

About the Project

This project is a simple 9x9 playable Sudoku with three difficulty levels: easy, medium, and hard. You can choose a level and enjoy the game.

What is in the Code?

The code starts by importing modules: `tkinter` for the GUI, `messagebox` for pop-up notifications, and `random` for selecting puzzles. It also imports Sudoku puzzles from the `sudokus` module.

The `Sudoku class` starts with the `__init__` function. This function sets the window title, size, background color, and initializes an empty 9x9 Sudoku board. The default difficulty is set to "Easy."

Next, the `widgets` function creates the GUI components. It has a difficulty menu, a Sudoku grid, and a "Check Solution" button. The grid uses `tk.Entry` widgets for user input.

The `generate_board` function selects a random puzzle from `sudokus` based on the chosen difficulty. The board is filled accordingly, and cells with prefilled numbers are made read-only.

The `check_solution` function checks if the user's solution is correct. It checks the board to see if the entered numbers are correct. If there are mistakes, an error message is displayed. If the board is not fully completed, the user is notified to finish it. If the solution is correct, a success message appears.

The `is_cell_valid` function makes sure that a number in a cell follows the game rules. It checks that the number appears only once in its row, column, and 3x3 grid.

Lastly, the `is_unique` function verifies that all numbers in a row, column, or 3x3 grid are unique and between 1 and 9.

At the end of the code, we have main application. It initializes the GUI and starts the loop for the game.