Lab 10  Name:___________  Checked:_______

Objectives:
Practice using arrays to store and process values of different types.

Part I: Preparation
Submit through Blackboard by 8:00am the morning of Lab.

Simple array example

```java
public 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.

- **Rewrite A**: Modify the program so that it prints out the array values using a for-loop, instead of the repetitive code, above (i.e., rewrite the block of printing statements marked “A”).

- **Rewrite B**: Modify the program so that it also initializes the array values using a for-loop, i.e., rewrite the block of assignment statements marked “B”.

  **NOTE**: Be sure you have two separate loops, DO NOT combine B with A.

- Submit your modified code for ArrayDemo though Blackboard.
Part II: Creating arrays of different types

Review your work for Part I (ArrayDemo)

Draw a picture of the array (be sure to label the elements with their indices).

draw your picture here:

Compare your solution to Part I with your partner’s. Approve or correct each other’s solution, then sign each other’s worksheet.

Lab partner’s signature (indicates approval): ____________________________

What happens if you do not initialize the array’s values? (Comment out the initialization loop that sets the values to 100, 200, etc. Do you get an error?)

Answer: ___________________________________________________________

a. An array of double

Make a new version of your program from Part I and name it Lab11a.java

This program should create an array of 100 values of type double, set to random values in the range 0….1.

• What happens if you do not initialize the array’s values?

Answer: ___________________________________________________________

b. An array of boolean

Implement a new version of your program Lab11b.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. (be sure to use a loop here too).

• What happens if you do not initialize the array’s values?

Answer: ___________________________________________________________

c. An array of char

Implement a new version of your program Lab11c.java that creates instead an array of 26 values of type char. The values should be set to the letter ‘a’ … ‘z’.

• What happens if you do not initialize the array’s values?

Answer: ___________________________________________________________

d. Reading values from the user and storing them in an array

Starting from Lab11a.java (array of double) implement a new version of your program Lab11d.java, that uses Scanner to input values from the user. (Test it with smaller arrays, say with 5 entries, so you don’t need to type so much.)

e. Expand your knowledge of arrays and all things Java!

The array exercise example is from the Java online tutorials: http://docs.oracle.com/javase/tutorial/java/nutsandbolts/arrays.html

• Read the tutorial on arrays. This is one of many online tutorials that are available on Java programming. The Oracle tutorials is a great way to brush up on a topic or to learn more about specific topics of interest to you.

• Make a note here about something that you learned

Answer: ___________________________________________________________
Lab 10 Comments  Name:__________________________

Comments on this lab, please:

What was the most valuable thing you learned in this lab?

What did you like best about this lab?

Was there any particular problem?

Do you have any suggestions for improving this lab as an effective learning experience?