PROGRAMMING TECHNOLOGY

Rubic Clock task 10.

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TASK: Rubic Clock

Create a game, which implements the Rubik clock. In this game there are 9 clocks. Each clock can show a time between 1 and 12 (hour only). Clocks are placed in a 3x3 grid, and initially they set randomly. Each four clocks on a corner has a button placed between them, so we have four buttons in total. Pressing a button increase the hour on the four adjacent clocks by one. The player wins, if all the clocks show 12. Implement the game, and let the player restart it. The game should recognize if it is ended, and it has to show in a message box how much steps did it take to solve the game. After this, a new game should be started automatically.

Solution

RubicClockGUI: for rendering window

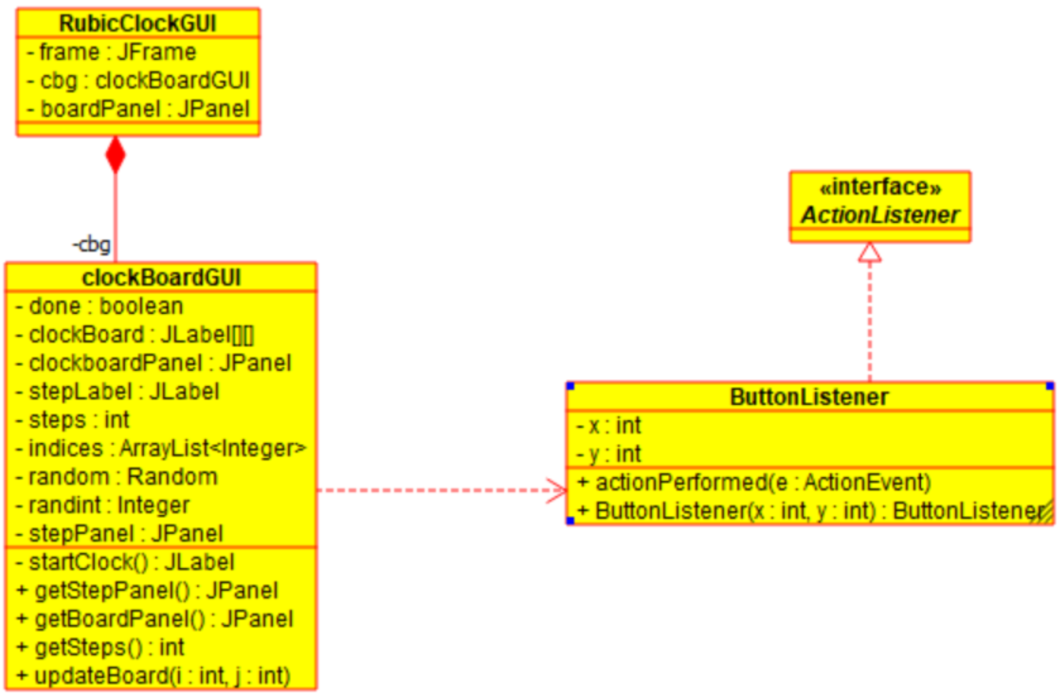
clockBoardGUI: for rendering game board and step panel

- clockBoardGUI() : generates game board
- getBoardPanel() : returns game board panel
- getStepPanel() : returns step panel
- startClock() : assigns random value for each clock(JLabel) on game board
- isOver() : checks if all clocks show 12

buttonListener: class in clockBoardGUI, to handle button events.

- actionPerformed() – event handling function

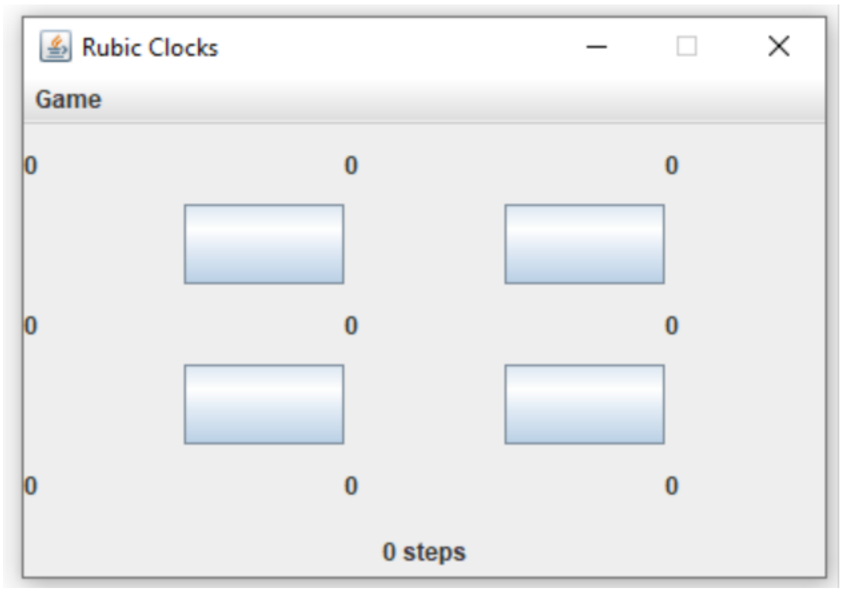
UML Diagram



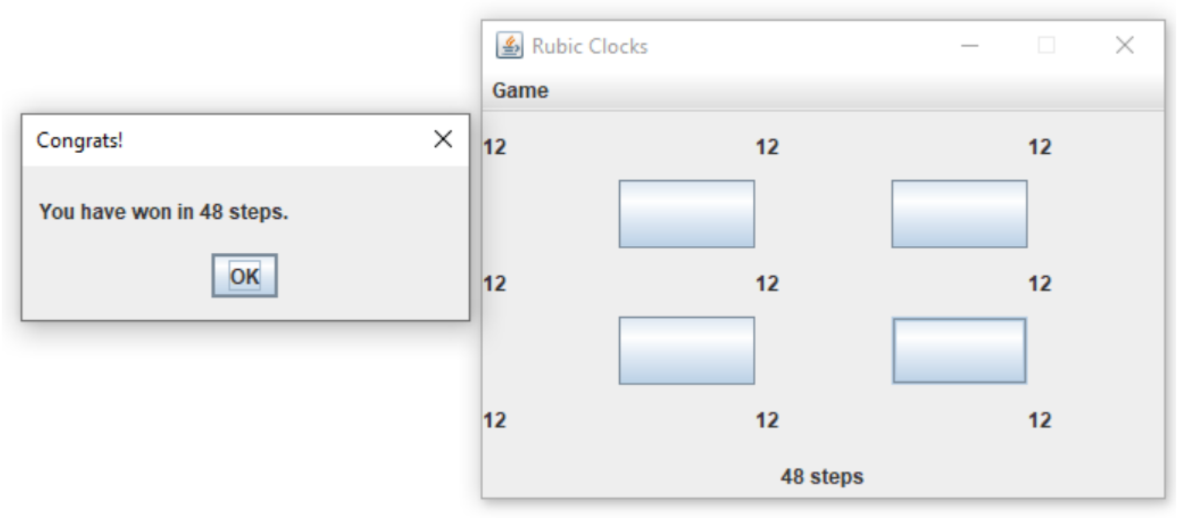
RubicClockGUI
- frame : JFrame
- cbg : clockBoardGUI
- boardPanel : JPanel
-cbg
clockBoardGUI
- done : boolean
- clockBoard : JLabel[][]
- clockboardPanel : JPanel
- stepLabel : JLabel
- steps : int
- indices : ArrayList<Integer>
- random : Random
- randint : Integer
- stepPanel : JPanel
- startClock() : JLabel
+ getStepPanel() : JPanel
+ getBoardPanel() : JPanel
+ getSteps() : int
+ updateBoard(i : int, j : int)
«interface»
ActionListener
ButtonListener
- x : int
- y : int
+ actionPerformed(e : ActionEvent)
+ ButtonListener(x : int, y : int) : ButtonListener

Testing

Example1 (labels set on 0 on purpose, to get easy win state)

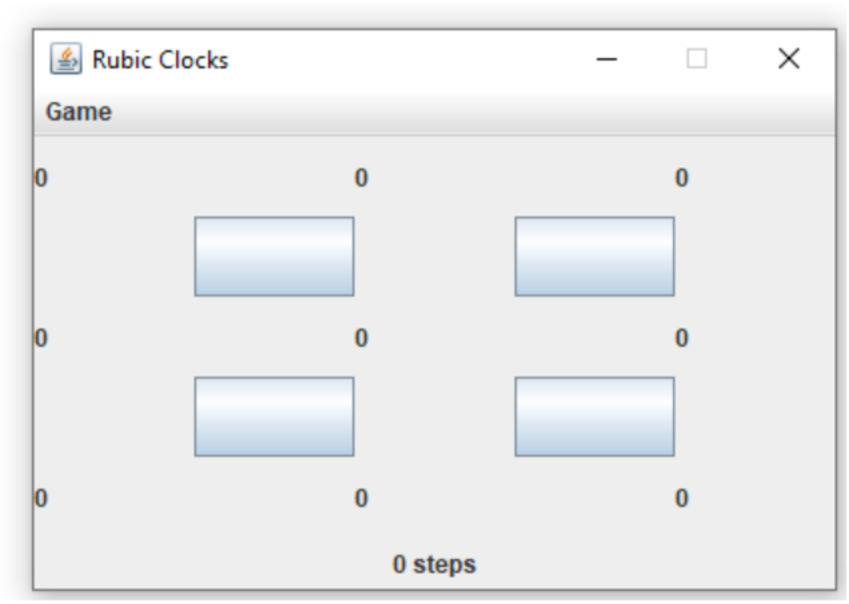


Winning case of example1

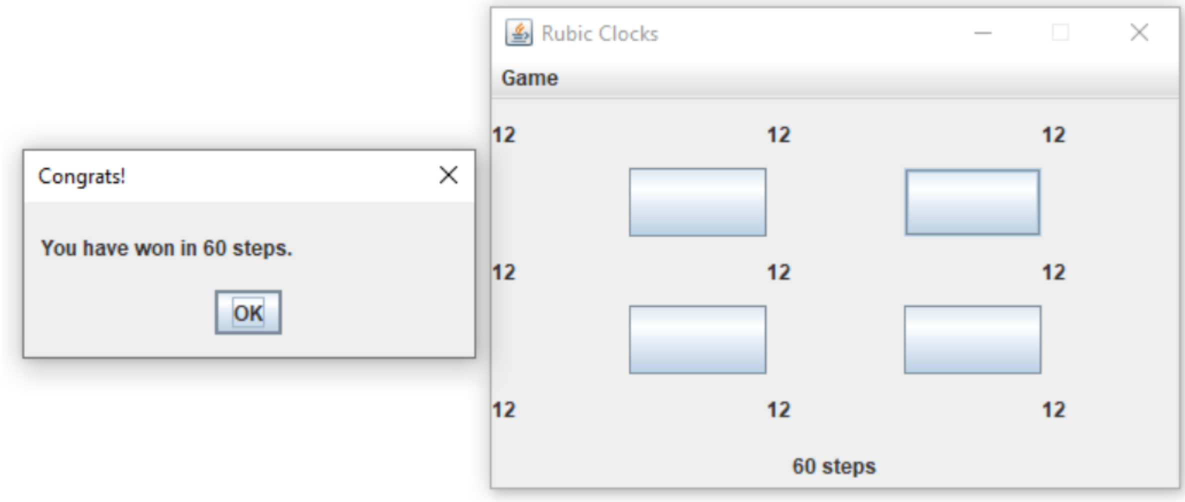


You have won in 48 steps.

Example2 (labels set on 0 on purpose, to get easy win state)

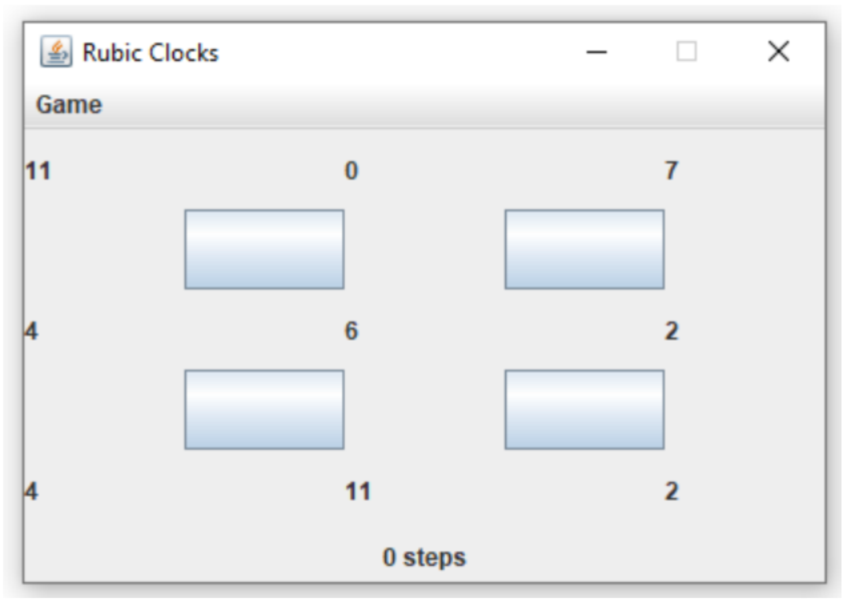


Winning case of example2

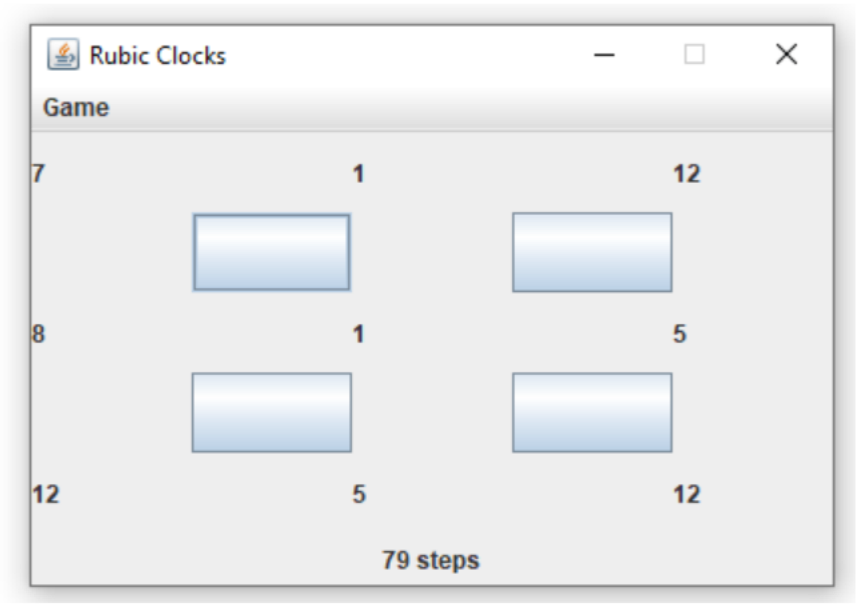


You have won in 60 steps.

Example3 (set on random numbers)



Random numbers gameboard winning state takes much time, not finished..


Rubic Clocks
Game
7
1
12
8
1
5
12
5
12
79 steps