COP 3330 Suggested Exercises for Week 5

2D Arrays

1) Modify the VideoGamesScores.java file so that each player's scores are sorted in order from lowest to highest. Then, when printing out player data, print out all of the scores for each player.

2) Modify the VideoGamesScores.java file so that you add a print method that takes in a player's name and an integer array of their scores. Your method should print out the player's name along with all of their scores in a format you deem to be nice. Call the method appropriately from main in your edit. Here is the method prototype:

```
public static void printPlayer(String name, int[] scoreList);
```

3) Write a program that asks the user for the number of rows and columns in a grid, as well as the number of bombs they would like printed on the grid. Use this information to make a 2D character array where each character is set to '_' or '*'. Use randomization to set the number of '*' characters in the grid exactly equal to the number of bombs the user entered. Your program should create a static method with the prototype below and call it from the main method:

```
public static char[][] makeRndGrid(int rows, int cols, int numbombs);
```

(The method generates a 2d character array with rows number of rows and cols number of columns, filling it with exactly numbombs '*' characters and the rest equal to '_'.)

4) Add to the code from #3 so that instead of having an '_' characters, these characters are replaced with characters representing digits such that each value stored represents the number of adjacent squares storing bombs. For example, for a grid with 5 rows and 5 columns, your could print out the following grid:

```
* 3 * 2 1
2 * 3 * 1
1 2 3 2 1
0 1 * 1 0
0 1 1 1 0
```

5) Write a suit of methods that performs matrix addition, subtraction and multiplication.

Classes

6) Add a method to the GiftCard class that takes in a gift card, adds the contents of that giftcard into the this GiftCard and sets the value of the other giftcard to 0. Here is the method prototype:

```
public void addCard(GiftCard other);
```

7) Brainstorm other methods for the GiftCard class, add them, and test them!

8) Create a new class called GiftCardCollection that has as an instance variable, an array of GiftCard as well as an integer, n, representing the current number of giftcards owned. The array should have space for 10 GiftCards. Add appropriate methods to this class. For example, a spend method might spend a balance from the first GiftCard in the collection that has enough money to make a purchase and not make a purchase if no single gift card has enough money on it.

9) Add a subtract, multiply and divide methods to the fraction class. Test the methods appropriately.

10) Think up of your own class based on your interests. What instance variables comprise an object of your new class? Create the class with instance variables and methods and test it out in main!