

Software User Documentation

Topic: Sudoku for All

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Introduction:

Sudoku is a game that improves the brain function of the player. The game is easy to learn for player of any age. Due to the game having need for low math skills has made it one of the most popular solving puzzle games. As it is found in different media sources. The challenge comes for the software developer is how to make create algorithms which will keep the game entertaining for the user.

Rules of the game:

- I. Each 3x3 sub grid can have digit from 1 to 9 exactly one.
- II. Each row can have digit from 1 to 9 exactly one.
- III. Each column can have digit from 1 to 9 exactly one.

Java technologies utilized:

- 1. Java FX framework
- 2. Java Integer Streams
- 3. Lambda coding



This is our sudoku application.

The user enters numbers in each empty cell so each row, column, and the nine 3x3 blocks. Each cell would contain number from 1 to 9 once.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 9 | | 3 | 4 | 8 | 6 | 7 | 5 |
| | | 7 | 2 | 6 | 1 | | 9 | 8 |
| | 6 | 3 | 5 | 7 | | | 2 | 4 |
| | 3 | 8 | 4 | 9 | | 7 | 1 | 6 |
| | 1 | | 8 | 2 | | 9 | 4 | 3 |
| | | 9 | 1 | | | | | 2 |
| 9 | | 1 | 6 | | 3 | | | 7 |
| | | 5 | 9 | 8 | 4 | 2 | | 1 |
| | | 4 | 7 | | | 5 | 3 | 9 |

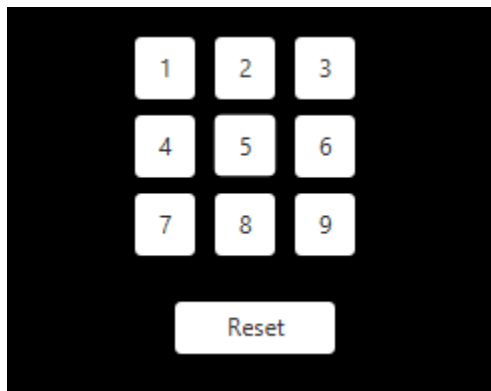
Figure 2.

This is the drawing space.

Initially a sudoku pattern is present depending upon its difficulty, when the application launches, a medium difficulty sudoku pattern is set as default.

We have a 9x9 grid, with some empty cells, user will play the game by populating those empty cells using numbers between 1-9.

User will mouse-click the cell where he/she wants to enter the value, that cell will be highlighted by blue color as shown in the Figure 2.



To enter the value, user will choose a number between 1 to 9 and click on the button corresponding to that. We have 9 buttons with numbers written on it from 1-9 as shown in the figure.



Suppose, if we click the 7 numbered button, the selected cell (highlighted by blue) will be populated by the digit 7.

Program options:

Difficulty: We have 3 difficulty options for the player, Easy, Medium and Hard. And we have these three buttons as shown in the figure to set the difficulty level of the game.

Reset button is also there, when we click this button a new Sudoku pattern is generated.

with the same difficulty. The console generates the solution pattern for the specific sudoku puzzle.

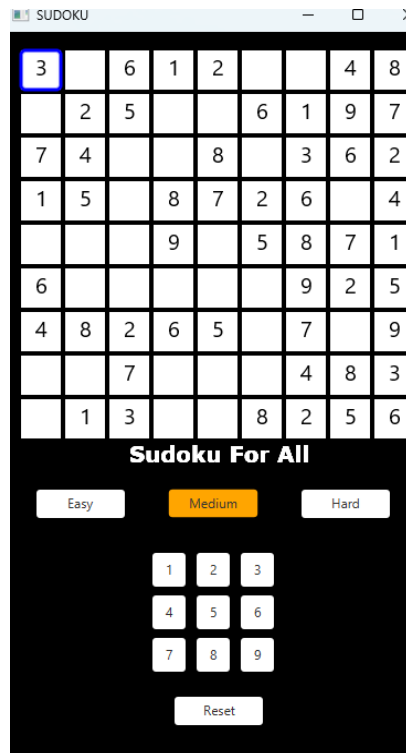
Easy Mode:

10 empty cells Empty



Medium Mode:

30 empty cells



Hard Mode:

50 empty cells



Reset button: is also there, when we click this button a new Sudoku pattern is generated.



With the same difficulty. The console generates the solution pattern for the specific sudoku puzzle.



This way we fill all the empty cells in the 9x9 grid, and the game won't stop till we reach the correct solution. As soon as we solve the Sudoku correctly, the game will terminate with a "Congratulations" banner as shown in the figure.

