

CS-207: Programming II
Spring 2016
Northeastern Illinois University
Homework #2: Due 01/28/16 at 9:00 a.m.
2D Arrays

Problem 1

Open the UniqueRows.java file and complete the `printUniqueRows` method.

- The method takes one parameter, a 2D character array, `a`.
- The method does not return anything.
- The method should print out the index of the rows that do not have any duplicate characters (i.e. a character should only appear once in a row).
- The indices of the rows that do not have any duplicate characters should be printed on the same line, each separated by a space.
- Once you have completed the method, uncomment the code in the `main` method to verify that your code works correctly.
- Other than uncommenting the code in the `main` method, do not modify the code. In addition, do not modify the given method header.
- Place the completed UniqueRows.java file in a folder named `Homework2` to be submitted to D2L.

Problem 2

Tic-Tac-Toe is a game played by two players on a 3x3 grid, where they place marks of X's and O's in the squares on the grid. The player who succeeds in placing three of their marks in a horizontal, vertical, or diagonal row wins the game. Open the TicTacToe.java file and complete the `whoWon` method. Note that this file will NOT compile until after you have completed the method with correct return type.

- The method takes one parameter, a 2D character array, `grid`, representing a completed tic-tac-toe board.
- The method should return a single character value.
- The method should determine whether the 'X' player won (3 X's in a horizontal, vertical, or diagonal row), the 'O' player won (3 O's in a horizontal, vertical, or diagonal row), or neither player won.
- If the 'X' player won, return the character 'X'. If the 'O' player won, return the character 'O'. If neither player won, return the character 'N'.
- Once you have completed the method, uncomment the code in the `main` method to verify that your code works correctly.

- Other than uncommenting the code in the `main` method, do not modify the code. In addition, do not modify the given method header.
- Place the completed `TicTacToe.java` file in the **Homework2** folder to be submitted to D2L.

Problem 3

Sudoku is a puzzle in which players insert the numbers 1 to 9 into a grid consisting of nine 3 x 3 squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square. Open the `Sudoku.java` file and complete the `isValid` method. Note that this file will NOT compile until after you have completed the method with correct return type.

- The method takes one parameter, a 2D integer array, `board`, representing a completed Sudoku board.
- The method should return a boolean value.
- The method should determine whether the given completed Sudoku board is a valid solution (i.e. does each row and each column have the numbers 1 to 9 with no repeats).
- Once you have completed the method, uncomment the code in the `main` method to verify that your code works correctly.
- Other than uncommenting the code in the `main` method, do not modify the code. In addition, do not modify the given method header.
- Place the completed `Sudoku.java` file in the **Homework2** folder to be submitted to D2L.

A note on cheating/plagiarism:

A plagiarism detector is used on all submitted code (across all sections) for homework assignments. If the plagiarism detector determines that 25% or more of your code for a particular assignment is plagiarized, you will receive a zero (i.e. an F) for that homework assignment, regardless of whether you cheated from someone or vice-versa. If you plagiarize half or more of the total homework assignments, you will receive a zero for the entire homework percentage.

Submitting your assignment to D2L

1. Make sure your name and assignment number are in the `.java` file(s) (as comments).
2. Upload your `.java` file to the Homework #1 folder on D2L.
3. If you have multiple `.java` files, put them in a folder and compress (i.e. `.zip`) the folder. Submit the `.zip` file to the Homework #1 folder on D2L. You should submit only one file - the `.zip` file. Do **NOT** upload multiple files.
4. Turn your homework in to D2L by the specified deadline (no late homework will be accepted - see syllabus for policies)