VIRTUAL SUDOKU

How to play: -

This is a logic based, combinatorial number placement puzzle. We know that Sudoku is a 9 x 9 number grid, and the whole grid are also divided into 3 x 3 boxes There are some rules to solve the Sudoku.

- We have to use digits 1 to 9 for solving this problem.
- One digit cannot be repeated in one row, one column or in one 3 x 3 box.

Using backtracking algorithm, we will try to solve Sudoku problem. When some cell is filled with a digit, it checks whether it is valid or not. When it is not valid, it checks for other numbers. If all numbers are checked from 1-9, and no valid digit found to place, it backtracks to previous option.

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About the program: -

- Define a method called isPresentInCol(), this will take call and num
- for each row r in the grid, do
    - if grid[r, col] = num, then return true
- return false otherwise
- Define a method called isPresentInRow(), this will take row and num
- for each column c in the grid, do
    - if grid[row, c] = num, then return true
- return false otherwise
- Define a method called isPresentInBox() this will take boxStartRow, boxStartCol, num
- for each row r in boxStartRow to next 3 rows, do
    - for each col r in boxStartCol to next 3 columns, do
        - if grid[r, c] = num, then return true
- return false otherwise
- Define a method called findEmptyPlace(), this will take row and col
- for each row r in the grid, do
    - for each column c in the grid, do
        - if grid[r, c] = 0, then return true
- return false
- Define a method called isValidPlace(), this will take row, col, num
- if isPresentInRow(row, num) and isPresentInCol(col, num) and isPresntInBox(row – row mod 3, col – col mod 3, num) all are false, then return true
- Define a method called solveSudoku(), this will take the grid
- if no place in the grid is empty, then return true
- for number 1 to 9, do
    - if isValidPlace(row, col, number), then
        - grid[row, col] := number
        - if solveSudoku = true, then return true
        - grid[row, col] := 0

- return false