Planning

The Scenario:

My client is a Sudoku enthusiast. She usually does them by hand, in Sudoku workbooks, and she finds the most time to solve Sudokus when she is on her travels. While travelling however, carrying a workbook isn't very convenient, andinternet connection isn't always available, she says. She also likes to challenge herself while playing, by solving Sudokus of different difficulty levels. Sometimes, she stops solving a Sudoku, and picks it up later to continue. In addition, the client mentioned that occasionally while solving a Sudoku, she is unsure about a certain box, and ends up solving thewhole puzzle with one mistake, invalidating her whole solution and hard work.

My app will provide a simple, accessible, and free Sudoku game in the form of a desktop application, that does not require internet connection. It will randomly generate a new and solvable Sudoku puzzle in every new game, with the already solved boxes being random each time as well. The app will also have three levels of difficulty, as the client has said she likes to challenge herself. Moreover, there will be an option to save progress on a Sudoku game and retrieve saved Sudokus, allowing the client the desired opportunity of saving a Sudoku for a later time. The app will be able to check the player's answers and provide feedback about the player's solutions during the game and once the player finishes the puzzle, as the client requested.
My computer science teacher, who is simulating the client, will also serve as my advisor.

Rationale for Proposed Solution:

I want to develop an offline application that would run on the client's computer. This way, I am hoping to help the client keep at her passion for Sudokus by providing her with an easy solution in her constant search for new puzzles to solve in a convenient way. Currently, the client carries around a Sudoku workbook on her travels. This brings with it many drawbacks, such as the fact it's an extra load to carry, as well as the issue that the client may finish all the puzzles in a workbook and be left with none more to solve until she purchases a new one. Moreover, as the game will feature as an offline application, there would be no need for internet connection, making it even more convenient as the client mentioned that oftentimes internet isn't available while traveling. By providing her with an offline Sudoku application, she wouldn't need to carry or purchase Sudoku workbooks, and she wouldn't need internet connection as well. In addition, the game will include varying levels of difficulty, giving the client an easier option than having tolook for Sudoku workbooks with higher difficulty levels. Furthermore, the Sudoku application would be hugely efficient in solving the client's current problem of solving a whole Sudoku with

one or two mistakes, as it will be able to provide an option to get feedback on each move she makes as she plays. It will also have a large font size, and a box that is filled in by her will be editable. Lastly, there is technically a chance of the game generating a Sudoku it has already generated before, but this is irrelevant as the client said she does not mind solving the same Sudoku twice. I believe this is an appropriate solution for the client as it can settle a considerable amount of the problems she encounters while solving Sudoku puzzles.

Success Criteria:

1. The app generates a new and random Sudoku in each new game.
2. The generated Sudokus are solvable.
3. The puzzles generated have a relatively large font and are easily readable.
4. The app offers three levels of difficulty; the number of already-solved boxes in a new Sudoku decrease the higher the chosen level is.
5. Only a portion of the cells are already solved when a new game is started, the amount of which depends on the level of difficulty selected.
6. The selection of squares initially solved is random.
7. When a player chooses the option to check progress, the application correctly determines whether the inputted solutions are correct.
8. The user can navigate through the application solely using buttons and need not manually (i.e., through the IDE) quit the application or close a window.
9. The app colors the background of squares filled in wrong as red and those filled in correctly as green, once the player requests to check progress.
10. The app allows the player to save progress, by means of writing the inputted numbers to a text file.
11. The app lets a player retrieve a saved Sudoku and continue solving it, by means of reading progress from a text file and displaying the saved numbers as they were before.
12. A player can edit a square that he/she has already filled in to change the number but cannot edit a square that was initially solved by the game.