Package 'Revticulate'

September 6, 2021

Type Package

Title Interaction with ``RevBayes'' in R

Version 0.3.0

Description
Interaction with ``RevBayes'' via R. Objects created in ``RevBayes'' can be passed into the R environment, and many types can be converted into similar R objects. To download ``RevBayes'', go to <https://revbayes.github.io/download>.

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Depends R (>= 2.10)

Imports ape, stringr, stringi, knitr, utils, comprehenr, phytools

RoxygenNote 7.1.1

Suggests markdown, rmarkdown, testthat, ggplot2, devtools

Encoding UTF-8

NeedsCompilation no

Author Caleb Charpentier [aut, cre],
April Wright [aut]

Maintainer Caleb Charpentier <caleb.charpentier@selu.edu>

Repository CRAN

Date/Publication 2021-09-06 04:10:07 UTC

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`callRev` *Submit input to RevBayes and return output*

Description

Submits input to the RevBayes executable and returns output to R in string format. If coerce = TRUE, the function coerRev() will attempt to coerce output to a similar R object.

Usage

```
callRev(
  ...,
  coerce = FALSE,
  path = Sys.getenv("RevBayesPath"),
  viewCode = FALSE,
  use_wd = TRUE,
  knit = FALSE,
  timeout = 5
)
```

Arguments

`...`	String input to send to RevBayes.
`coerce`	If TRUE, attempts to coerce output to an R object. If FALSE, output will remain in String format. Default is FALSE.
`path`	Path to the RevBayes executable. Default is Sys.getEnv("RevBayesPath"), which is created with initRev().
`viewCode`	If TRUE, the input and output in the temporary file used to interact with RevBayes will be displayed in the viewing pane. This option may be useful for diagnosing code errors.
`use_wd`	If TRUE, sets the working directory in the temporary RevBayes session to the working directory of the active R session. Default is TRUE.
`knit`	Argument used to manage output formatting for knitRev(). This argument should generally be ignored by the user.
`timeout`	Determines how long the system2() call should wait before timing out (seconds). Default is 5.

Value

out: character. String formatted output from RevBayes

coercedOut: type varies. R object formatted output from RevBayes. Object type varies according to Rev output (Ex: numeric vector or ape::Phylo object)

Examples

```
## Not run:
callRev("2^3")
callRev("2^3", coerce = FALSE, viewcode = TRUE)

## End(Not run)
```

---

clearRev *Removes lines from RevBayes history*

Description

Removes lines of code from the .Revhistory file used for managing RevBayes interactions.

Usage

```
clearRev(n = NULL)
```

Arguments

n	How many lines to remove. If n = NULL, all lines are removed.

Value

pseudoError: NULL. Message warning user that they attempted to erase more items from the Rev history than exist. message() is used instead of stop() so that clearRev() functions in repRev().

undoRev(n): NULL. Removes n number of lines from .Revhistory and cats the remaining history to the screen.

Examples

```
## Not run:
clearRev() #Clear all objects from RevBayes
clearRev(n = 1) # Clear the last line input to RevBayes

## End(Not run)
```

coerceRev *Coerces string of RevBayes output into an equivalent R object.*

Description

Coerces string of RevBayes output into an equivalent R object. Uses the structure of the characters within the string to identify an appropriate R object type (a list, vector, or even phylo tree) to coerce the string into.

Usage

```
coerceRev(out)
```

Arguments

out	String formatted representation of a Rev language object. coerceRev() will recognize the formatting of most commonly used Rev objects and will convert them into equivalent R objects. If coerceRev() does not recognize the objects formatting, the initial String representation will be returned.

Value

out: Type varies depending on Rev object type. R object-formatted output coerced from a RevBayes output string.

Examples

```
## Not run:
coerceRev("[1, 2, 3, 4]")

## End(Not run)
```

doRev *Wrapper for callRev(). Runs previous code in the .Revhistory file to allow user-created Rev variables to persist between interactions.*

Description

Wrapper for callRev(). Runs previous code in the .Revhistory file to allow user-created Rev variables to persist between interactions.

Usage

```
doRev(input, viewCode = FALSE, coerce = FALSE, timeout = 5)
```

Arguments

input	Code snippet to run in the RevBayes executable
viewCode	If TRUE, Rev code input and output will be displayed in the viewing pane.
coerce	If TRUE, the output from RevBayes will be coerced into R format with coerceRev()
timeout	Determines how long the system2() call should wait before timing out (seconds). Default is 5.

Value

now: type varies. If coerce = TRUE, coerceRev() will attempt to convert RevBayes output into an equivalent R object. Else, return type is character.

---

findRev *Searches for the RevBayes executable*

Description

Recursively searches the users machine for the RevBayes executable and returns a vector of possible paths

Usage

```
findRev(parentDirectory = "~")
```

Arguments

parentDirectory	Parent directory to recursively search for the RevBayes executable. Default is the user's root directory ('~'). Because many sub-directories likely exist within the root directory, the search time will greatly decrease by providing a lower level directory path to the RevBayes executable.

Value

getPaths: character. Located path to RevBayes executable.

Examples

```
## Not run:
findRev()

## End(Not run)
## Not run:
findRev("C://Users/caleb/")

## End(Not run)
```

`getRevHistory` *Get full history of RevBayes code from RevEnv*

Description

Returns a vector of the lines of code in the .Revhistory file

Usage

```
getRevHistory()
```

Value

lines: character. Lines read from .Revhistory file.

`getRevObj` *Getter function to retrieve objects created in RevBayes*

Description

Getter function to retrieve objects created in RevBayes

Usage

```
getRevObj(name, coerce = FALSE)
```

Arguments

`name`	String. Name of object to retrieve
`coerce`	Boolean. If true, Revticulate attempts to coerce the String formatted Rev object into a comparable R object. Default is FALSE.

Value

revObject: type varies. Object returned from RevBayes that was previously defined in .Revhistory. If coerce == FALSE, returns character. Else, returns type determined by coerceRev().

getRevVars *Get variable definitions from RevEnv*

Description

Returns vector of lines in .Revhistory containing variable definitions

Usage

```
getRevVars(varName = NULL)
```

Arguments

varName	Only returns lines where specific variable names are defined. If NULL, all lines are returned

Value

varList: character. Vector of lines from .Revhistory containing assignment variables.

singleVar: character. Vector of lines from .Revhistory containing an assignment variable for a specific variable name.

Examples

```
## Not run:
getRevVars()

## End(Not run)
## Not run:
getRevVars("var1")

## End(Not run)
```

initRev *Initializes external variables for interaction with RevBayes*

Description

Creates external variables for storing the paths to the RevBayes executable and .Revhistory files, as well as initiating a folder to store temp files for RevBayes interactions.

Usage

```
initRev(searchPath = "~", infoDir = dirname(getwd()))
```

Arguments

searchPath	Full path or directory to search for the RevBayes executable. Default is the user's root directory (~).
infoDir	Path to parent directory of the RevInfo folder used for managing RevBayes interactions. Default is the parent directory of the user's working directory. If a RevInfo folder already exists in this directory, history stored in the existing folder will be used. Else, a new folder will be created.

Value

No return. Initiates external environmental variables and directory for mediating interaction between R and RevBayes.

Examples

```
## Not run:
RevPath <- "C://Users/Caleb/Documents/WrightLab/RevBayes_Win_v1.0.13/RevBayes_Win_v1.0.13/rb.exe"
initRev(RevPath)

## End(Not run)
```

---

knitRev *Knitr engine for RevBayes*

Description

Rev code can be ran directly in knitr chunks, without the use of the functions doRev() or repRev(). History is accessed with the .Revhistory file and persists between chunks.

Usage

```
knitRev()
```

Value

No return. Initiates knitr engine for RevBayes.

repRev *Continuous interactive session with RevBayes*

Description

Simulates a continuous, interactive session with RevBayes. While this session is active, all code will be interpreted as Rev code, and attempting to run R code may result in error.

Usage

```
repRev(
  path = Sys.getenv("RevBayesPath"),
  viewCode = FALSE,
  coerce = FALSE,
  use_wd = TRUE
)
```

Arguments

path	Path to the RevBayes executable. Defaults to Sys.getenv("RevBayesPath"), so initRev() should be called first.
viewCode	If TRUE, code from the temporary file used to interact with RevBayes will be displayed in the viewing pane. Default is FALSE.
coerce	If FALSE, output from RevBayes will be printed to the console in character format. If TRUE, repRev() will attempt to coerce output into a suitable R object. Default is FALSE.
use_wd	If TRUE, the simulated Revbayes session will use the same working directory as the active R session. If FALSE, it will use its default. Default is TRUE.

Details

By default, the interactive session uses the present R working directory as the RevBayes working directory. This behavior can be turned off with use_wd = FALSE

The exit the session, type 'quit()' or hit the 'esc' key. clearRev(), getRevVars(), and getRevHistory can be called from within the session for user convenience

Value

No return. Acts as an interactive session with the RevBayes. RevBayes output is printed to the console via cat(), and Rev variables can be referenced externally via doRev() and getRevObj().

Examples

```
## Not run:
repRev()

myNumber <- 4
```

```
myNumber

posteriorPredictiveProbability(v(2), 3)
getrRev()
clearRev()
quit()

## End(Not run)
```

`%+%` *Operator for concatenation.*

Description

Rapid string parsing

Usage

```
a %+% b
```

Arguments

a	The first String
b	The second String

Details

Method for quicker pasting of Strings.

Value

character formatted concatenation of both input strings.

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