

Sudoku Game

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January 30, 2021

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1 Introduction

Sudoku in Japanese mens (– su:doku) which very popular puzzle games with a number. It means “su” - {number}, {doku} “the digit number”. Sometimes they call “magic square” but it doesn’t mean it’s correct, because it’s reveal 9 latin square. Sudoku active published everytime in the world and it has fastest growing puzzle in the world. The grow started in Japan from 1980 years and sometimes ago no one in Europe never heard about this game. From 2004 British publishment started showing this puzzle and in 25th puzzle was published as a tv show. Nowadays you can see this puzzle in a magazine, newspapers and ther’s a lot of websites where you can play on your phone and download this apps. The puzzle has 9x9 partition lower square direction 3 cell. Such a way all the playing area has 81 cell. In that playing area from the beginning to play has some number (from 1 to 9) in that empty playing area doesn’t make any sence. I want to tell you

that the difficulty of this puzzle game depends of the empty cells number. Let's take a screenshot fully field of sudoku puzzle and he tell us everything about this game rule. See that all horizontal row, any verticaly column, every iniquatiti. Are the numbers in random order? Confuse? But no. As I said you before, since in aech row and every mini square column totally 9 cells and you need to arrange the numbers between 1 to 9. According to the rules every numbers may appear in a row only for one time. Our opinion the sudoku, isn't original puzzle, but it's introduce difficulty modification that time square. Which was created by Swedish mathematics Leonard Euler from the last XVII. However the sudoku conqueror the world. The classical version has 79 cells. For the first level it's difficult to children that's why we recommend to use the less cells.In selectical sudoku the numbers in row isn't stragglng. That has from 0 to 9 and geometric figures.

1.1 Japan historical information

Everyone knows how appear the japaneze sudoku puzzle, but they just help to distribution this puzzle in the world. There's a type of prototype of sudoku just we can call is published in 1980th in French newspaper which name is "Le Siecle". That puzzle is that time haven't got a modern look yet, but they suggest the coping decision mechanism solution. After that sudoku resume the journey around the world and in 1978th Hwoard hans from Indiana published in "Dell Magazines" some puzzle "Number place" that we can deseeded one of the first modern sodku puzzle. That sudoku was presented Japanic publish from Japanese publisher his name was Nikoli and in his monthly "Monthly Nikolist" from April 1983th that time we can start to counting puzzle mania. At the end of 2003th British newspaper "Times" was typing puzzle in his every pages. Nowadays sudoku important things of many newspaper. There's many multi mullion companies that has million copies who used puzzle in newspaper. For example Germany "Die Zeit" Australian "Der Standard" which is most famous. From 1980th Japan publishment Kayi Maki was used and the name of puzzle "Sudoku" in they're newspaper. With this logical names the puzzle have popular In USA, Europe and in Australia. The most years was 2000-2008th. However in our we have a lot of club with tournament and some game show. The books and newspaper solds with to much money. We also can play with mobile phones and our laptop.



Figure 1: Japanese Sudoku

1.2 Software requirement and principles

I'm gonna to create sudoku puzzle and it has several stages: 1. Creating the destruction 2. Creating what will use 3. Launching game and cheking the result There's most important and the most interesting is creating planning of sudoku. The puzzle has 9x9 partition lower square direction with fill numbers from 1 to 9 and from horizontal, to verical in square 3x3 numbers can't repeated. So here we can see that different users like parties in the project users: First person of this puzzle: He want to play on his laptop Second one is a manager: He want to see how many person are playing this game at this moment Third one is: He want to see where's the mistake and he want to see this mistakes Fourth one is: He want see how difficult this puzzle

1.3 Unity 3D

For this project i will use Unity 3D.Unity is a tools to create 3d or 2d application and games. Which will work on windows and OS X. The games which was created and this tool can be used on Windows, OS X, android, iOS, linux and Wii,Playstation 3, Xbox. We also can create browser games for creating browser games you need to install Web player. Also applica-

tion which was created by Unity can be supported by DirectX and OpenGL platform.

Specificaty: • To many scenses programming language. F.x C, JavaScrip, Go. • We can run on the platform. • We can easily use. • Easy way to import. • Without any problem we can customize.

1.4 Visual studio 2019

Microsoft Visual Studio – It's Microsoft product which included integrate the software to create application without any problem. Visual studio also included IntelliSense with capability to use the code. The debbuger which included on the system can work easily or machine level. Other building tools it's form editor to create graphical interface, like web editor or graphical database designer. We can also create or connect another plagins to see more function in every level, which will support the system to control the version SorceSafe. Visual designing it's specific programming languages development process. Like Team Explorer. Visual studio for my opinion it's a best alternative to MonoDev which was on the box Unity.

1.5 Use case of application

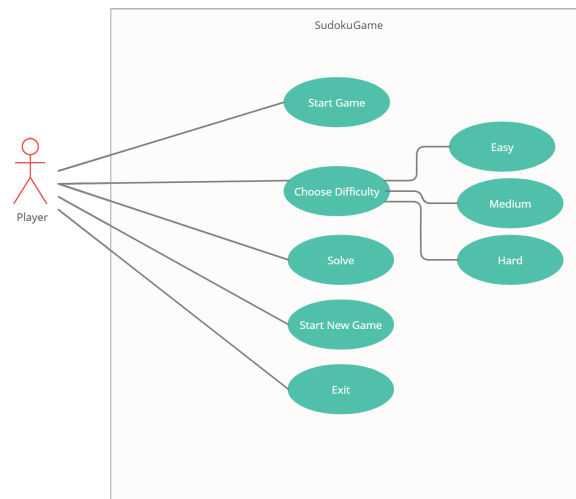


Figure 2: Use case Diagram

On this diagram we can see the process how it's should be. First of

all we will click the start and game will start. After that we can chose how difficult the game will be it's a selection an action. From that we can play or select exit game. In that plae we can see about app where is written about application and developers name. See the results will show us the result and we can see our results or we can choose new game. I'm want to say about last information and the project was written in C with unity engine. I choose that programming languages becouse of it's easy and good option to learn. We can understand how to create a code. Unity engine working with a lot of structure. It can be reads all of information in game scene. To object which I used a game we can write a script which specialization on that engine. To start using unity engine first of all we need to learn c programming languages after that we can probably use unity engine.

1.6 UML Diagram

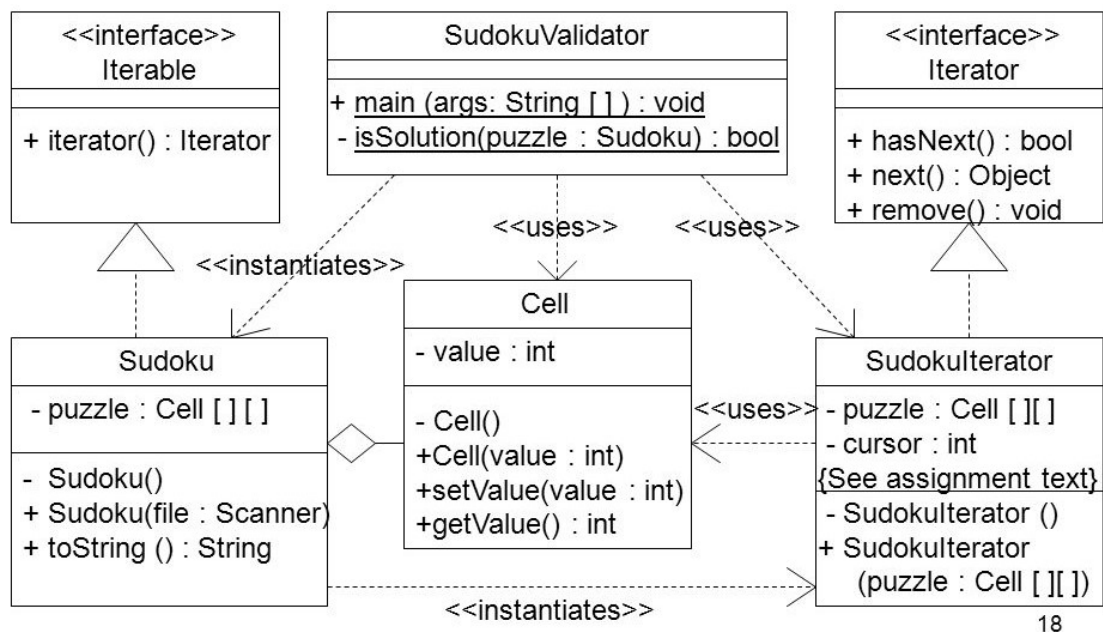


Figure 3: UML diagramm

This is a UML diagramm of an application

2 Testing

For the overall acceptance test, we will be testing the requirement from the user story: - As a user, I want the game to give me an error if I input an unacceptable input in the game. (vice versa, if the input is acceptable, the game verifies) For the following test, we will be looking into the 3 major aspects to complete the test 1. User enters the game 2. User clicks on a square to clarify which square is in focus 3. User enters a value a. The game either accepts the value b. The game gives error about unacceptable value To test the following requirement using acceptance test, we will be using screenshots to demonstrate how the user might interact.

1. User enters the game

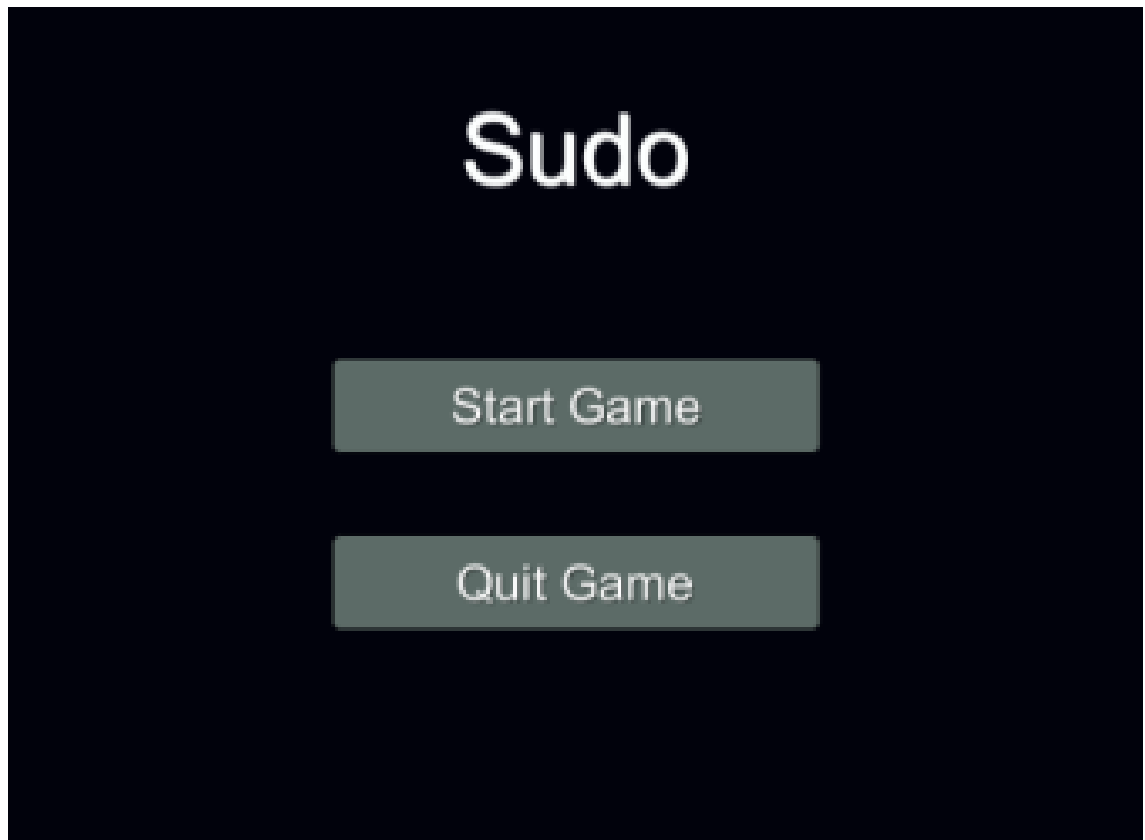


Figure 4: To start the game, user would press on the 'start button'

2. User clicks on the square to focus

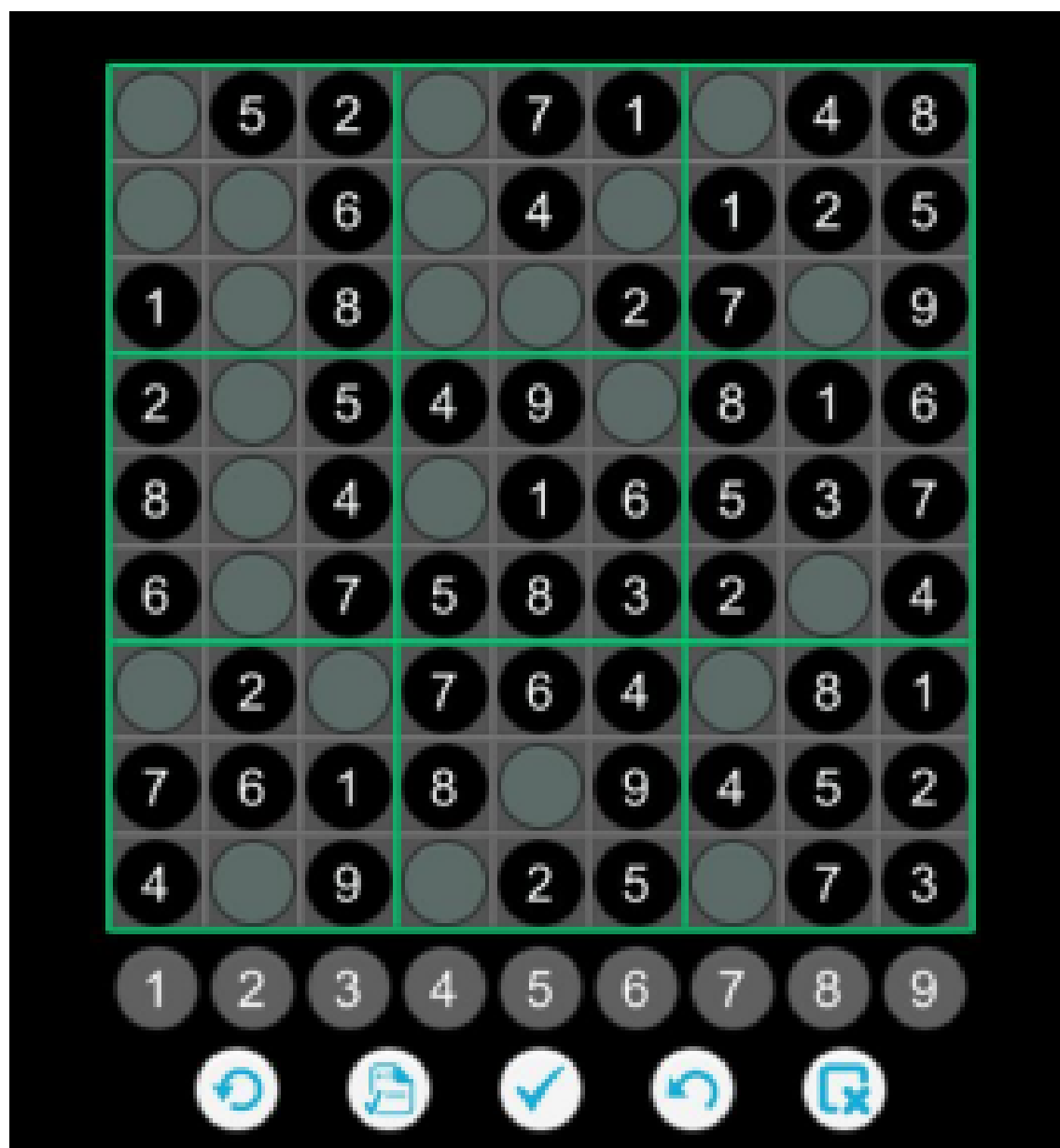


Figure 5: a board is generated for the user

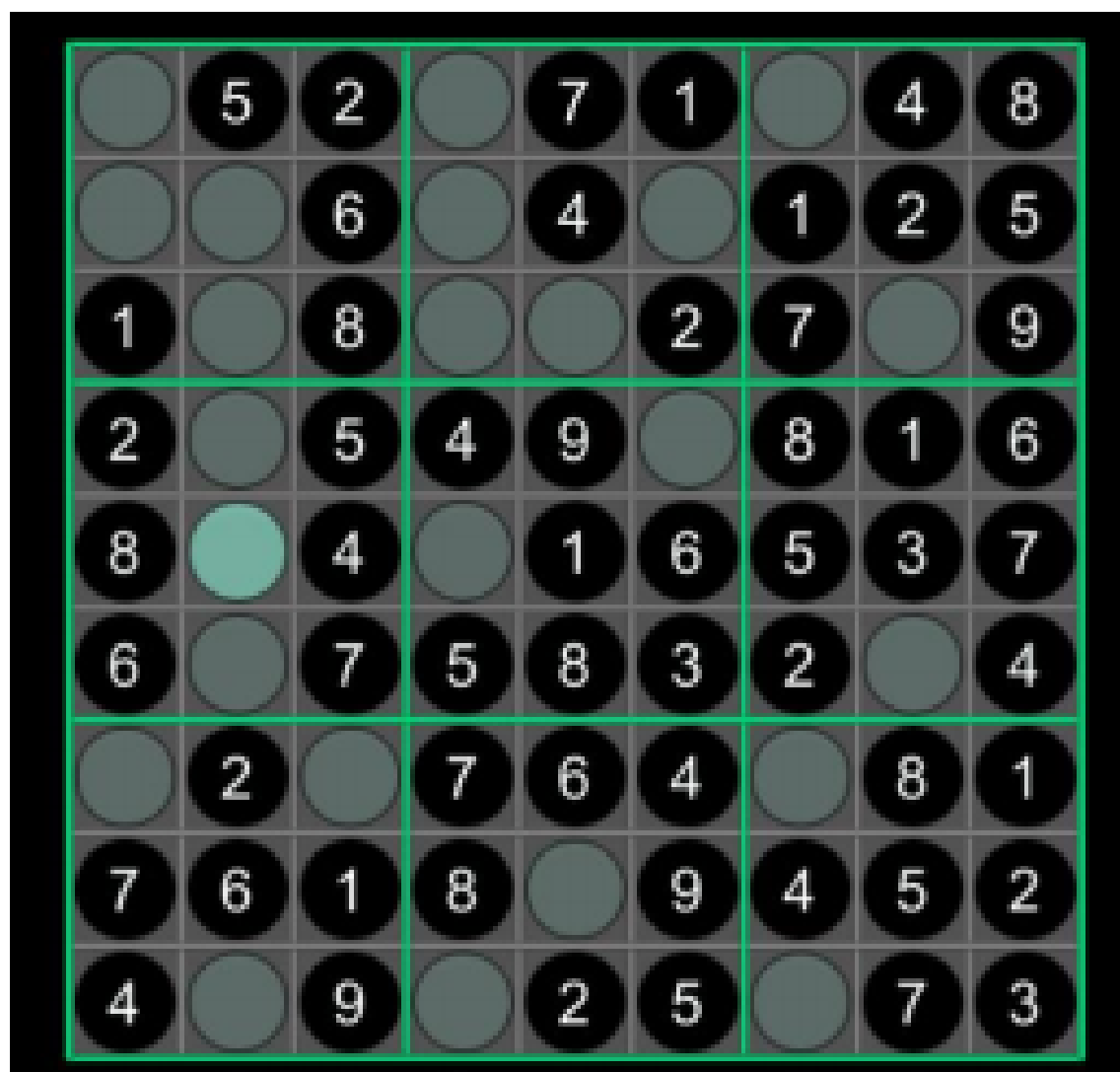


Figure 6: the square is highlighted using different color

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3. User enters a value into a square User then validates the number



Figure 7: The user inputs a number into the square (in this case the centre '9' was inputted)

inputted

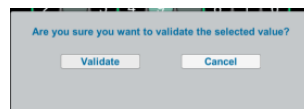


Figure 8:

- a. If the number is acceptable value, the game continues
- b. If the number is not valid, the game warns the user

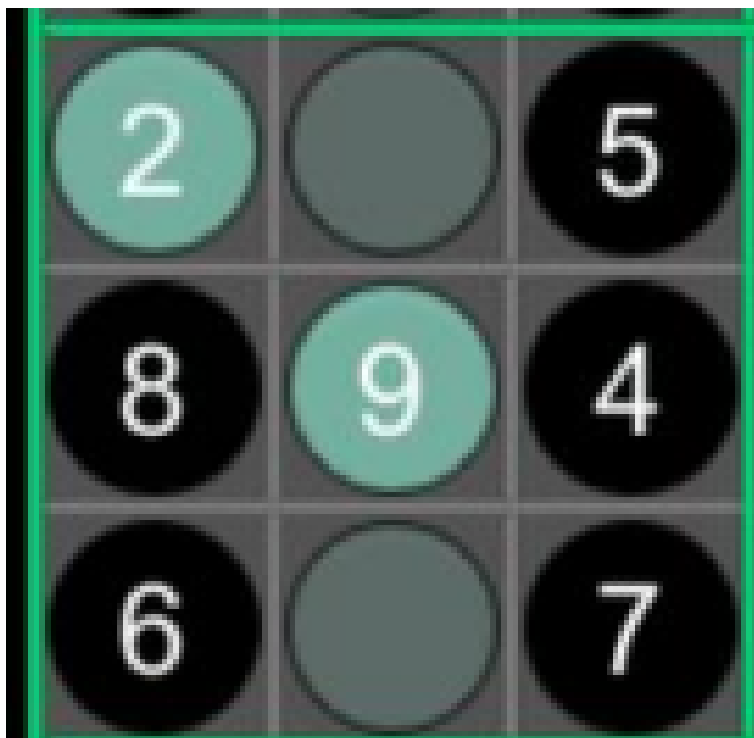


Figure 9: 9 in this case is acceptable, therefore the game continues

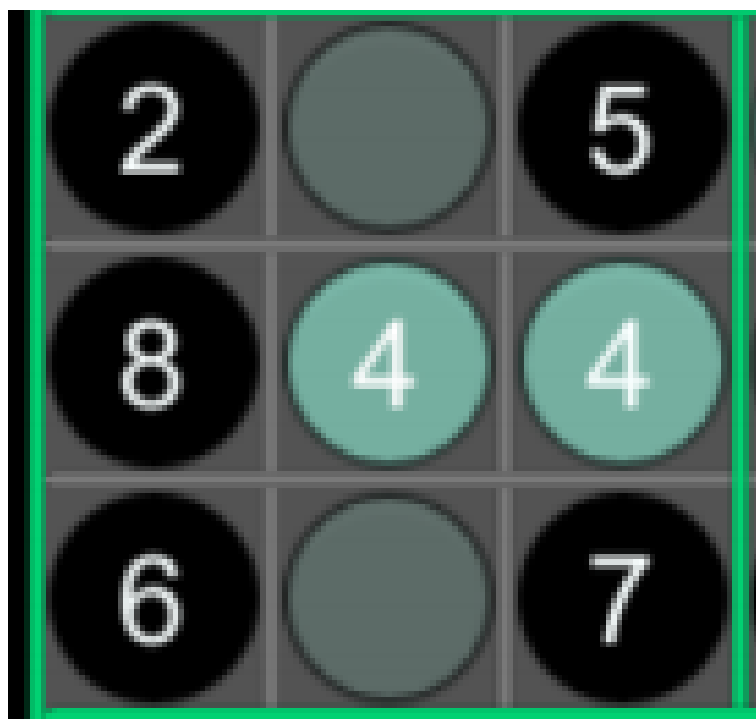


Figure 10: inserting 4 should give an error since it's a duplicate

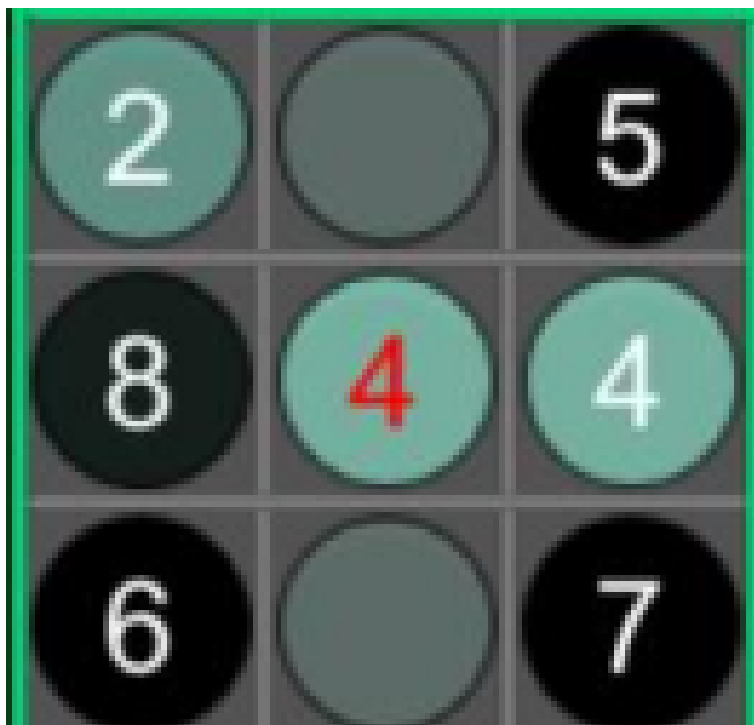


Figure 11: User is warned of the invalid number

3 Summary

Sudoku distinguish in level difficulty it depends on the size of square for the professional players exist puzzle like 15x15 and 16x16 square. There's a sudoku puzzle, which can be specify in separate numbers in each sell, and sum of digits numbers particular of sells. Sudoku can be divided into rectangular blocks of different sizes and inside each field the sum of the digits included on it's indicated. There's also another type of sudoku, which doesn't have square blocks but rectangular ones. In this case I used two application for windows. It's a visual studio and unity 3d engine. For creating this sudoku application can help the some instruction and books from wiki and very important things it's a knowledge which I got to study in Computer Science. The main point is a present result of studies in computer science. So I if I going to say about my thesis we should go for the first page in that page I write the historical information about sudoku and there were types of sudoku after that I show the how my application will be with some screen. For the last term is a code of my application which was written in very popular language is a C and design was creating in unity.