Package 'pmxcode'

February 18, 2024

Title Create Pharmacometric Models

Version 0.1.2

Description Provides a user interface to create or modify pharmacometric models for various modeling and simulation software platforms.

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Imports bsicons, bslib, config (>= 0.3.1), dplyr, glue, golem (>= 0.3.3), htmltools, htmlwidgets, jsonlite, magrittr, markdown, pillar, rclipboard, readr, rhandsontable, rlang, shiny (>= 1.7.1), shinyAce, shinyFiles, stats, tidyr, tools, utils, xfun

VignetteBuilder knitr

Suggests knitr (>= 1.28), rmarkdown (>= 2.2)

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R topics documented:

Index

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align_annotations   *Auto indent mrgsolve code*

Description

Auto indent mrgsolve code

Usage

```
align_annotations(code)
```

Arguments

code   Code lines containing comments to align across

---

align_tags   *Auto indent NONMEM code tags*

Description

Auto indent NONMEM code tags

Usage

```
align_tags(code)
```

Arguments

code   Code lines containing comments to align across

---

areTruthy   *Multi-argument version of isTruthy*

Description

See shiny::isTruthy for details.

Usage

```
areTruthy(...)
```

Arguments

...	Any object

Value

TRUE if all objects are "truthy", FALSE if at least one is not.

---

check_covariate_table   *Check covariate definition table*

Description

Check covariate definition table

Usage

```
check_covariate_table(table = NULL, check_step = FALSE)
```

Arguments

table	a data.frame with expected columns
check_step	a logical indicator to check content of Step column or not

---

check_incomplete_covariate_table
Check if covariate definition table contains rows with incomplete data

---

Description

Check if covariate definition table contains rows with incomplete data

Usage

```
check_incomplete_covariate_table(table)
```

Arguments

table   a data.frame with expected columns

---

convert_reference_code
Convert reference code for univariate model creation

Description

Convert reference code for univariate model creation

Usage

```
convert_reference_code(code)
```

Arguments

code   A character string containing NONMEM code

---

create_univariate_models

Generate univariate model code

Description

Generate univariate model code

Usage

```
create_univariate_models(
  code,
  referenceName,
  nThetas,
  table,
  style,
  prefix,
  startNumber,
  path
)
```

Arguments

code	A character string containing the code of the reference NONMEM model
referenceName	The name of the reference model file
nThetas	The number of THETA parameters in the reference NONMEM model
table	The table of covariate relationship definition
style	Either PsN or standard
prefix	If standard style, the prefix to start the name of the univariable model file with
startNumber	If PsN style, the number to start univariate model run files
path	The directory in which the univariate models will be saved and run

---

file_exists *Determines if a file path exists*

Description

Determines if a file path exists

Usage

```
file_exists(file)
```

Arguments

file	a path to a file

get_code
Creation of model code

Description

Creation of model code

Usage

```
get_code(
  input = NULL,
  template = NULL,
  vars,
  advan,
  trans,
  isPRED,
  isODE,
  isLINMAT,
  isPREDPP,
  varianceTable,
  covarianceBlock,
  rvTable,
  parm_lib,
  model_lib,
  rv_lib,
  scaling,
  replacement = TRUE
)
```

Arguments

input	Internal parameter for shiny
template	Text template
vars	Reactive object - List of variables in data file
advan	Reactive object - NONMEM ADVAN value
trans	Reactive object - NONMEM TRANS value
isPRED	Reactive object - is model coded with $PRED?
isODE	Reactive object - is model coded with ODEs?
isLINMAT	Reactive object - is model coded as linear matrix?
isPREDPP	Reactive object - is mode coded with $PK?
varianceTable	Variance- table
covarianceBlock	Variance-covariance matrix
rvTable	Reactive object - residual variability matrix

parm_lib	Library of parameters
model_lib	Library for $MODEL replacement
rv_lib	Library for residual variability replacement
scaling	Library for scaling
replacement	Logical value indicating with replacement is required

get_correlation_table   *Convert of covariance matrix into a 0/1 correlation map table*

Description

Convert of covariance matrix into a 0/1 correlation map table

Usage

```
get_correlation_table(x, na_zero = FALSE)
```

Arguments

x	A covariance matrix
na_zero	Logical indicating whether NA should be replaced by 0's

Value

A matrix of 0 and 1

get_derived_parms_code

Get lines of code for derived parameters

Description

Get lines of code for derived parameters

Usage

```
get_derived_parms_code(
  input,
  advan,
  trans,
  isPRED,
  isODE,
  isLINMAT,
  parms,
  parm_lib
)
```

Arguments

`input`	Internal parameter for `shiny`
`advan`	Reactive object - NONMEM ADVAN value
`trans`	Reactive object - NONMEM TRANS value
`isPRED`	Reactive object - is model coded with $PRED?
`isODE`	Reactive object - is model coded with ODEs?
`isLINMAT`	Reactive object - is model coded as linear matrix?
`parms`	Parameter selection
`parm_lib`	Library of parameters

`get_individual_parm_code`

Get line of code for individual parameter value

Description

Get line of code for individual parameter value

Usage

```
get_individual_parm_code(parms, varianceTable, iparm, ieta, mu)
```

Arguments

`parms`	Parameter selection
`varianceTable`	Variability selection
`iparm`	Index of parameter in parms data frame
`ieta`	Index of ETA associated with parameter
`mu`	A logical indicator for mu transformation

---

get_init_code   *Get compartment intialization block*

Description

Get compartment intialization block

Usage

```
get_init_code(input, advan, trans, nPKcmts, nPDcmts, parm_lib)
```

Arguments

input	Internal parameter for shiny
advan	Reactive object - NONMEM ADVAN value
trans	Reactive object - NONMEM TRANS value
nPKcmts, nPDcmts	
	Number of compartments for PK and PD model components
parm_lib	Library of parameters

---

get_mrgsolve_code   *Creation of mrgsolve code*

Description

Creation of mrgsolve code

Usage

```
get_mrgsolve_code(
  input = NULL,
  template = NULL,
  advan,
  trans,
  isPRED,
  isODE,
  isLINMAT,
  isPREDPP,
  varianceTable,
  covarianceBlock,
  rvTable,
  parm_lib,
  model_lib,
  rv_lib,
  scaling,
  replacement = TRUE
)
```

Arguments

`input`	Internal parameter for `shiny`
`template`	Text template
`advan`	Reactive object - NONMEM ADVAN value
`trans`	Reactive object - NONMEM TRANS value
`isPRED`	Reactive object - is model coded with $PRED?
`isODE`	Reactive object - is model coded with ODEs?
`isLINMAT`	Reactive object - is model coded as linear matrix?
`isPREDPP`	Reactive object - is mode coded with $PK?
`varianceTable`	Variance- table
`covarianceBlock`	
	Variance-covariance matrix
`rvTable`	Reactive object - residual variability matrix
`parm_lib`	Library of parameters
`model_lib`	Library for $MODEL replacement
`rv_lib`	Library for residual variability replacement
`scaling`	Library for scaling
`replacement`	Logical value indicating with replacement is required

`get_mrg_individual_parm_code`
Get line of code for individual parameter value

Description

Get line of code for individual parameter value

Usage

```
get_mrg_individual_parm_code(parms, iparm, eparm)
```

Arguments

`parms`	Parameter selection
`iparm`	Index of parameter in parms data frame
`eparm`	Parameter associated with IIV in ordered categorical models

---

get_mrg_parms_code   *Get mrgsolve model parameter code lines as list*

Description

Get mrgsolve model parameter code lines as list

Usage

```
get_mrg_parms_code(input, parms, mu)
```

Arguments

input	Internal parameter for shiny
parms	Parameter selection
mu	A logical indicator for mu transformation

---

get_ncmts   *Get the number of PK and PD compartments*

Description

Get the number of PK and PD compartments

Usage

```
get_ncmts(input, new, model_lib, isPRED, isPREDPP)
```

Arguments

input	Internal parameter for shiny
new	Text template
model_lib	Library for $MODEL replacement
isPRED	Reactive object - is model coded with $PRED?
isPREDPP	Reactive object - is mode coded with $PK?

```
get_nonmem_blocks          Get NONMEM code blocks
```

Description

Process a character string containing NONMEM model code and returns a character vector in which each element contain a particular $ block

Usage

```
get_nonmem_blocks(code)
```

Arguments

code   A character string containing the control stream

```
get_nonmem_code          Creation of NONMEM code
```

Description

Creation of NONMEM code

Usage

```
get_nonmem_code(
  input = NULL,
  template = NULL,
  vars,
  advan,
  trans,
  isPRED,
  isODE,
  isLINMAT,
  isPREDPP,
  varianceTable,
  covarianceBlock,
  rvTable,
  parm_lib,
  model_lib,
  rv_lib,
  scaling,
  replacement = TRUE
)
```

Arguments

`input`	Internal parameter for shiny
`template`	Text template
`vars`	Reactive object - List of variables in data file
`advan`	Reactive object - NONMEM ADVAN value
`trans`	Reactive object - NONMEM TRANS value
`isPRED`	Reactive object - is model coded with $PRED?
`isODE`	Reactive object - is model coded with ODEs?
`isLINMAT`	Reactive object - is model coded as linear matrix?
`isPREDPP`	Reactive object - is mode coded with $PK?
`varianceTable`	Variance- table
`covarianceBlock`	
	Variance-covariance matrix
`rvTable`	Reactive object - residual variability matrix
`parm_lib`	Library of parameters
`model_lib`	Library for $MODEL replacement
`rv_lib`	Library for residual variability replacement
`scaling`	Library for scaling
`replacement`	Logical value indicating with replacement is required

---

get_parms_code	*Get NONMEM model parameter code lines as list*

Description

Get NONMEM model parameter code lines as list

Usage

```
get_parms_code(input, parms, varianceTable, mu)
```

Arguments

`input`	Internal parameter for shiny
`parms`	Parameter selection
`varianceTable`	Variability selection
`mu`	A logical indicator for mu transformation

---

get_preamble_code   *Get lines of preamble code for transit compartment absorption model and delayed dosing records*

Description

Get lines of preamble code for transit compartment absorption model and delayed dosing records

Usage

```
get_preamble_code(input, parms, vars)
```

Arguments

input	Internal parameter for shiny
parms	Parameter selection
vars	Character vector of variable names

---

get_scaling_code   *Get code lines for scaling and bioavailability*

Description

Get code lines for scaling and bioavailability

Usage

```
get_scaling_code(input, advan, trans, parm_lib, scaling)
```

Arguments

input	Internal parameter for shiny
advan	Reactive object - NONMEM ADVAN value
trans	Reactive object - NONMEM TRANS value
parm_lib	Library of parameters
scaling	Library for scaling

| get_theta_number | *Get number of THETA parameters* |

Description

Get number of THETA parameters

Usage

```
get_theta_number(code)
```

Arguments

code   A character string containing the control stream

| hot_to_r_raw | *Convert covariate handsontable data to R data.frame without factor* |

Description

Convert covariate handsontable data to R data.frame without factor

Usage

```
hot_to_r_raw(...)
```

Arguments

...   passed to rhandsontable::hot_to_r

| is_EDB | *Determine if a square matrix is of type block, band or error* |

Description

Determine if a square matrix is of type block, band or error

Usage

```
is_EDB(x)
```

Arguments

x   A square matrix

Value

Either "error", "band", or "block"

---

new_model_server   *New model module*

Description

New model module

Usage

```
new_model_server(session, input, output, resources)
```

Arguments

input, output, session
                 Internal parameters for `shiny`.

resources   A list of internal resources

---

notTruthy   *Opposite of areTruthy*

Description

Opposite of areTruthy

Usage

```
notTruthy(...)
```

Arguments

. . .   Any object

Value

TRUE if at least one object is not "truthy", FALSE if all are.

---

replace_abbreviated   *Replacement of @ABBREVIATED tag*

Description

Replacement of @ABBREVIATED tag

Usage

```
replace_abbreviated(input, new, vars)
```

Arguments

input	Internal parameter for shiny
new	Text template
vars	Character vector of variable names

---

replace_data   *Replacement of @DATA tag*

Description

Replacement of @DATA tag

Usage

```
replace_data(input, new)
```

Arguments

input	Internal parameter for shiny
new	Text template

---

replace_des *Replace @DES tag*

Description

Replace @DES tag

Usage

```
replace_des(input, new, advan, trans, isODE, vars, nPKcmts, nPDcmts, parm_lib)
```

Arguments

input	Internal parameter for shiny
new	Text template
advan	Reactive object - NONMEM ADVAN value
trans	Reactive object - NONMEM TRANS value
isODE	Reactive object - is model coded with ODEs?
vars	Reactive object - List of variables in data file
nPKcmts	Number of PK compartments in the model
nPDcmts	Number of PD compartments in the model
parm_lib	Library of parameters

---

replace_error *Replace @ERROR tag*

Description

Replace @ERROR tag

Usage

```
replace_error(
  input,
  new,
  advan,
  trans,
  isPRED,
  nPKcmts,
  nPDcmts,
  parm_lib,
  rv_lib
)
```

Arguments

`input`	Internal parameter for shiny
`new`	Text template
`advan`	Reactive object - NONMEM ADVAN value
`trans`	Reactive object - NONMEM TRANS value
`isPRED`	Reactive object - is model coded with $PRED?
`nPKcmts`	Number of PK compartments in the model
`nPDcmts`	Number of PD compartments in the model
`parm_lib`	Library of parameters
`rv_lib`	Library for residual variability replacement

`replace_input`   *Replacement of @INPUT tag*

Description

Replacement of @INPUT tag

Usage

```
replace_input(input, new, vars)
```

Arguments

`input`	Internal parameter for shiny
`new`	Text template
`vars`	Character vector of variable names

`replace_model`   *Replace @MODEL tag*

Description

Replace @MODEL tag

Usage

```
replace_model(input, new, model_lib, isPRED, isPREDPP)
```

Arguments

input	Internal parameter for shiny
new	Text template
model_lib	Library for $MODEL replacement
isPRED	Reactive object - is model coded with $PRED?
isPREDPP	Reactive object - is mode coded with $PK?

---

replace_mrg_capture   *Replacement of @CAPTURE tag*

Description

Replacement of @CAPTURE tag

Usage

```
replace_mrg_capture(input, new, parms)
```

Arguments

input	Internal parameter for shiny
new	Text template
parms	Parameter selection

---

replace_mrg_cmt   *Replacement of @CMT tag*

Description

Replacement of @CMT tag

Usage

```
replace_mrg_cmt(input, new, model_lib, isPRED)
```

Arguments

input	Internal parameter for shiny
new	Text template
model_lib	Library for $MODEL replacement
isPRED	Reactive object - is model coded with $PRED?

replace_mrg_global   *Replacement of @GLOBAL tag*

Description

Replacement of @GLOBAL tag

Usage

```
replace_mrg_global(input, new, advan, trans, nPKcmts, parm_lib)
```

Arguments

input	Internal parameter for shiny
new	Text template
advan	Reactive object - NONMEM ADVAN value
trans	Reactive object - NONMEM TRANS value
nPKcmts	Number of compartments for PK
parm_lib	Library of parameters

replace_mrg_main_pred *Replace @MAIN or @PRED tags*

Description

Replace @MAIN or @PRED tags

Usage

```
replace_mrg_main_pred(
  input,
  new,
  preamble_code,
  parms_code,
  derived_parms_code,
  scaling_code,
  init_code,
  isPRED,
  parms,
  parm_lib,
  rv_lib
)
```

Arguments

`input`	Internal parameter for `shiny`
`new`	Text template
`preamble_code`	Preamble code
`parms_code`	Typical and individual parameter code
`derived_parms_code`	
	Derived parameter code
`scaling_code`	Dose scaling and bioavailability code
`init_code`	Compartment initialization code
`isPRED`	Reactive object - is model coded with $PRED?
`parms`	Parameter selection
`parm_lib`	Library of parameters
`rv_lib`	Library for residual variability replacement

---

replace_mrg_ode   *Replacement of @ODE tag*

Description

Replacement of @ODE tag

Usage

```
replace_mrg_ode(input, new, advan, trans, isODE, nPKcmts, nPDcmts, parm_lib)
```

Arguments

`input`	Internal parameter for `shiny`
`new`	Text template
`advan`	Reactive object - NONMEM ADVAN value
`trans`	Reactive object - NONMEM TRANS value
`isODE`	Reactive object - is model coded with ODEs?
`nPKcmts`	Number of PK compartments in the model
`nPDcmts`	Number of PD compartments in the model
`parm_lib`	Library of parameters

---

replace_mrg_omega   *Replacement of @OMEGA tag*

Description

Replacement of @OMEGA tag

Usage

```
replace_mrg_omega(input, new, parms, blocks, nmextImport)
```

Arguments

input	Internal parameter for shiny
new	Text template
parms	Parameter selection
blocks	Variance - covariance matrix
nmextImport	A logical indicating whether NONMEM ext file content should be imported

---

replace_mrg_param   *Replacement of @PARAM tag*

Description

Replacement of @PARAM tag

Usage

```
replace_mrg_param(input, new, parms, nmextImport)
```

Arguments

input	Internal parameter for shiny
new	Text template
parms	Parameter selection
nmextImport	A logical indicating whether NONMEM ext file content should be imported

---

replace_mrg_plugin   *Replacement of @PLUGIN tag*

Description

Replacement of @PLUGIN tag

Usage

```
replace_mrg_plugin(input, new)
```

Arguments

input	Internal parameter for shiny
new	Text template

---

replace_mrg_sigma   *Replacement of @SIGMA tag*

Description

Replacement of @SIGMA tag

Usage

```
replace_mrg_sigma(input, new, rvTable, nmextImport)
```

Arguments

input	Internal parameter for shiny
new	Text template
rvTable	Residual variability selection
nmextImport	A logical indicating whether NONMEM ext file content should be imported

---

replace_mrg_table   *Replacement of @TABLE tag*

Description

Replacement of @TABLE tag

Usage

```
replace_mrg_table(
  input,
  new,
  advan,
  trans,
  isPRED,
  nPKcmts,
  nPDcmts,
  parm_lib,
  rv_lib
)
```

Arguments

input	Internal parameter for shiny
new	Text template
advan	Reactive object - NONMEM ADVAN value
trans	Reactive object - NONMEM TRANS value
isPRED	Reactive object - is model coded with $PRED?
nPKcmts	Number of PK compartments in the model
nPDcmts	Number of PD compartments in the model
parm_lib	Library of parameters
rv_lib	Library for residual variability replacement

---

replace_nmext   *Replacement of @NMEXT tag*

Description

Replacement of @NMEXT tag

Usage

```
replace_nmext(input, new, nmextImport = FALSE)
```

Arguments

`input`	Internal parameter for `shiny`
`new`	Text template
`nmextImport`	A logical indicating whether NONMEM ext file content should be imported

---

`replace_omega` *Replacement of @OMEGA tag*

Description

Replacement of @OMEGA tag

Usage

```
replace_omega(new, parms, varianceTable, blocks)
```

Arguments

`new`	Text template
`parms`	Parameter selection
`varianceTable`	Variability selection
`blocks`	Variance - covariance matrix

`replace_path` *Replacement of @PATH tag*

Description

Replacement of @PATH tag

Usage

```
replace_path(input, new)
```

Arguments

`input`	Internal parameter for `shiny`.
`new`	Text template

---

replace_pk_pred *Replace @PK and @PRED tags*

Description

Replace @PK and @PRED tags

Usage

```
replace_pk_pred(
  input,
  new,
  preamble_code,
  parms_code,
  derived_parms_code,
  scaling_code,
  init_code,
  isPRED,
  parms,
  varianceTable,
  parm_lib,
  rv_lib,
  mu
)
```

Arguments

input	Internal parameter for shiny
new	Text template
preamble_code	Preamble code
parms_code	Typical and individual parameter code
derived_parms_code	
	Derived parameter code
scaling_code	Dose scaling and bioavailability code
init_code	Compartment initialization code
isPRED	Reactive object - is model coded with $PRED?
parms	Parameter selection
varianceTable	Variability selection
parm_lib	Library of parameters
rv_lib	Library for residual variability replacement
mu	A logical indicator for mu transformation

---

replace_prior   *Replacement of @PRIOR tag*

Description

Replacement of @PRIOR tag

Usage

```
replace_prior(input, new, parms, varianceTable, estimations)
```

Arguments

input	Internal parameter for shiny
new	Text template
parms	Parameter selection
varianceTable	Variability selection
estimations	Table of estimation tasks

---

replace_problem   *Replacement of @PROB1 and @PROB2 tags*

Description

Replacement of @PROB1 and @PROB2 tags

Usage

```
replace_problem(input, new)
```

Arguments

input	Internal parameter for shiny
new	Text template

---

replace_purpose *Replacement of @PURPOSE tag*

Description

Replacement of @PURPOSE tag

Usage

```
replace_purpose(input, new, varianceTable)
```

Arguments

input	Internal parameter for shiny.
new	Text template
varianceTable	Variance- table

---

replace_sigma *Replacement of @SIGMA tag*

Description

Replacement of @SIGMA tag

Usage

```
replace_sigma(new, input, rvTable)
```

Arguments

new	Text template
input	Internal parameter for shiny
rvTable	Residual variability selection

---

replace_subroutine *Replacement of @SUBROUTINE tag*

Description

Replacement of @SUBROUTINE tag

Usage

```
replace_subroutine(input, new, advan, trans, isPRED, isODE, isLINMAT)
```

Arguments

input	Internal parameter for shiny
new	Text template
advan	Reactive object - NONMEM ADVAN value
trans	Reactive object - NONMEM TRANS value
isPRED	Reactive object - is model coded with $PRED?
isODE	Reactive object - is model coded with ODEs?
isLINMAT	Reactive object - is model coded as linear matrix?

---

replace_table *Replace @TABLE tag*

Description

Replace @TABLE tag

Usage

```
replace_table(input, new, vars)
```

Arguments

input	Internal parameter for shiny
new	Text template
vars	Reactive object - List of variables in data file

---

replace_tags   *Replace $TAGs tag*

Description

Replace $TAGs tag

Usage

```
replace_tags(input, new)
```

Arguments

input	Internal parameter for shiny
new	Text template

---

replace_task   *Replace @TASK tag*

Description

Replace @TASK tag

Usage

```
replace_task(input, new, estimations, isODE)
```

Arguments

input	Internal parameter for shiny
new	Text template
estimations	Table of estimation tasks
isODE	Reactive object - is model coded with ODEs?

---

replace_theta   *Replacement of @THETA tag*

Description

Replacement of @THETA tag

Usage

```
replace_theta(new, parms)
```

Arguments

new	Text template
parms	Parameter selection

---

resources   *Load resource files*

Description

Load resource files

Usage

```
resources()
```

---

run_app   *Run the Shiny Application*

Description

Run the Shiny Application

Usage

```
run_app(
  onStart = NULL,
  options = list(launch.browser = TRUE),
  enableBookmarking = NULL,
  uiPattern = "/",
  ...
)
```

Arguments

onStart	A function that will be called before the app is actually run. This is only needed for shinyAppObj, since in the shinyAppDir case, a global.R file can be used for this purpose.
options	Named options that should be passed to the runApp call (these can be any of the following: "port", "launch.browser", "host", "quiet", "display.mode" and "test.mode"). You can also specify width and height parameters which provide a hint to the embedding environment about the ideal height/width for the app.
enableBookmarking	
	Can be one of "url", "server", or "disable". The default value, NULL, will respect the setting from any previous calls to enableBookmarking(). See enableBookmarking() for more information on bookmarking your app.
uiPattern	A regular expression that will be applied to each GET request to determine whether the ui should be used to handle the request. Note that the entire request path must match the regular expression in order for the match to be considered successful.
...	arguments to pass to golem_opts. See '?golem::get_golem_options' for more details.

Value

Starts the PMXcode Shiny application

Examples

```
## Not run:
if( interactive() ){
  pmxcode::run_app()
}

## End(Not run)
```

---

tenvars	*Format variables by lines of 10.*

Description

Format variables by lines of 10.

Usage

```
tenvars(x)
```

Arguments

x	Character vectors of variables

Index