CSC 1051 - Lab 13

Objectives:
Practice using arrays of objects and two-dimensional arrays

1) Arrays of objects
Suppose you have a Person class as follows:
public class Person
{
    private String name;
    private int age;

    public Person (String name, int age)
    {
        this.name = name;
        this.age = age;
    }

    // increases a Person’s age
    public void grow(int n)

    // returns a string with the Person’s info
    public String toString ()

    // like toString(), but **prints** the Person’s info
    public void printInfo ()
}

a) Finish implementing the Person class. Include a getter and setter for age. Write a program Lab13a.java to create a couple of Person objects and test your methods. As a test, use some examples similar to the homework questions for arrays of objects.

b) Review the textbook example of a DVD database: DVD.java, DVDCollection.java and Movies.java. Using this program as an example, create a class called PersonCollection, similar to the DVDCollection – it should maintain a database of Person objects. Create a program Lab13b.java to test PersonCollection.java (Lab13b.java should be similar to Movies.java).

Have your work checked by the instructor or TA: _________________________________

(You will be handing in this worksheet after you complete the remaining questions.)
2) 2D Arrays
Create a test program to experiment and to test each of the following code fragments and show the array contents after execution. Note that you will need to write some extra code to display the array contents - you can see how this is done in the example. You will need to adapt this code to print out the array contents of arrays for different sizes.

EXAMPLE:
```java
int count = 1;
int[][] table = new int[2][3];
for (int i=0; i < 2; i++)
    for (int j=0; j < 3; j++)
    {
        table[i][j] = count;
        count++;
    }

//print out the array contents
for (int i=0; i < 2; i++) /// processing rows
{
    for (int j=0; j < 3; j++) //processing columns
        System.out.print( table[i][j] + " ");
    System.out.println(); // done with row, go to new line
}

ANSWER:
table

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
```

a)
```java
int[][] table = new int[4][4];
for (int i=0; i < 4; i++)
    table[i][i] = i;
```
b) char[][] table = new char[4][4];
String sample = “OPEN THIS FIRST”;
for (int i=0; i < 4; i++)
    for (int j=0; j < 4; j++)
        table[i][j] = sample.charAt(i+j);

c) int[][] table = new int[3][4];
for (int i=0; i < table.length; i++)
    for (int j=0; j < table[i].length; j++)
        table[i][j] = i * 2 + j;

d) Download, compile, and run SodaSurvey.java. Modify the code to add static method computeAVG() that computes and returns the average of all the elements in a 2D array. The method should accept a single parameter, a two dimensional array of int, and it should return the average as a double. Use this method in the main() method of SodaSurvey.java to compute and print the average of all the soda scores (this will be the overall average, not by soda or by person, as computed in the program).

    Have your work checked by the instructor or TA: _________________________________
    Check that you have filled in all your answers and have a signature here and in page 1, then hand in this worksheet.