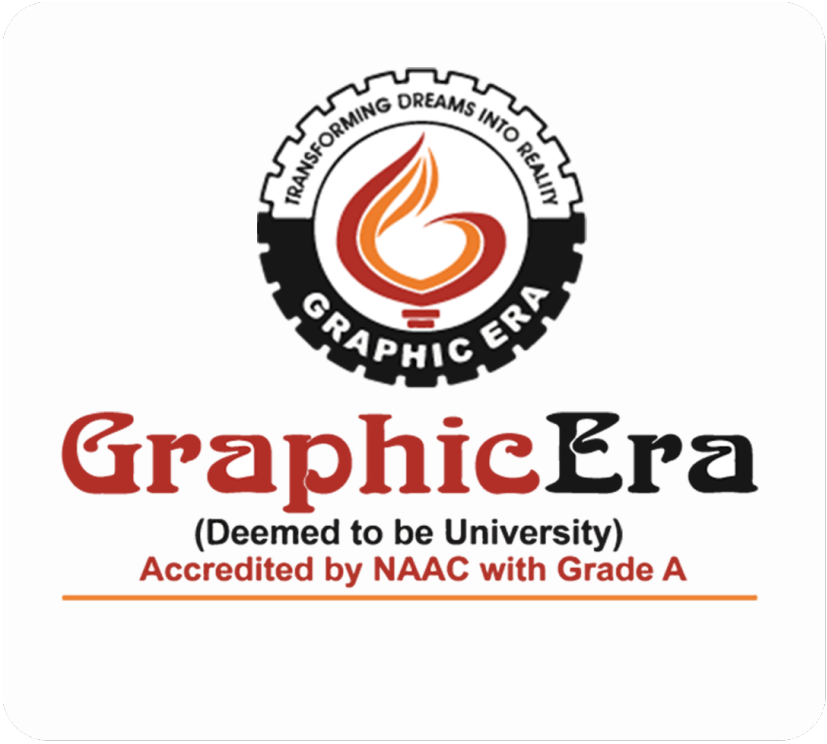
Project

On

SUDOKU SOLVER

(IT IV Semester)

2020-2021



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ABOUT THE PROJECT:

Sudoku is a logic-based, combinational number-placement puzzle. In a classic sudoku, the objective is to fill a 9*9 grid with digits so that each column, each row, and each of the nine 3*3 sub-grids that compose the grid contain all of the nine digits from 1 to 9. The puzzle setter provides partially completed grid, which for a well-posed puzzle has a single solution.
For example: the same integer cannot appear twice in the same row, same column or same sub-grid. The logic behind it is to check a number column wise and note the integers that could be best fitted in the empty grid cells and then to see the entered digit is rightly placed or not.
The programming language used to make the sudoku solver is C++.

REQUIREMENTS OF THE PROJECT:

HARDWARE REQUIREMENTS:

- PROCESSOR: Dual-Core Intel Core i5
- RAM: 8 GB
- OS: macOS Catalina (Version 10.15.6)

SOFTWARE REQUIREMENTS:

- Visual Studio Code
- OS: macOS Catalina (Version 10.15.6)
- TURBO C++
- Online GDB
- Any other software supporting C and C++

MODULES OF THE PROJECT:

1. enterAPuzzle( ): This function is used to enter the sudoku puzzle which will be partially and the places where we have to fill the number is previously entered as 0.
2. getFreeCell( ): This function helps us to know the number of free cells available int the 9*9 grid so that a suitable integer be entered. The free cells are initially marked as zero.
3. printGrid( ): This function prints the complete 9*9 grid after solving the puzzle.
4. Search( ): In this function it first checks a free cell if the cell is free or in the case of this program if it contains zero then it goes on to search a solution whether it is appropriate row wise and then column wise and then 3*3 grid wise. And once the solution is entered into a free cell it then moves on to the next free cell.
5. isValid( ): This is the function in which the solution entered in a free cell is checked row-wise, column-wise and 3*3 grid-wise.
6. Main( ): The program execution will start from here. First it calls the enterAPuzzle( ) function (where we are as users asked to enter the puzzle), the it calls isValid, then it calls search( ) function and last it calls the printGrid( ) function to print the function after solving the puzzle.

OUTPUT OF THE PROJECT:

The output of the project first shows the introduction of the student then by clicking on enter the program asks the user to enter the sudoku puzzle. After entering the puzzle the program prints the sudoku after solving.

REFERENCE:

1. GEEKS FOR GEEKS
2. CPPFORSCHOOL
3. W3 SCHOOL