

Package: Rmaze (via r-universe)

October 6, 2026

Type Package

Title Generating Mazes with R

Version 0.1.1

Date 2026-06-08

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Description Generating mazes in R.

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BugReports <https://github.com/Vessy/Rmaze/issues>

URL <https://github.com/Vessy/Rmaze>

Imports stringr (>= 1.0.0), igraph (>= 1.0.1), ggplot2 (>= 2.1.0),
shiny (>= 0.13.2),

Suggests knitr, rmarkdown

VignetteBuilder knitr

Config/roxygen2/version 8.0.0

Encoding UTF-8

Config/pak/sysreqs cmake libglpk-dev make libicu-dev libuv1-dev libxml2-dev zlib1g-dev

Repository <https://kbroman.r-universe.dev>

Date/Publication 2026-06-08 12:07:27 UTC

RemoteUrl <https://github.com/kbroman/Rmaze>

RemoteRef HEAD

RemoteSha 680978133fe097b633106e86c0fb618ed6568985

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makeGraph	<i>Create a connected maze graph that represents a rectangular grid. Nodes represent cells and edges between nodes represent wall sites. All walls are initially on.</i>
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Description

Create a connected maze graph that represents a rectangular grid. Nodes represent cells and edges between nodes represent wall sites. All walls are initially on.

Usage

```
makeGraph(nrows = 0, ncols = 0)
```

Arguments

- nrows maze height (number of rows); default value set to 0.
- ncols maze width (number of columns); default value set to 0.

Value

This function creates and returns a maze graph that represents a rectangular grid that matches user specified maze dimensions. Nodes in the graph will be named in the format Aij, where i corresponds to a row number and j corresponds to a column number.

Examples

```
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_dfs(maze1)
plotMaze(maze1, 10, 10)
```

makeImperfect	<i>Given a perfect maze graph, create an imperfect maze graph.</i>
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Description

Given a perfect maze graph, create an imperfect maze graph.

Usage

```
makeImperfect(gD = NA, ptc = 20, inShiny = FALSE)
```

Arguments

gD	an existing maze graph object.
ptc	percentage of walls to randomly add or remove; default value is 10(percent).
inShiny	a flag that marks whether the function is called from a shiny app or console.

Value

A maze graph object containing an imperfect maze.

Examples

```
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_dfs(maze1)
plotMaze(maze1, 10, 10)
maze1 <- makeImperfect(maze1)
plotMaze(maze1, 10, 10)
```

makeMaze_dfs	<i>Create a maze using a randomized version of depth-first search algorithm (recursive backtracker).</i>
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Description

Create a maze using a randomized version of depth-first search algorithm (recursive backtracker).

Usage

```
makeMaze_dfs(
  gD = NA,
  stepBystep = FALSE,
  nrows = 0,
  ncols = 0,
  inShiny = FALSE
)
```

Arguments

gD	an existing maze graph object.
stepBystep	a flag that will allow a step by step plot of maze creation
nrows	maze height (number of rows); required only for the step by step plot; default value set to 0.
ncols	maze width (number of columns); required only for the step by step plot; default value set to 0.
inShiny	a flag that marks whether the function is called from a shiny app or console

Value

Given a connected maze graph (with all walls on), this function creates a maze (removes some walls) using depth-first search algorithm (recursive backtracker), and returns the resulting maze graph.

Examples

```
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_dfs(maze1)
plotMaze(maze1, 10, 10)
```

makeMaze_kruskal	<i>Create a maze using a randomized Kruskal's algorithm.</i>
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Description

Create a maze using a randomized Kruskal's algorithm.

Usage

```
makeMaze_kruskal(
  gD = NA,
  stepBystep = FALSE,
  nrows = 0,
  ncols = 0,
  inShiny = FALSE
)
```

Arguments

gD	an existing maze graph object.
stepBystep	a flag that will allow a step by step plot of maze creation
nrows	maze height (number of rows); required only for the step by step plot; default value set to 0.
ncols	maze width (number of columns); required only for the step by step plot; default value set to 0.
inShiny	a flag that marks whether the function is called from a shiny app or console

Value

Given a connected maze graph (with all walls on), this function creates a maze (removes some walls) using depth-first search algorithm (recursive backtracker), and returns the resulting maze graph.

Examples

```
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_kruskal(maze1)
plotMaze(maze1, 10, 10)
```

makeMaze_prim

*Create a maze using a randomized Prim's algorithm.***Description**

Create a maze using a randomized Prim's algorithm.

Usage

```
makeMaze_prim(
  gD = NA,
  stepBystep = FALSE,
  nrows = 0,
  ncols = 0,
  inShiny = FALSE
)
```

Arguments

gD	an existing maze graph object.
stepBystep	a flag that will allow a step by step plot of maze creation
nrows	maze height (number of rows); required only for the step by step plot; default value set to 0.
ncols	maze width (number of columns); required only for the step by step plot; default value set to 0.
inShiny	a flag that marks whether the function is called from a shiny app or console

Value

Given a connected maze graph (with all walls on), this function creates a maze (removes some walls) using depth-first search algorithm (recursive backtracker), and returns the resulting maze graph.

Examples

```
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_prim(maze1)
plotMaze(maze1, 10, 10)
```

plotMaze	<i>Given a maze graph, plot a maze.</i>
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Description

Given a maze graph, plot a maze.

Usage

```
plotMaze(gD = NA, nrows = 0, ncols = 0, inShiny = FALSE)
```

Arguments

gD	an existing maze graph object.
nrows	maze height (number of rows); default value set to 0.
ncols	maze width (number of columns); default value set to 0.
inShiny	a flag that marks whether the function is called from a shiny app or console

Value

This function uses `ggplot` to plot a maze. Currently, maze entrance and exit points (cells/nodes) are fixed.

Examples

```
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_dfs(maze1)
plotMaze(maze1, 10, 10)
```

plotMazeSolution	<i>Plot maze solution (path)</i>
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Description

Plot maze solution (path)

Usage

```
plotMazeSolution(gD = NA, nrows = 0, ncols = 0, inShiny = FALSE)
```

Arguments

gD	an existing maze graph object.
nrows	maze height (number of rows); default value set to 0.
ncols	maze width (number of columns); default value set to 0.
inShiny	a flag that marks whether the function is called from a shiny app or console.

Value

The maze solution is found as the shortest path between the start and end maze cells (currently, start and end points of the maze are fixed). The function uses ggplot to plot a maze.

Examples

```
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_dfs(maze1)
plotMaze(maze1, 10, 10)
plotMazeSolution(maze1, 10, 10)
```

runExample	<i>A function to start a Shiny app that comes with the package. Code from: https://www.r-bloggers.com/supplementing-your-r-package-with-a-shiny-app-2/</i>
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Description

A function to start a Shiny app that comes with the package. Code from: <https://www.r-bloggers.com/supplementing-your-r-package-with-a-shiny-app-2/>

Usage

```
runExample()
```

Examples

```
## Not run:
Rmaze::runExample()

## End(Not run)
```

stepByStepMAze	<i>Plot maze solution (path)</i>
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Description

Plot maze solution (path)

Usage

```
stepByStepMAze(gD = NA, nrows = 0, ncols = 0, inShiny = FALSE)
```

Arguments

gD	an existing maze graph object.
nrows	maze height (number of rows); default value set to 0.
ncols	maze width (number of columns); default value set to 0.
inShiny	a flag that marks whether the function is called from a shiny app or console.

Value

The maze solution is found as the shortest path between the start and end maze cells (currently, start and end points of the maze are fixed). The function uses ggplot to plot a maze.

Examples

```
## Not run:
maze1 <- makeGraph(10, 10)
maze1 <- makeMaze_dfs(maze1, stepBystep = TRUE, nrows=10, ncols=10)

## End(Not run)
```

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