#), [xpath.default\(\)](#), [xpath.xml\\_document\(\)](#)

**Examples**

```
library(magrittr)
options(project = system.file('project/model', package='nonmemica'))
1001 %>% xpath('//etashrink/row/col')
```

---

xpath.default	<i>Evaluate xpath Expression in Default Context</i>
---------------	---

---

**Description**

Coerces x to xml\_document and evaluates.

**Usage**

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

**Arguments**

x	default
...	passed arguments

**Value**

vector

**See Also**

Other xpath: [as.xml\\_document.character\(\)](#), [as.xml\\_document.numeric\(\)](#), [as.xml\\_document\(\)](#), [xpath.xml\\_document\(\)](#), [xpath\(\)](#)

---

xpath.xml\_document      *Evaluate xpath Expression in Document Context*

---

**Description**

Evaluates an xpath expression for a given document.

**Usage**

```
## S3 method for class 'xml_document'  
xpath(x, xpath, ...)
```

**Arguments**

x	xml_document
xpath	xpath expression to evaluate
...	ignored

**Details**

The resulting nodeset is scavenged for text, and coerced to best of numeric or character.

**Value**

vector

**See Also**

Other xpath: [as.xml\\_document.character\(\)](#), [as.xml\\_document.numeric\(\)](#), [as.xml\\_document\(\)](#), [xpath.default\(\)](#), [xpath\(\)](#)

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