Project 1

Title

Sudoku Game

Course

CIS-5

Section

40404

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Author

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Introduction:

Welcome to the Sudoku Game! This program allows you to play the classic Sudoku puzzle. Sudoku is a number-placement puzzle that involves filling a 9x9 grid with digits from 1 to 9. The objective is to fill each row, each column, and each of the nine 3x3 sub grids (called "boxes") with all of the digits from 1 to 9.

Game Play and Rules:

To play the Sudoku game using this program, follow these steps:

1. Run the program.
2. Enter the initial values for the Sudoku puzzle. Use numbers from 1 to 9 to represent the known values and use 0 for empty cells that need to be filled.
3. The program will display the initial Sudoku puzzle with a visual representation of the 3x3 boxes.
4. The puzzle will be solved by the program. The empty cells will be filled with random numbers between 1 and 9.
5. The program will display the solved Sudoku puzzle.

Remember to input valid numbers between 0 and 9 for the initial Sudoku puzzle. Invalid inputs will be flagged, and the program will exit without failure. Enjoy playing Sudoku and challenging yourself to solve the puzzle!

Summary:

Project size: About 90+ lines

The number of variables: 2

The code includes basic input validation to check if the user-input values for the Sudoku puzzle are within the valid range (0 to 9). However, the program does not check for the validity of the initial Sudoku puzzle (whether it follows Sudoku rules). The program only runs once, displaying the initial Sudoku puzzle and its solved version.

Flowchart:

1. **Start:**
    - Program execution begins.
2. **Set Random Seed:**
    - Set a random seed using the current time to ensure different random numbers each time the program runs.
3. **Declare Variables:**
    - Declare a 9x9 array to represent the Sudoku puzzle.
4. **Initialize Variables:**
    - Display a welcome message.
    - Prompt the user to input the initial values for the Sudoku puzzle.
5. **Input Initial Sudoku Puzzle:**
    - Use nested loops to read the input values from the user and store them in the array.
    - Validate input: If the input is not between 0 and 9, display an error message and exit the program without failure.
6. **Display Initial Sudoku Puzzle:**
    - Display the input Sudoku puzzle with a visual representation of the 3x3 boxes.
7. **Solve Sudoku:**
    - Display a message indicating that the program is solving the Sudoku puzzle.
    - Use nested loops to fill in empty cells with random numbers between 1 and 9.
8. **Display Solved Sudoku Puzzle:**
    - Display the solved Sudoku puzzle with a visual representation of the 3x3 boxes.
9. **End:**
    - Program execution ends.