

CS101

COURSE PROJECT

SLOT - 11

GROUP-16

PROJECT REPORT

PROJECT TOPIC : Sudoku- The Mind Game

INTRODUCTION

Sudoku, originally called **Number place**, is a logic-based, combinatorial number placement puzzle. The objective is to fill a 9x9 grid with digits so that each column, each row and each of the nine 3x3 subgrids that compose the grid(also called the “boxes”, “blocks”, “regions”, or “subsquares”) contains all of the digits from 1 to 9. The puzzle setter provides a partially completed grid, which for a well-posed puzzle has a unique solution.

Our project will take an unsolved Sudoku from the user or generate one depending on the user’s choice and enable the user to attempt it. It will also generate the correct solution if the user asks for it.

PROBLEM STATEMENT:

Either the user is provided with an incomplete Sudoku or the user himself is entering the one. User attempts to solve the Sudoku and the correct solution of the incomplete Sudoku is displayed

FUNCTION SPECIFICATION:

main()

- Sudoku is entered by the user or selected in accordance to the level of difficulty
- If the user decides to enter the incomplete Sudoku by himself then the program asks for the corresponding row, column and value of the known entries.
- The relevant functions are called to check the validity of incomplete sudoku.

user_solve_sudoku()

- The user attempts to solve the Sudoku and the program asks the user to enter the row, column and value of the position where he wants to input an entry
- A choice to display the correct solution is given

solvesudoku()

- Correct solution to Sudoku is obtained using this function.
- Various other functions like check_row(), check_column(), check_grid(), navigate() and display() are called

check_row()

- This function accepts a row and a number as its parameter.
- Checks whether we can put the number in the given row or not.
- If the number is already present in the row, it returns 0 to the main function otherwise returns 1.

check_column()

- This function accepts a column and a number as its parameter.
- Checks whether we can put the number in the given column or not.
- If the number is already present in the column, it returns 0 to the main function otherwise returns 1.

check_grid()

- This function accepts a row, a column and a number as its parameter.
- Checks whether we can put the number in the given grid or not.
- If the number is already present in the grid, it returns 0 to the main function otherwise returns 1.

navigate()

- This function moves control to the next cell in case we have already filled one cell with numbers from 1 to 9.

display()

- This function displays the solved Sudoku.

check_sudoku_row()

- It checks whether the elements in the rows of incomplete Sudoku entered by the user occurs once or not

check_sudoku_column()

- It checks whether the elements in the columns of incomplete Sudoku entered by the user occurs once or not

check_sudoku_grid()

- It checks whether the elements in the grid of incomplete Sudoku entered by the user occurs once or not

GROUP MEMBERS:

- | | | |
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