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. 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?
4. How do you access the first element of any array?
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
1 package labs;
2
3 public class week3CodingAssignment {
4
5    public static void main(String[] args) {
6        // TODO Auto-generated method stub
7
8        //Create an array of int called ages that contains the following values: 3, 9, 23, 64, 2, 8, 28, 93.
9        int [] ageArray = {3, 9, 23, 64, 2, 8, 28, 93, 99};
10
11       //Programmatically subtract the value of the first element in the array from the value in the last element of the
12       //(i.e. do not use ages[7] in your code). Print the result to the console.
13        int ageDifference = ageArray[ageArray.length - 1] - ageArray[0];
14       System.out.println(ageDifference);
15
16
17       //Add a new age to your array and repeat the step above to ensure it is dynamic
18       //A: see above array
19
20       //Use a loop to iterate through the array and calculate the average age.
21       //Print the result to the console.
22       double totalAge = 0;
23       for (int age : ageArray) {
24           totalAge += age;
25       }
26       double averageAge = totalAge / ageArray.length;
27       System.out.println(averageAge);
28
29       //Create an array of String called names that contains the following values:
30       //"Sam", "Tommy", "Tim", "Sally", "Buck", "Bob".
31       String [] nameArray = {"Sam", "Tommy", "Tim", "Sally", "Buck", "Bob"};
32
33       //Use a loop to iterate through the array and calculate the average number of letters per name.
34       //Print the result to the console
35       int totalLetters = 0;
36       for (String name : nameArray) {
37           totalLetters += name.length();
38       }
39       double averageLetters = totalLetters / nameArray.length;
40       System.out.println(averageLetters);
41
42       //Use a loop to iterate through the array again and concatenate all the names together, separated by spaces.
43       //Print the result to the console.
44        String concatenatedNames = "";
45       for (int i = 0; i < nameArray.length; i ++) {
46           concatenatedNames += nameArray[i];
47           concatenatedNames += " ";
48       }
49       System.out.println(concatenatedNames);
50
51       //How do you access the last element of any array?
52       //A: the last element of an array is accessed by array [array.length -1]
53
```

```java
54     //How do you access the first element of any array?
55     //A: the first element of an array is always index 0 and accessed by array[0]
56
57     //Create a new array of int called nameLengths.
58     //Write a loop to iterate over the previously created names array and add the length of each name to the nameLength[
59     int [] nameLengths = new int [nameArray.length];
60     for (int i = 0; i < nameArray.length; i ++) {
61     nameLengths[i] = nameArray[i].length();
62     System.out.println(nameLengths[i]);
63     }
64     //Write a loop to iterate over the nameLengths array and calculate the sum of all the elements in the array.
65     //Print the result to the console.
66     int sum = 0;
67     for (int lengths : nameLengths) {
68         sum += lengths;
69     }
70     System.out.println(sum);
71
72
73     //Write a method that takes a String, word, and an int, n, as arguments and returns the word concatenated to itsel
74     //(i.e. if I pass in "Hello" and 3, I would expect the method to return "HelloHelloHello").
75     //A: see line 113
76     System.out.println(concatenateMe("Hello", 5));
77
78     //Write a method that takes two Strings, firstName and lastName, and returns a full name
79     //(the full name should be the first and the last name as a String separated by a space
80     //A: see line 120
81     System.out.println(makeFullName("Abigail", "Hughes"));
82
83     //Write a method that takes an array of int and returns true
84     //if the sum of all the ints in the array is greater than 100.
85     //A: see line 124
86     int [] arrayToSum = { 1, 2, 55, 89, 22};
87     System.out.println(isSumGreaterThan100(arrayToSum));
88
89     //Write a method that takes an array of double and returns the average of all the elements in the array.
90     //A: see line 131
91     double [] firstArray = {5, 20, 50, 21};
92     System.out.println(returnArrayAverage(firstArray));
93
94     //Write a method that takes two arrays of double and returns true if the average of the elements
95     //in the first array is greater than the average of the elements in the second array.
96     //A: see line 138
97     double [] secondArray = { 6.5, 8.9, 1, 2, 55, 89, 22};
98     System.out.println(isFirstAverageGreater(firstArray, secondArray));
99
100    //Write a method called willBuyDrink that takes a boolean isHotOutside, and a double moneyInPocket,
101    //and returns true if it is hot outside and if moneyInPocket is greater than 10.50.
102    //A: see line 151
103    System.out.println(willBuyDrink(true, 10));
104
```

```java
105    //Create a method of your own that solves a problem.
106    //In comments, write what the method does and why you created it.
107    //A: This is a method that takes a string and a string array, tests whether the string is in a array and returns a greetin
108    //see line 157
109    System.out.println(greetPerson("Sally", nameArray));
110
111    }
112
113    public static String concatenateMe(String word, int n) {
114        String newWord = "";
115        for(int i = 1; i<= n; i++) {
116            newWord += word;
117        }
118        return newWord;
119    }
120    public static String makeFullName( String firstName, String lastName) {
121        String fullName = firstName.concat(" ").concat(lastName);
122        return fullName;
123    }
124    public static boolean isSumGreaterThan100(int [] array) {
125        int sum = 0;
126        for (int num : array) {
127            sum += num;
128        }
129        return sum > 100;
130    }
131    public static double returnArrayAverage(double [] array) {
132        double sum = 0;
133        for (double each : array) {
134            sum += each;
135        }
136        return sum / array.length;
137    }
138    public static boolean isFirstAverageGreater (double [] array, double [] arrayTwo) {
139        double sumFirst = 0;
140        for (double each : array) {
141            sumFirst += each;
142        }
143        double averageFirst = sumFirst / array.length;
144        double sumSecond = 0;
145        for (double each : arrayTwo) {
146            sumSecond += each;
147        }
148            double averageTwo = sumSecond / arrayTwo.length;
149        return averageFirst > averageTwo;
150    }
151    public static boolean willBuyDrink(boolean isHotOutside, double moneyInPocket) {
152        if (isHotOutside && moneyInPocket > 10.50) {
```
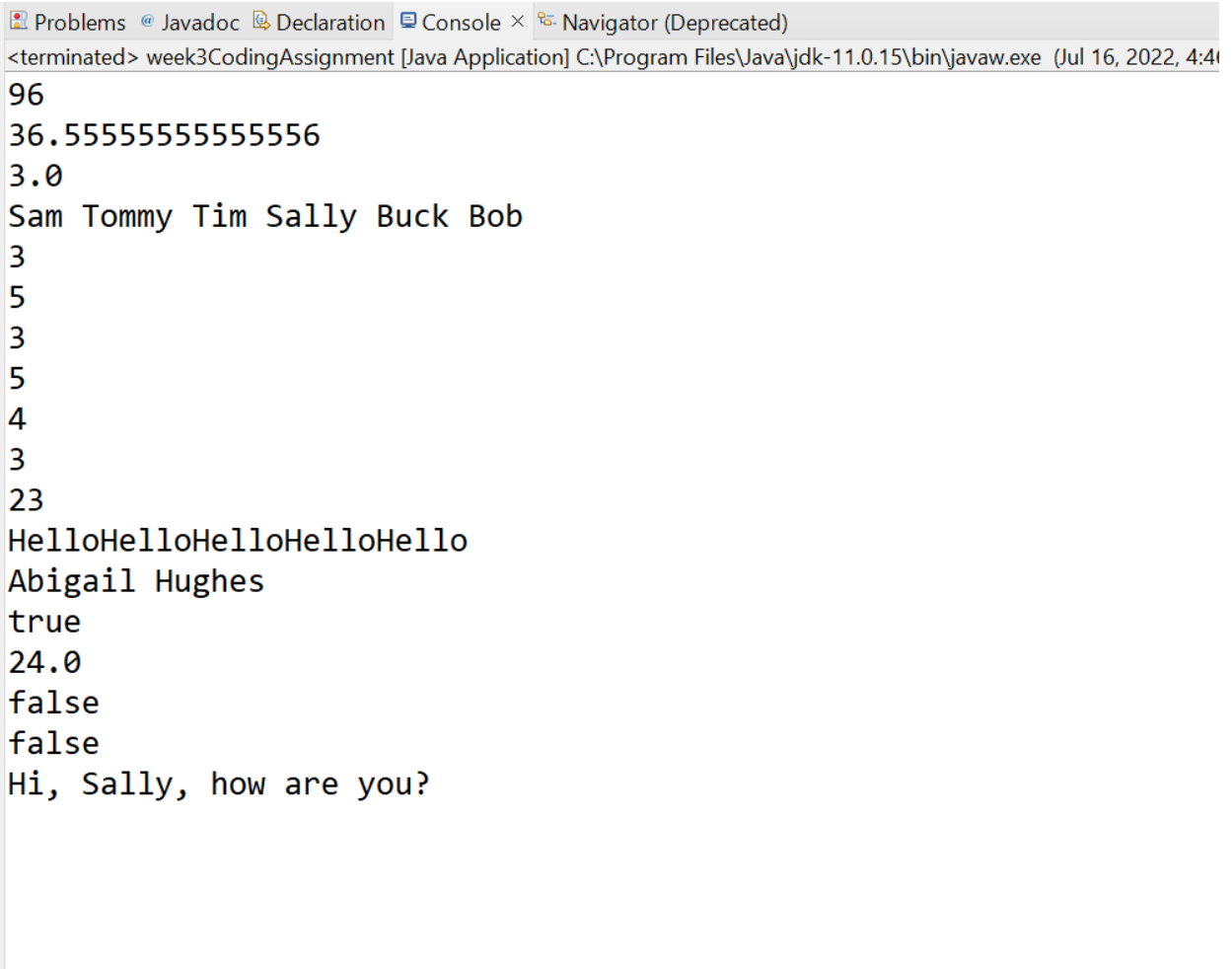
```java
151    public static boolean willBuyDrink(boolean isHotOutside, double moneyInPocket) {
152        if (isHotOutside && moneyInPocket > 10.50) {
153            return true;
154        }
155        return false;
156    }
157    public static String greetPerson(String name, String [] array) {
158        for (String str : array) {
159            if( str.equals(name)) {
160                return "Hi, "+ name + ", how are you?";
161            }
162        }return "Name not found";
163    }
164
165 }
166
```

Screenshots of Running Application:

```
96
36.55555555555556
3.0
Sam Tommy Tim Sally Buck Bob
3
5
3
5
4
3
23
HelloHelloHelloHelloHello
Abigail Hughes
true
24.0
false
false
Hi, Sally, how are you?
```

URL to GitHub Repository:

https://github.com/Hughes405/Coding-Assignment.git