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. Add the URL for this week's repository to this document where instructed and submit this document to your instructor when complete.

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? array.length - 1**
4. **How do you access the first element of any array? 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.
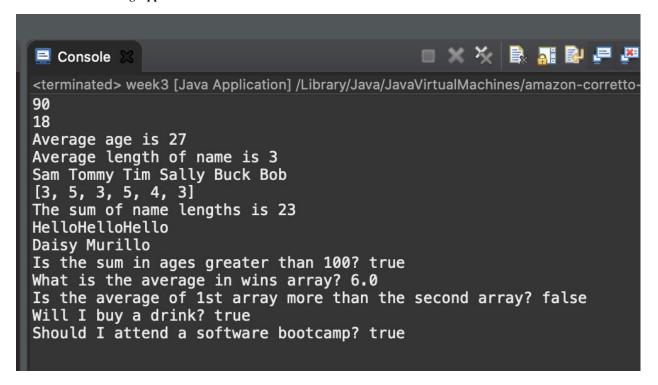
Screenshots of Code:

week3.java

```java
1   //Daisy Murillo July 4, 2020
2
3   package week3assignment;
4
5   import java.util.Arrays; //needed to use the Arrays.copyOf method
6
7
8   public class week3 {
9   //ARRAY OF INTS
10
11      public static void main(String[] args) {
12          int[] ages = {3, 9, 23, 64, 2, 8, 28, 93};
13
14          //subtract 1st value from last value
15          System.out.println(ages[ages.length-1] - ages[0]);
16
17          //add new age & repeat previous step
18          ages = Arrays.copyOf(ages, ages.length + 1);
19          ages[ages.length - 1] = 21;
20          System.out.println(ages[ages.length-1] - ages[0]);
21
22          //iterate through array & calculate average age
23          int total = 0;
24          for(int i = 0; i < ages.length; i++) {
25              total += ages[i];
26          }
27          int average = total / ages.length;
28          System.out.println("Average age is " + average);
29
30
31          //take average number of letters per name
32          String[] names = {"Sam", "Tommy", "Tim", "Sally", "Buck", "Bob" };
33          int count =0;
34          for(int i = 0; i < names.length; i++) {
35              count += names[i].length();
36          }
37          int avgLen = count / names.length;
38          System.out.println("Average length of name is " + avgLen);
39
40          //concatenate all the names together
41          String name = "";
42          for(int i =0; i <names.length; i++) {
43              name += names[i] + " ";
44          }
45          System.out.println(name);
46
47          //add length of name to nameLengths array
48          int[] nameLengths = new int[6];
49          int sum = 0;
50          for(int i=0; i <names.length; i++) {
51              nameLengths[i] += names[i].length();
52              sum += names[i].length();
53          }
54          System.out.println(Arrays.toString(nameLengths));
55          System.out.println("The sum of name lengths is " + sum);
56
```

```java
        //concatenated word to itself n number of times
        System.out.println(concatWords("Hello", 3));
        //returns Full Name
        System.out.println(fullName("Daisy", "Murillo"));
        //adds ages array & returns true if sum > 100
        System.out.println("Is the sum in ages greater than 100? " + sum(ages));
        //adds wins array & returns average
        System.out.println("What is the average in wins array? " + avg(wins));
        //takes 2 array of doubles, returns true if avg of 1st > avg of 2nd
        System.out.println("Is the average of 1st array more than the second array? " + twoArrays(wins, losses));
        //if moneyInPocket > 10.50 && isHotOutside = true, return true
        System.out.println("Will I buy a drink? " + willBuyDrink(true, 12.00));
        //my own method resolving decision to attend bootcamp
        System.out.println("Should I attend a software bootcamp? " + canAttendBootcamp(true, 3050.00));
    }

    public static String concatWords(String word, int n) {
        String input ="";
        for(int i =0; i < n; i++) {
            input += word;
        }
        return input;
    }

    public static String fullName(String firstName, String lastName) {
        String fullName = firstName + " " + lastName;

        return fullName;
    }

    public static boolean sum(int[] ages) {
        int total = 0;
        for(int i = 0; i < ages.length; i++) {
            total += ages[i];
        }
        if (total > 100) {
            return true;
        } else {
            return false;
        }
    }

    static double[] wins = {2, 4, 6, 8, 10};
    static double[] losses = {12, 14, 16, 18, 20};

    public static boolean twoArrays(double[] wins, double[] losses) {
        double wins1 = avg(wins);
        double losses1 = avg(losses);

        return wins1 > losses1;
    }

    public static double avg(double[] wins) {
        int total = 0;
        for (int i = 0; i < wins.length; i++) {
            total += wins[i];
        }
```

```
113         }
114             int average = total / wins.length;
115             return average;
116     }
117
118●     public static boolean willBuyDrink(boolean isHotOutside, double moneyInPocket) {
119             if (isHotOutside = true && moneyInPocket > 10.50) {
120                 return true;
121             } else {
122                 return false;
123             }
124     }
125
126         //this problem solves my decision in taking a coding bootcamp. If I lack programming skills is true, & can afford bootcamp, attend is true
127
128●     public static boolean canAttendBootcamp(boolean lackProgrammingSkills, double canAfford) {
129             if (lackProgrammingSkills = true && canAfford > 3000.00) {
130                 return true;
131             } else {
132                 return false;
133             }
134     }
135
136  }
137
```

Screenshots of Running Application:


```
Console
<terminated> week3 [Java Application] /Library/Java/JavaVirtualMachines/amazon-corretto-
90
18
Average age is 27
Average length of name is 3
Sam Tommy Tim Sally Buck Bob
[3, 5, 3, 5, 4, 3]
The sum of name lengths is 23
HelloHelloHello
Daisy Murillo
Is the sum in ages greater than 100? true
What is the average in wins array? 6.0
Is the average of 1st array more than the second array? false
Will I buy a drink? true
Should I attend a software bootcamp? true
```

URL to GitHub Repository:

https://github.com/Daisy21murillo/week_3_assignment