CSC 1051 - Lab 13

Objectives:
Practice using arrays to store and process values.

a) Simple array example

class ArrayDemo {
    public static void main(String[] args) {
        int[] anArray; // declares an array of integers

        anArray = new int[10]; // allocates memory for 10 integers

        anArray[0] = 100; // initialize first element
        anArray[1] = 200; // initialize second element
        anArray[2] = 300; // etc.
        anArray[3] = 400;
        anArray[4] = 500;
        anArray[5] = 600;
        anArray[6] = 700;
        anArray[7] = 800;
        anArray[8] = 900;
        anArray[9] = 1000;

        System.out.println("Element at index 0: "+ anArray[0]);
        System.out.println("Element at index 1: "+ anArray[1]);
        System.out.println("Element at index 2: "+ anArray[2]);
        System.out.println("Element at index 3: "+ anArray[3]);
        System.out.println("Element at index 4: "+ anArray[4]);
        System.out.println("Element at index 5: "+ anArray[5]);
        System.out.println("Element at index 6: "+ anArray[6]);
        System.out.println("Element at index 7: "+ anArray[7]);
        System.out.println("Element at index 8: "+ anArray[8]);
        System.out.println("Element at index 9: "+ anArray[9]);
    }
}

• Type in this program, compile, and run.

• Rename the program Lab13a.java and modify it to set the array values using a loop. (Hint: Use two for loops, one for initializing the values and another for printing them out; use the loop counter to index into the array elements.)

• Modify the program to work with an array of 100 elements, instead of 10.
b) Arrays of different types
This example in part (a) is from the java online tutorials:
http://docs.oracle.com/javase/tutorial/java/nutsandbolts/arrays.html

- Read the tutorial on arrays. Note that this is one of many online tutorials that are available on Java programming. As you progress to writing Java programs to solve real life problems (or to review for final exam!), it is useful to know where to go to learn or to brush up on intricacies of the Java language.

- Make a new version of your program from part (a) and name it **Lab13b.java** that creates instead an array of 100 values of type double, set to random values in the range 0….1.

c) An array of booleans
Create a new version of your program **Lab13c.java** that creates instead an array of 100 values of type boolean. The values should be set to alternating true/false, i.e., anArray[0] = true, anArray[1] = false, etc. (but be sure to use a loop here too).

d) Reading values from the user and storing them in an array
Starting from Lab13a.java (array of int) create a new version of your program **Lab13d.java**, that uses Scanner to input integer values from the user. (Test it with smaller arrays, say with 5 entries, so you don’t need to type so much.)

e) Reading values from a file and storing them in an array
Starting from Lab13d.java, create a new version of your program **Lab13e.java**, where you enlarge the array again to hold 100 integers and modify it so that the inputs the values from a file. Use this file for input:
www.csc.villanova.edu/~map/1051/examples/oneHundredInts.inp
Demonstrate your work to the instructor or TA.

Lab13a (array of int)  __________
Lab13b (array of double)  __________
Lab13c (array of boolean)  __________
Lab13d (input into array)  __________
Lab13e (input from file)  __________