Intro to Java Week 3 Coding Assignment

Points possible: 70

Category	Criteria	% of Grade
Functionality	Does the code work?	25
Organization	Is the code clean and organized? Proper use of white space, syntax, and consistency are utilized. Names and comments are concise and clear.	25
Creativity	Student solved the problems presented in the assignment using creativity and out of the box thinking.	25
Completeness	All requirements of the assignment are complete.	25

Instructions: In Eclipse, or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed. Take screenshots of the code and of the running program (make sure to get screenshots of all required functionality) and paste them in this document where instructed below. Create a new repository on GitHub for this week's assignments and push this document, with your Java project code, to the repository. Lastly, in the Learning Management System, click the "Add Submission" button and paste the URL to your GitHub repository.

Coding Steps:

1. Create an array of int called ages that contains the following values: 3, 9, 23, 64, 2, 8, 28, 93.
    a. Programmatically subtract the value of the first element in the array from the value in the last element of the array (i.e. do not use ages[7] in your code). Print the result to the console.
    b. Add a new age to your array and repeat the step above to ensure it is dynamic (works for arrays of different lengths).
    c. Use a loop to iterate through the array and calculate the average age. Print the result to the console.
2. Create an array of String called names that contains the following values: "Sam", "Tommy", "Tim", "Sally", "Buck", "Bob".
    a. Use a loop to iterate through the array and calculate the average number of letters per name. Print the result to the console.

    b. Use a loop to iterate through the array again and concatenate all the names together, separated by spaces, and print the result to the console.
3. How do you access the last element of any array? **System.out.printlin("name of array"["name of array".length - 1]**
4. How do you access the first element of any array? **system.out.println("name of array"[0])**
5. Create a new array of int called nameLengths. Write a loop to iterate over the previously created names array and add the length of each name to the nameLengths array.
6. Write a loop to iterate over the nameLengths array and calculate the sum of all the elements in the array. Print the result to the console.
7. Write a method that takes a String, word, and an int, n, as arguments and returns the word concatenated to itself n number of times. (i.e. if I pass in "Hello" and 3, I would expect the method to return "HelloHelloHello").
8. Write a method that takes two Strings, firstName and lastName, and returns a full name (the full name should be the first and the last name as a String separated by a space).
9. Write a method that takes an array of int and returns true if the sum of all the ints in the array is greater than 100.
10. Write a method that takes an array of double and returns the average of all the elements in the array.
11. Write a method that takes two arrays of double and returns true if the average of the elements in the first array is greater than the average of the elements in the second array.
12. Write a method called willBuyDrink that takes a boolean isHotOutside, and a double moneyInPocket, and returns true if it is hot outside and if moneyInPocket is greater than 10.50.
13. Create a method of your own that solves a problem. In comments, write what the method does and why you created it.

Screenshots of Code:

```java
package week3;

import java.util.Arrays;

public class Week3Homework {
    //Arrays
    public static int [] ages = {3,9,23,64,2,8,28,93,25,80};
    public static String[] names = {"Sam", "Tommy", "Tim", "Sally", "Buck", "Bob"};
    public static int[] nameLengths = arrayLengths(names);
    public static double [] numbers = {3.4, 9.9, 10.3, 8.1, 9.2};
    public static double [] numbers2 = {6.6, 8.8, 9.9, 10.4, 11.5, 20};

    public static void main(String[] args) {
```

```java
public static void main(String[] args) {

    System.out.println("#1a");
    System.out.println(ages[ages.length -1] - ages[0]);

    System.out.println("\n#1c");
    System.out.println(calculateAverage(ages));

    System.out.println("\n#2a");
    System.out.println(averageLetterNumber(names));

    System.out.println("\n#2b");
    String namesTogether = String.join(" ", names);
    System.out.println(namesTogether);

    System.out.println("\n#3");
    System.out.println("To find last element of any array it is: nameOfArray[nameOfArray.length -1]");

    System.out.println("\n#4");
    System.out.println("To find first element of any array it is: nameOfArray[0]");

    System.out.println("\n#5");
    System.out.println("New nameLengths array is  " + Arrays.toString(nameLengths));

    System.out.println("\n#6");
    System.out.println(calculateSum(nameLengths));

    System.out.println("\n#7");
    System.out.println(multiplyString("Good Morning ", 4));

    System.out.println("\n#8");
    String firstName = "Christina";
    String lastName = "Lytle";
    System.out.println(createFullName(firstName, lastName));

    System.out.println("\n#9");
    System.out.println(returnTrueIfOver100(ages));

    System.out.println("\n#10");
    System.out.println(averageInDoubles(numbers));

    System.out.println("\n#11");
    boolean result = averageOneIsGreaterThanTwo(numbers, numbers2);
    System.out.println(result);

    System.out.println("\n#12");
    boolean isHotOutside = true;
    double moneyInPocket = 20;
    System.out.println(willBuyDrink(isHotOutside, moneyInPocket));

    System.out.println("\n#13");
    System.out.println(getMax(ages));
    System.out.println(getMin(ages));

```

```
68          }
69
70      //method to calculate average of all numbers in array
71      public static int calculateAverage (int[] numbers) {
72          int sum =0;
73          for (int number : numbers) {
74              sum += number;
75          }
76          return sum / numbers.length;
77      }
78
79      //method to calculate the average numbers in a word in a String Array
80      public static int averageLetterNumber (String [] names) {
81          int total = 0;
82          for (String name : names) {
83              total += name.length();
84      }
85          return total / names.length;
86
87      }
88
89      //method for Array with Name Lengths
90      public static int [] arrayLengths(String[] names) {
91          int[] lengthsOfNames = new int[names.length];
92          for(int i = 0; i < names.length; i++) {
93              String name = names[i];
94              lengthsOfNames[i] = name.length();
95          }
96          return lengthsOfNames;
97      }
98
99      //method to calculate sum of all numbers in array
100         public static int calculateSum (int[] numbers) {
101             int sum = 0;
102             for (int number : numbers ) {
103                 sum += number;
104             }
105             return sum;
106         }
107
108     //method to have a string concatenate itself number of times
109         public static String multiplyString(String word, int number) {
110             String output = "";
111             for (int i=0; i < number; i++) {
112                 output += word;
113             }
114             return output;
115         }
116
117     //method to create a full name with a space
118         public static String createFullName (String x, String y) {
119             return x + " " + y;
120     }
```

```java

    //method to check if sum of numbers is less than 100
    public static boolean returnTrueIfOver100 (int[] numbers) {
        int total = 0;
        for (int i = 0; i< numbers.length; i++) {
            int number = numbers[i];
            total += number;
        }

        return total > 100;
    }

    //method to calculate average of all double numbers in array
    public static double averageInDoubles (double[] numbers) {
        double sum =0;
        for (double number : numbers) {
            sum += number;
            }
        return sum / numbers.length;
        }

    //method that takes two arrays and returns true if first array average is > than secon array
    public static boolean averageOneIsGreaterThanTwo (double[] one, double[]  two) {
        return average(one) > average(two);
        }
        public static double average(double[] array) {
            double total = 0;
            for (double arra : array) {
                total += arra;
            }
            return total / array.length;
        }

    //method willBuyDrink
        public static boolean willBuyDrink (boolean a, double b) {
        return (a== true) && (b >10.50);
        }

    //method for getting the maximum value in an array
        public static int getMax(int[] inputArray) {
            int maxValue = inputArray[0];
            for (int i=0; i< inputArray.length; i++) {
                if(inputArray[i] > maxValue) {
                    maxValue = inputArray[i];
                }
            }
            return maxValue;
        }

    //method for getting the minimum value in an array
        public static int getMin(int[] inputArray) {
            int minValue = inputArray[0];
            for (int i=0; i< inputArray.length; i++) {
                if(inputArray[i] < minValue) {
                    minValue = inputArray[i];
                }
            }
            return minValue;
        }
        //I created methods to find the min and max of a value of an array because it might be
        //useful to know the number range you are working with.

}

```

Screenshots of Running Application:

```
#1a
77

#1c
33

#2a
3

#2b
Sam Tommy Tim Sally Buck Bob

#3
To find last element of any array it is: nameOfArray[nameOfArray.length -1]

#4
To find first element of any array it is: nameOfArray[0]

#5
New nameLengths array is  [3, 5, 3, 5, 4, 3]

#6
23

#7
Good Morning Good Morning Good Morning Good Morning

#8
Christina Lytle

#9
true

#10
8.180000000000001

#11
false

#12
true

#13
93
2
```

URL to GitHub Repository:

https://github.com/Christinalytle/week3Homework.git