Project Five

Due: Tuesday 10/3/2013 by midnight. - Points: 30

Objectives:

1. Become familiar with the use of multidimensional arrays in Java.
2. Develop familiarity with using OOP in Java.

Description:
Write a program that solves relatively simple Sudoku puzzles. Your implementation needs to consist of a Sudoku class.

Input:
Similar to Project 4, you should read be able to pass a text file path/name via command line to a program. The program should then be able to read the data from the file by means of a Scanner class instance. The input file will contain the initial Sudoku data with 0's placed for the missing numbers. The data will be presented from the top left of the table to bottom right.

Output:
The final results should be presented via the stdout in a matrix format (table format) similar to the input file structure.

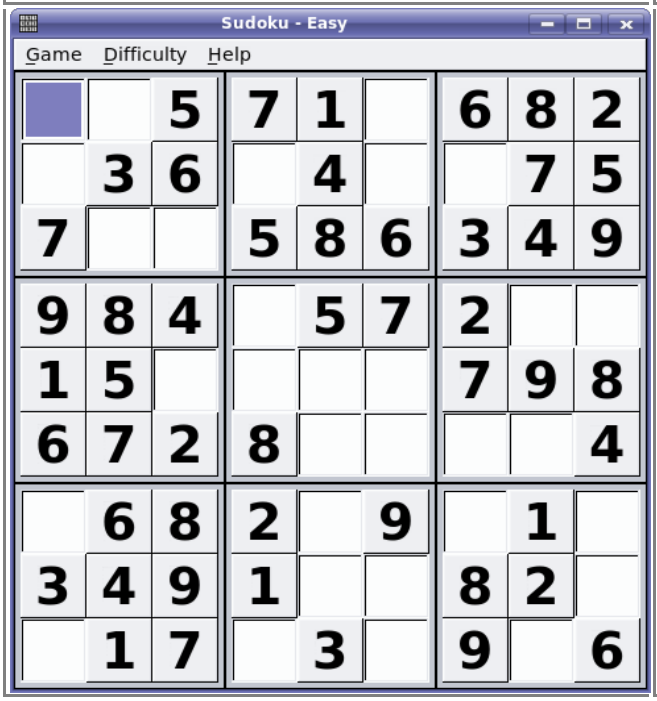
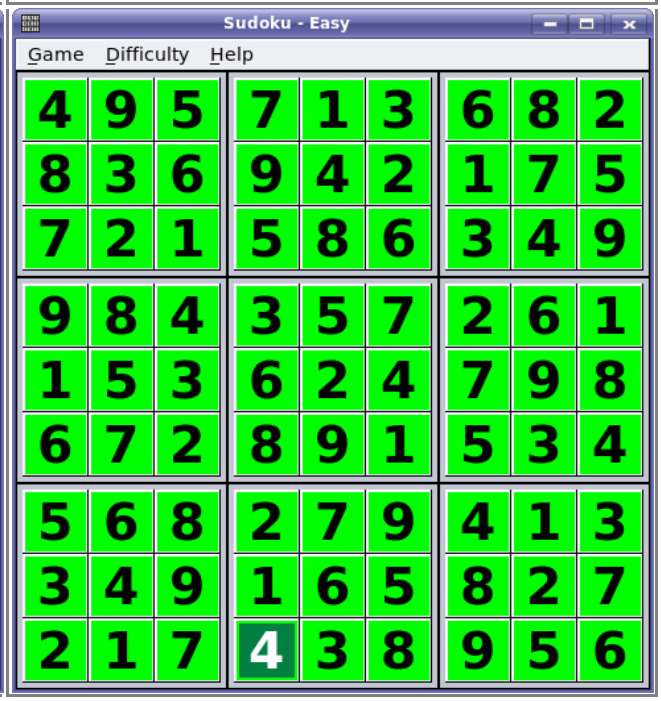
Requirements: Your program should have a class Sudoku with the following specifications:

- **readData** method - This method should be able to read data from a passed in file, storing it in a 2D array.
- **printData** method - This method should be able to print the data stored in a 2D array to console in a format similar to that of the input file.
- **checkHorizontal** method - This method should be able to step left-to-right across a 2D array, verifying that the numbers 1-9 appear exactly once each across that row. It may be a good idea to have this method return a boolean value, depending on your implementation.
- **checkVertical** method - This method should be able to step top-to-bottom down a 2D array, verifying that the numbers 1-9 appear exactly once each in that column. It may be a good idea to have this method return a boolean value, depending on your implementation.
- **checkSection** method - This method should be able to verify that the numbers 1-9 appear exactly once each within a specific 3x3 section of a 2D array. It may be a good idea to have this method return a boolean value, depending on your implementation. You may also wish to pass starting row and column index values into the method as parameters.
- **solve** method - This method should be able to solve a given sudoku puzzle. It should also verify its solution by using the methods outlined above. It may help to reference Wikipedia for help with this problem.

Notes:
Make sure that your program tests for convergence and does not get stuck in an infinite loop.

Sample puzzles:

Example1: Sample input for the following problem.

Input	Output
	

Example 2: Sample input file for the follwoing problem.

Input	Output