

Homework 3 Design Document

I believe that the purpose of this project is to help us practice programming, learn how to write effective notes, how recursion works, how to use sets, and how to upload files to our program. After all, what better way to learn than to do it yourself?

The classes that we need to implement are Sudoku, Main, and a JUnit testing class. The main code that we will be writing for this assignment will go in the Sudoku class. The Main class starts our program by asking the user to upload a Sudoku file to solve. Once the file is uploaded then the program will run and solve the puzzle. The JUnit testing class will interact with the Sudoku class making sure that all its methods are running correctly. The Main class will interact with the Sudoku class by creating a new Sudoku object and calling its methods to solve any given Sudoku problem.

From what I understand, a Set class is an object that is already created in Java. This Set class allows us as the programmers to add, remove, and find elements faster and with less of an expense. This is one of the reasons that we are using Sets. The other reason that we are using sets is because it is easier to call its methods rather than using an array list.

The only relationship I can see between a 1D array implementation of the puzzle and a 2D matrix implementation is that you can just divide each element in the 1D array to get the row and column of a 2D matrix. Other than that, they both have all of the methods that we would need in order to have this program work.

I predict that I will need all the time that I can get on this assignment because I am still not confident enough to say that I know what I am doing. I am getting better but I am not feeling like I am able to code very fast at all. I have to do a lot of thinking. So all in all, I hope to program for at least 16 hours. More would be great but I just don't see a possible way to do that unfortunately at the moment.

I believe that the recursive solver will successfully solve every puzzle that is tried as long as the puzzle is solvable. The constraint solver however may be able to only solve fifty percent of the puzzles because it is not checking everything. Therefore there may be some errors that occur that make it so the solver is unsuccessful.