

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)

VignetteBuilder knitr

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junkgen	<i>Generate a single pseudo-random number using the MLS Junk Generator algorithm</i>
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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	<i>mlsjunkgen: Use the MLS Junk Generator Algorithm to Generate a Stream of Pseudo-Random Numbers</i>
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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

<code>mlsjunkgend</code>	<i>Generate a data frame of pseudo-random numbers using the MLS Junk Generator algorithm</i>
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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

<code>n</code>	the number of pseudo-random numbers to generate; defaults to 1
<code>w</code>	the first seed required by the MLS Junk Generator algorithm
<code>x</code>	the first seed required by the MLS Junk Generator algorithm
<code>y</code>	the first seed required by the MLS Junk Generator algorithm
<code>z</code>	the first seed required by the MLS Junk Generator algorithm
<code>round</code>	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	<i>Generate a matrix of pseudo-random numbers using the MLS Junk Generator algorithm</i>
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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"
```

mlsjunkgenv	<i>Generate a vector of pseudo-random numbers using the MLS Junk Generator algorithm</i>
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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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