Package ‘mlsjunkgen’

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Title Use the MLS Junk Generator Algorithm to Generate a Stream of Pseudo-Random Numbers

Version 0.1.2

Description Generate a stream of pseudo-random numbers generated using the MLS Junk Generator algorithm. Functions exist to generate single pseudo-random numbers as well as a vector, data frame, or matrix of pseudo-random numbers.

URL `https://stevemyles.site/mlsjunkgen/`,
`https://github.com/scumdogsteev/mlsjunkgen`

BugReports `https://github.com/scumdogsteev/mlsjunkgen/issues`

Depends R (>= 3.1.3)

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Suggests knitr, rmarkdown, testthat (>= 3.0.0)

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R topics documented:

`junkgen` *Generate a single pseudo-random number using the MLS Junk Generator algorithm*

Description

Based on user input seeds, this function generates a pseudo-random number. This is called by the mlsjunkgen package's other functions to generate a pseudo-random number stream.

Usage

```
junkgen(w, x, y, z)
```

Arguments

`w`	the first seed required by the MLS Junk Generator algorithm
`x`	the first seed required by the MLS Junk Generator algorithm
`y`	the first seed required by the MLS Junk Generator algorithm
`z`	the first seed required by the MLS Junk Generator algorithm

Value

A numeric vector containing a single pseudo-random number

Examples

```
# Generate a pseudo-random number with user-specified seeds

w <- 1
x <- 2
y <- 3
z <- 4
junkgen(w = w, x = x, y = y, z = z) # returns "[1] 0.9551644"
```

`mlsjunkgen` *mlsjunkgen: Use the MLS Junk Generator Algorithm to Generate a Stream of Pseudo-Random Numbers*

Description

mlsjunkgen: Use the MLS Junk Generator Algorithm to Generate a Stream of Pseudo-Random Numbers

mlsjunkgen functions

- junkgen: generate a single pseudo-random number; called by the other functions
- mlsjunkgenv: generate a vector stream of pseudo-random numbers
- mlsjunkgend: generate a data frame of pseudo-random numbers
- mlsjunkgenm: generate a matrix of pseudo-random numbers

mlsjunkgend *Generate a data frame of pseudo-random numbers using the MLS Junk Generator algorithm*

Description

Based on user input seeds, this function generates a data frame of n pseudo-random numbers and names the column containing these as "RN" for "random numbers." This is achieved by calling junkgen.

Usage

```
mlsjunkgend(n = 1, w, x, y, z, round = 5)
```

Arguments

n	the number of pseudo-random numbers to generate; defaults to 1
w	the first seed required by the MLS Junk Generator algorithm
x	the first seed required by the MLS Junk Generator algorithm
y	the first seed required by the MLS Junk Generator algorithm
z	the first seed required by the MLS Junk Generator algorithm
round	the number of decimal places to which to round the pseudo-random numbers; default = 5

Value

A numeric vector containing a single pseudo-random number

Examples

```
# Generate a pseudo-random number data frame with 10 observations from user-specified seeds

w <- 1
x <- 2
y <- 3
z <- 4

mlsjunkgend(n = 10, w = w, x = x, y = y, z = z) # returns a data frame of 10 observations
```

```
# Specifying different values for n and round

mlsjunkgend(n = 5, w = w, x = x, y = y, z = z, round = 2)
# returns a data frame identical to the above example but with only 5 observations
# rounded to 2 decimal places

# using the default value of n (1) is identical to assigning the rounded result of
# junkgen to a data frame of 1 observation

round(junkgen(w = w, x = x, y = y, z = z), 5) # returns "[1] 0.95516"
mlsjunkgend(w = w, x = x, y = y, z = z)
# returns the following:
#        RN
# 1 0.95516
```

mlsjunkgenm *Generate a matrix of pseudo-random numbers using the MLS Junk Generator algorithm*

Description

Based on user input seeds, this function generates a vector of n pseudo-random numbers by calling mlsjunkgenv which in turn calls junkgen.

Usage

```
mlsjunkgenm(nrow = 1, ncol = 1, w, x, y, z, round = 5)
```

Arguments

`nrow`	the number of rows for the matrix; defaults to 1
`ncol`	the number of columns for the matrix; defaults to 1
`w`	the first seed required by the MLS Junk Generator algorithm
`x`	the first seed required by the MLS Junk Generator algorithm
`y`	the first seed required by the MLS Junk Generator algorithm
`z`	the first seed required by the MLS Junk Generator algorithm
`round`	the number of decimal places to which to round the pseudo-random numbers; default = 5

Value

A numeric vector containing a single pseudo-random number

Examples

```
# Generate a 4x4 matrix of pseudo-random numbers with user-specified seeds

w <- 1
x <- 2
y <- 3
z <- 4

mlsjunkgenm(nrow = 4, ncol = 4, w = w, x = x, y = y, z = z) # returns a 4x4 matrix

# the sixteen values in the above matrix are equivalent to the following call
# to mlsjunkgenv

mlsjunkgenv(n = 16, w = w, x = x, y = y, z = z)

# matrices need not be square
# this returns a 3x2 matrix of pseudo-random numbers with 2 decimal places
mlsjunkgenm(nrow = 3, ncol = 2, w = w, x = x, y = y, z = z, round = 2)

# using the default value of n (1) generates a 1x1 matrix the value of which
# is identical to running junkgen and rounding the result to 5 decimal places

round(junkgen(w = w, x = x, y = y, z = z), 5) # returns "[1] 0.95516"
mlsjunkgenv(w = w, x = x, y = y, z = z) # returns a 1x1 matrix with single element = "0.95516"
```

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mlsjunkgenv *Generate a vector of pseudo-random numbers using the MLS Junk Generator algorithm*

Description

Based on user input seeds, this function generates a vector of n pseudo-random numbers by calling junkgen.

Usage

```
mlsjunkgenv(n = 1, w, x, y, z, round = 5)
```

Arguments

n	the number of pseudo-random numbers to generate; defaults to 1
w	the first seed required by the MLS Junk Generator algorithm
x	the first seed required by the MLS Junk Generator algorithm
y	the first seed required by the MLS Junk Generator algorithm
z	the first seed required by the MLS Junk Generator algorithm
round	the number of decimal places to which to round the pseudo-random numbers; default = 5

Value

A numeric vector containing a single pseudo-random number

Examples

```
# Generate a pseudo-random number stream of length 5 with user-specified seeds

w <- 1
x <- 2
y <- 3
z <- 4

# the following call returns "[1] 0.95516 0.66908 0.21235 0.34488 0.11995"
mlsjunkgenv(n = 5, w = w, x = x, y = y, z = z)

# Specifying different values for n and round

mlsjunkgenv(n = 3, w = w, x = x, y = y, z = z, round = 2) # returns "[1] 0.96 0.67 0.21"

# using the default value of n (1) is identical to running junkgen and rounding
# the result to 5 decimal places

round(junkgen(w = w, x = x, y = y, z = z),5) # returns "[1] 0.95516"
mlsjunkgenv(w = w, x = x, y = y, z = z) # returns "[1] 0.95516"
```

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