

# SUDOKU AUTOSOLVER

## USER MANUAL

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[illegible]

The puzzle is further subdivided into 9 boxes made up of 9 squares in a 3 by 3 grid. The boxes are numbered 1 (from the upper left corner) to 9 (the lower right corner). Box 1 is made up of the following 9 squares (spanning from r1c1 to r3c3):

R1c1	R1c2	R1c3
R2c1	R2c2	R2c3
R3c1	R3c2	R3c3

Within a Sudoku puzzle, any single row, column or box is also known as a house. The key rule to solving Sudoku puzzles is that each house (row, column and box) must have exactly one occurrence of the digits 1 through 9. A digit may not be omitted, nor may a digit be repeated within a house. We'll refer to this as the House Rules.

## Sudoku puzzles:

A Sudoku puzzle is presented with somewhere between 171 and 80 of the 81 squares filled in with digits. To solve the puzzle, you must deduce the placement of the digits in every blank square. Most Sudoku players agree that a Sudoku puzzle must have one and only one solution; that is, if there is more than one value possible for a blank square, then the puzzle is not a valid Sudoku. Without this

precondition, many of the deductive solving techniques employed on more difficult puzzles would fail.

These simple rules allow for a very, very broad set of puzzles ranging in difficulty from simple to insanely difficult. In general, a “good Sudoku” puzzle is one that may be solved through logic and deduction; no guessing is required. There is often debate as to where the line between logic and guess work lies; this guide will explain how Sudoku Solver does things. From there, you can learn more by using Sudoku Solver, working on puzzles, reading other sources on Sudoku puzzles and deciding what works best for you.

## Sudoku Solver

Sudoku solver is a cpp program. It can be used to create a Sudoku and allows you to validate it by finding whether the Sudoku has any solutions or not.

The basic idea of this user manual is to guide to through to how to use the program effectively. There are two parts of this manual. The first part helps you with how to play the Sudoku. The second part helps you to get a solved Sudoku from the computer.

## How to play the game

- Run the program in a compiler to start the game.
- The main menu that appears contains three options.

- They are New Game, Auto-Solver, High scores.
- There are three buttons at the title bar to Close, Minimize, and Maximize.
- Click the button that reads New Game.
- Three options will be visible for you which include Easy, Medium, Difficult.

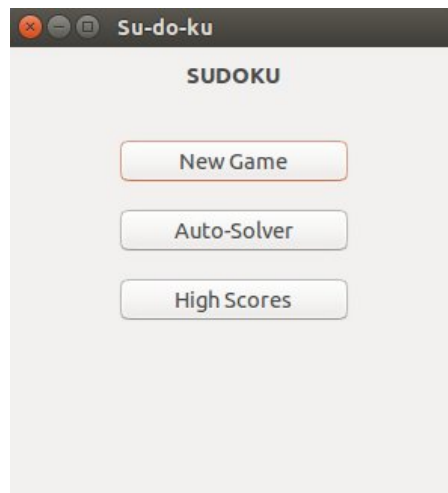


Figure 1

- New Game allows you to play the game Sudoku.
- By clicking New Game, a new window will pop out which allows you to play the game.
- Easy allows you to play the game in the easy level.
- Medium allows you to play the game in the medium mode.
- Difficult is used to play the game using the difficult Sudoku.

Clicking New Game brings out a new window that looks like the following window:

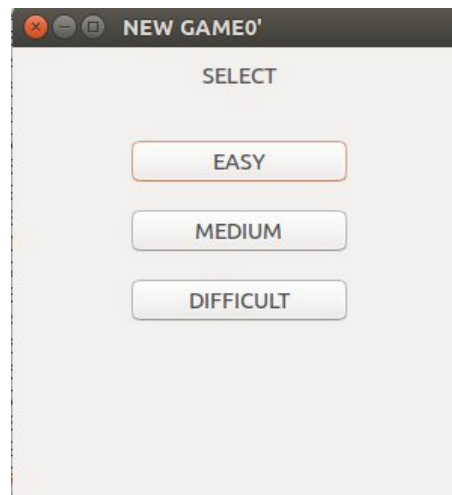


Figure 2

It allows you to choose the difficulty level. Each level has independent high scores recorded.

The level of difficulty is based on the number of entries at the beginning of the puzzle as more or less it is the best way of deciding the difficulty level.

Each level allows you to fill the empty squares(squares filled with zero's). The two options that are provided are: Check and Solve.

The game window looks similar to the following window:



Figure 3

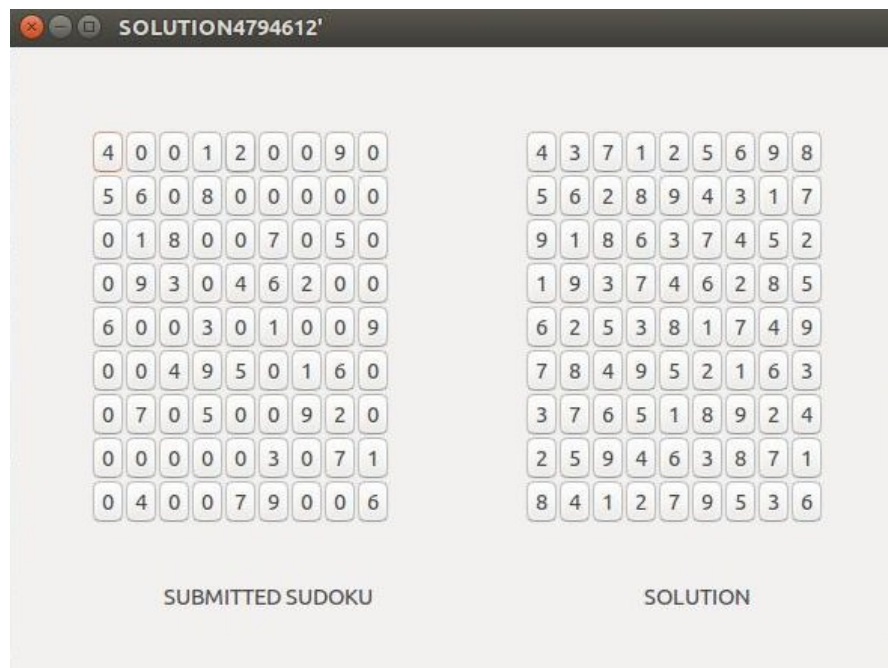
The game is made to be user friendly. It checks whether your entry is a valid entry or not. You cannot add an entry which does not obey the rules of Sudoku in the grid.

Check allows the user to check whether the answer he wrote was correct or not. The timer starts as soon as the level of difficulty is chosen. The timer stops after clicking the Check button and if the answer is correct then the time is checked with the existing high scores.

Solve button gives the correct solution to the Sudoku solved by the computer and allows the user to compare the answer with his solution.

All the inputs given to the user are made sure that they give rise to an unique answer.





## High scores

The high scores can be checked at the main menu. Once the score of the user is noticed to be a high score the score is noted along with the name of the User.

To access the High scores, click the High scores button at the main menu. This creates a window showing the list of High scores.

HIGH SCORES		
EASY		
Sr. No.	Time(sec)	Name
1	12	Rishabh Agarwal
2	11	Abhishek
3	14	Chitraang
4	10	Yogesh

There are three tabs at the top Easy, Medium, and Difficult.

Each one of the tab stores the list of high scores in that particular level of difficulty. To arrange the list of user's high scores in ascending order of Time taken by the user, we have to click the tab referring to the time column, Time(sec).



The screenshot shows a window titled 'HIGH SCORES'. It has three tabs: 'EASY', 'MEDIUM', and 'DIFFICULT'. The 'MEDIUM' tab is selected. Below the tabs is a table with three columns: 'Sr. No.', 'Time(sec)', and 'Name'. The table contains four rows of data. The 'Time(sec)' column header has a small upward arrow next to it. At the bottom of the window is a button.

Sr. No.	Time(sec)	Name
2	10	Shubham Goel
1	11	Gurjot
3	12	Pramod
4	14	Lohith

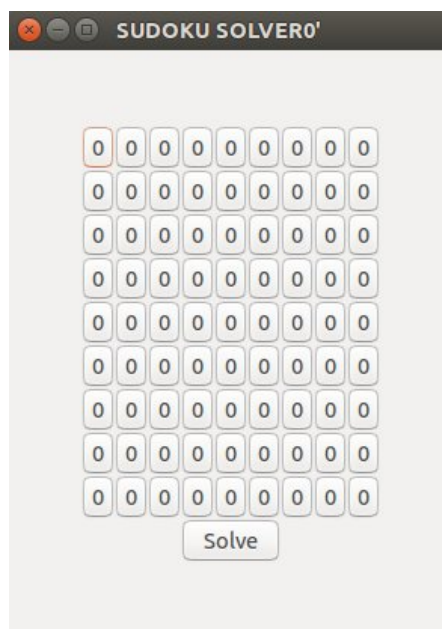
This will help you to play any tough Sudoku and enjoy playing!!!...

## Using Sudoku Solver

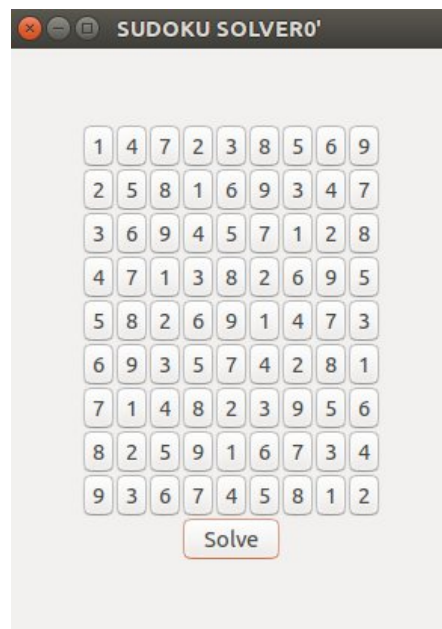
The Sudoku auto-solver helps you to get a solution for a Sudoku within seconds. If there are multiple solutions for the Sudoku, then one of the solution will be shown.

You can access the solver by clicking the option, Auto-Solver in the main menu that pops out right after running the program.

- The background looks like:



- All the numbers are initialized to zero at the starting.
- On clicking the square in which you want to enter the number a new window pops out as follows:
- Once the inputs are given leave the other squares to be zero. Finally click the Solve button to get the solved Sudoku.
- If the Sudoku has no solution then the program returns an error message reporting that the Sudoku has no solution..!
- Finally, the solved Sudoku looks like the following:



# LIVE THE GAME !!!!!

