Package ‘FourScores’

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Title A Game for Human vs. Human or Human vs. AI
Version 1.5.1
Description A game for two players: Who gets first four in a row (horizontal, vertical or diagonal) wins. As board game published by Milton Bradley, designed by Howard Wexler and Ned Strongin.
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**Description**

Help-Function for an AI

**Usage**

\[ \text{AImove}(\text{field}, \text{AIstrength}, \text{AIplayernumber}) \]

**Arguments**

- **field**: matrix: the playing field
- **AIstrength**: integer: strength of the AI - number of moves the AI will simulate?
- **AIplayernumber**: integer: 0 or 1: should the AI be player 1 or player 2?

**Value**

the selected row

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**Description**

help-function which return the x-axis-value of the mouse when releasing the mouse button.

**Usage**

\[ \text{clicking}(\text{buttons}, x, y) \]

**Arguments**

- **buttons**: the mouse buttons input.
- **x**: the x-value of the mouse button.
- **y**: the y-value of the mouse button.

**Value**

a rounded value for the x-coordinate
**clickingXY**

Description

A function to check the mouse click input by the user

Usage

`clickingXY(buttons, x, y)`

Arguments

- **buttons**: the mouse buttons input.
- **x**: the x-value of the mouse button.
- **y**: the y-value of the mouse button.

Value

A Vector of the x and y coordinates of the mouse click

**fbbuttons**

**Field buttons**

Description

A function to show buttons, letting the player(s) decide what to do: show the winning field, play again or exit.

Usage

`fbbuttons(field, justsub, message, MACuser, rows, columns, AI, A1strength, A1playernumber, PlayerNames, PlayerColors)`

Arguments

- **field**: matrix: the field.
- **justsub**: boolean: should only be a subtitle plotted (below the winning field)?
- **message**: character: a message to be plotted.
- **MACuser**: boolean: on some non-mac computers this can be set to FALSE to have mouse-functionality in the graphics device.
- **rows**: integer: how many rows shall the playing field have?
- **columns**: integer: how many columns shall the playing field have?
FieldGeneration

AI  boolean: play against AI?
A1Strength  integer: strength of the AI - number of moves the AI will simulate?
A1PlayerNumber  integer: 0 or 1: should the AI be player 1 or player 2?
PlayerNames  array of characters: the players’ names.
PlayerColors  vector of characters: the players’ colors.

FieldCorrect  Is the field correct?

Description
help-function that checks whether the field is correct

Usage
FieldCorrect(column, field)

Arguments
  column  integer: the column chosen by the current player
  field  matrix: the playing field.

Value
  a boolean (TRUE if the given column would be a valid move for the field given).

FieldGeneration  field generation

Description
help-function which generates the playing-field

Usage
FieldGeneration(rows, columns)

Arguments
  rows  integer: how many rows shall the playing field have?
  columns  integer: how many columns shall the playing field have?

Value
  an empty matrix with rows and columns
**FieldPlot**

*plot the field*

**Description**

a major-function which plots the current field, and if given a hint, which player has won

**Usage**

FieldPlot(field, message, PlayerColors)

**Arguments**

- **field**: matrix: the playing field
- **message**: character: a message to be plotted.
- **PlayerColors**: vector of characters: the players’ colors.

**FieldWinCheck**

*check for a winner*

**Description**

help-function that checks whether (at least) one of the four possibilities of winning is given

**Usage**

FieldWinCheck(field, player)

**Arguments**

- **field**: matrix: the playing field.
- **player**: integer: the current player.

**Value**

a boolean whether the player has won the match or not
Description

Function to play FourScores

Usage

FourScores(rows = 6, columns = 7, AI = TRUE, AIsntrongth = rows * columns, AIplayerNumber = 1, MACuser = TRUE, PlayerNames = c("AI", "Human"), getnewnames = FALSE, PlayerColors = c("green", "blue"), getnewcolors = FALSE)

Arguments

rows integer: how many rows shall the playing field have?
columns integer: how many columns shall the playing field have?
AI boolean: play against AI?
AIsntrongth integer: strength of the AI - number of moves the AI will simulate?
AIplayerNumber integer: 0 or 1: should the AI be player 1 or player 2?
MACuser boolean: on some non-mac computers this can be set to FALSE to have mouse-functionality in the graphics device.
PlayerNames array of characters: the players’ names.
getnewnames boolean: should new names be asked for?
PlayerColors vector of characters: the players’ colors.
getnewcolors boolean: should new colors be asked for?

Examples

## Not run:
FourScores(AI = T, AIsntrongth = 10, MACuser = T, getnewnames = F, getnewcolors = F)

## End(Not run)
getColors  

**Description**  
A function to get some colors

**Usage**  
getColors(PlayerNames, PlayerColors, MACuser)

**Arguments**  
- **PlayerNames**: array of characters: the players’ names.
- **PlayerColors**: vector of characters: the players’ colors.
- **MACuser**: boolean: on some non-mac computers this can be set to FALSE to have mouse-functionality in the graphics device.

**Value**  
a vector with the updated player colors

getPlayerNames  

**Description**  
help-function which gets and returns the players’ names

**Usage**  
getPlayerNames(PlayerNames, MACuser)

**Arguments**  
- **PlayerNames**: array of characters: the players’ names.
- **MACuser**: boolean: on some non-mac computers this can be set to FALSE to have mouse-functionality in the graphics device.

**Value**  
a vector with the player names
**NewField**

*Generate a new field*

**Description**

help-function which "throws" the stone into the field and returns the new field

**Usage**

`NewField(field, column, player)`

**Arguments**

- `field`: matrix: the playing field.
- `column`: integer: the column chosen by the current player.
- `player`: integer: the current player.

**Value**

The updated field matrix.

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**painter**

*logo painter*

**Description**

a general help function to plot

**Usage**

`painter(numberMatrix, colorArray)`

**Arguments**

- `numberMatrix`: a matrix with different integers showing which color to pick from the `colorArray`.
- `colorArray`: a character array with different names of colors to be used by the painter.
plotlogo

Description
plot the "different purpose" logo

Usage
plotlogo()

resample

Description
resampling function

Usage
resample(x, ...)

Arguments
x
...  a vector
other parameters

Value
a vector

References
Help function from ?sample to overcome the "sample(ret, size = 1)" problem for length(ret) == 1
typing  

Description
help-function which returns, the key on the keyboard which is being typed

Usage
typing(key)

Arguments
key  a keyboard input.

Value
the key pressed.
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