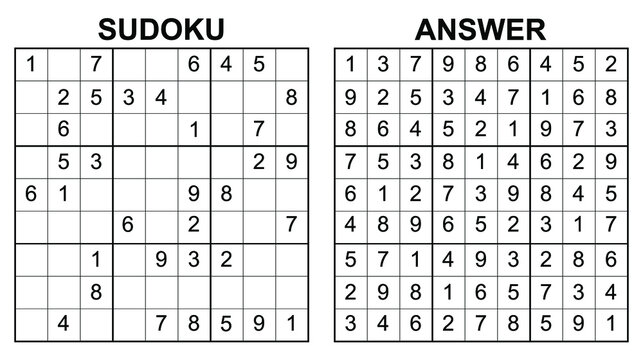
Sudoku Solver

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Introduction

Sudoku is a popular number puzzle game that originated in Japan. The objective of the game is to fill a 9x9 grid with digits from 1 to 9 in such a way that each column, each row, and each of the nine 3x3 subgrids (also known as "boxes") contains all the digits from 1 to 9 without repetition. The puzzle starts with some cells pre-filled with numbers, and the player must fill in the remaining cells following these rules.

In this project, we aim to develop an AI Sudoku solver using the Depth-First Search (DFS) algorithm combined with various logical constraints. The goal is to enhance the solver's efficiency and accuracy in providing solutions to any valid Sudoku puzzle and to compare the effectiveness of different logical constraints in speeding up the solving process.



Strategies

1. Basic – insert numbers 1-9 into cells row by row and backtrack.
2. Original cache - Create cache for all cells with legal numbers from original grid. Insert legal numbers into cells row by row and backtrack.
3. Updating cache – Create cache for all cells with legal numbers from original grid. Insert legal numbers into cells row by row, update the cache and backtrack with reverting cache.
4. Priority cell search – Create cache for all cells with legal numbers from original grid. Insert legal numbers into cells ordered by least legal options.
5. Priority number search – Try all cells but start with the number that is has the highest frequency in the grid.