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INTRODUCTION

- Rule:

  Fill a given grid(9x9) with the numbers 1 to 9, so that every column, row, and 3x3 box the numbers 1 to 9, keeping in mind that the same number doesn’t repeat in that particular row, column or the 3x3 box.

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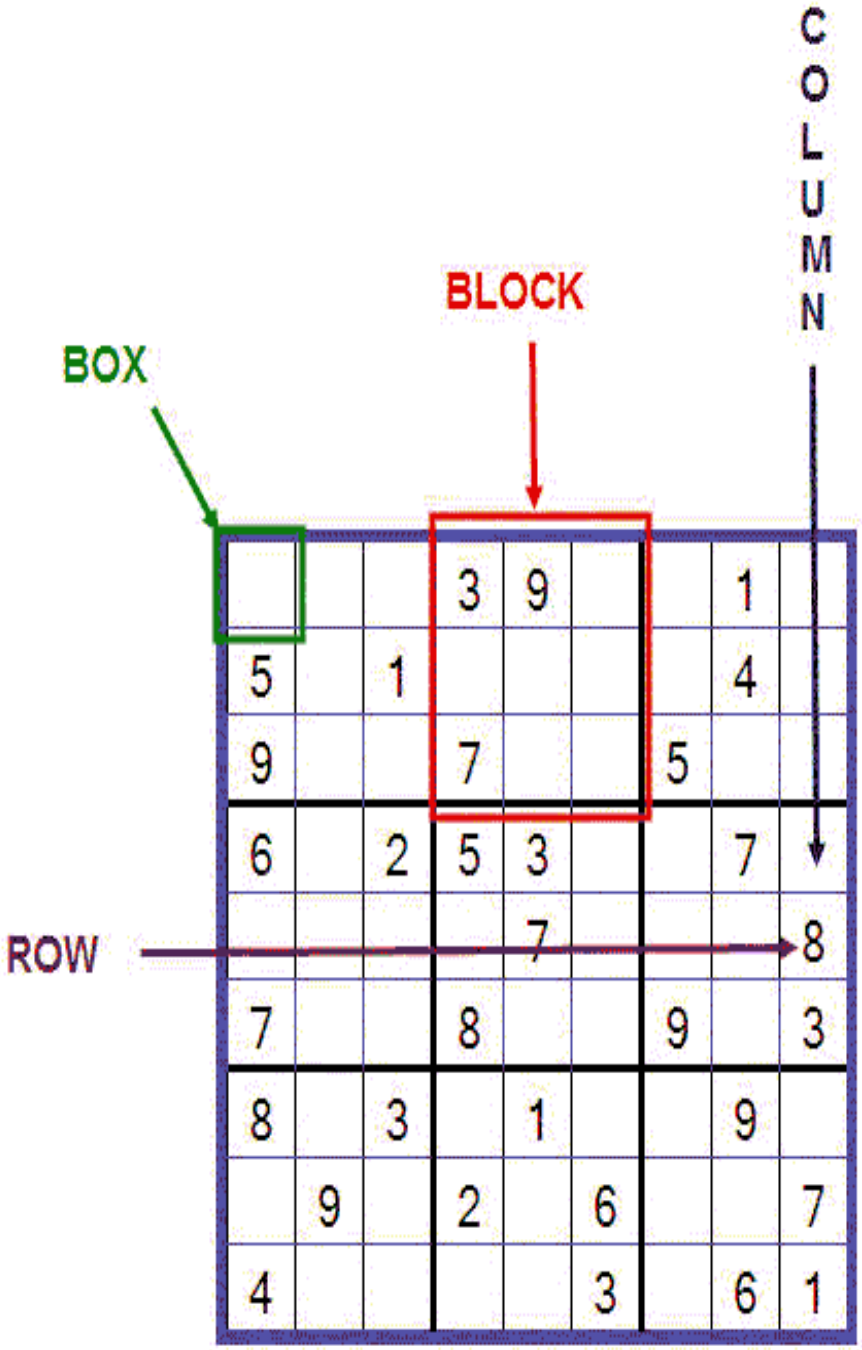
COLUMN
BLOCK
BOX
ROW
3 9 1
5 1 4
9 7 5
6 2 5 3 7
7 8
7 8 9 3
8 3 1 9
9 2 6 7
4 3 6 1

AIMS & OBJECTIVES

- To successfully implement a novel approach to solve computationally intensive problems like Sudoku.
- To solve the classical Sudoku puzzle USING Brute Force and Backtracking approach.

PROBLEM STATEMENT

- Our job is to place a number into every empty box so that each row across, each column down, and each small 9-box square within the large square (there are 9 of these) will contain each number from 1 through 9. Remember that no number may appear more than once in any row across, any column down, or within any small 9-box square.
- The **numbers will be filled with the help of pattern matching.**

PROPOSED SYSTEM

- Our project uses five main modules:
  1. Reading the input from file.
  2. Search for patterns.
  3. Provide solution.
  4. Compare the run-time
  5. Solve by Backtracking.

BACKTRACKING ALGORITHM

- Backtracking is a technique to solve problems where multiple choices are there and we don't know the correct choice and hence we solve problem with trial and error i.e. trying each option until goal is achieved.

  We basically check that the same number is not present in current row, current column and current 3X3 subgrid. After checking for safety, we assign the number, and recursively check whether this assignment leads to a solution or not. If the assignment doesn’t lead to a solution, then we try next number for current empty cell. And if none of number (1 to 9) lead to solution, we return false.

DESIGN (FLOW CHART)