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 Week3Assignment;
2
3⊖ import java.time.Year;
4  import java.util.Arrays;
5  import java.util.Scanner;
6
7  public class Week3Code {
8
9⊖     public static void main(String[] args) {
10         // TODO Auto-generated method stub
11
12         //1. create an array of int called ages that contains the following values: 3, 9, 23, 64, 2, 8, 28, 93
13             int [] ages = {3, 9, 23, 64, 2, 8, 28, 93};
14
15         //1a. subtract value of first element in the array from the value in the last element in the array and print result
16             System.out.println(ages[ages.length-1] - ages[0]);
17
18         //1b. add a new age to array and repeat step above
19             int [] newages = new int [9];
20
21             for(int i = 0; i < 8; i++) {
22                 newages[i] = ages[i];
23             }
24             newages[8] = 35;
25
26             System.out.println(newages[newages.length-1] - newages[0]);
27
28     //1c. use a loop to iterate through the array and calc the average age, print result
29             int sum = 0;
30             for (int number : newages) {
31                 sum += number;
32             }
33
34             double ave = sum / newages.length;
35             System.out.println(ave);
36
37     //2. create string array called names that contains the following values: "Sam", "Tommy", "Tim", "Sally", "Buck", "Bob"
38             String[] names = {"Sam","Tommy","Tim","Sally","Buck","Bob"};
39
40     //2a. use loop to iterate through the array and calculate the average number of letters per name, print result
41             int sumLetters = 0;
42
43             for (int i = 0; i < names.length; i++) {
44                 sumLetters += names[i].length();
```

```java
43            for (int i = 0; i < names.length; i++) {
44                sumLetters += names[i].length();
45            }
46
47            double aveLetters = sumLetters / names.length;
48            System.out.println(aveLetters);
49
50    //2b. use loop to iterate through the array again and concatenate all names together separated by spaces, print result
51            String result = "";
52            for (int counter = 0; counter < names.length; counter++) {
53                result = result.concat(names[counter]);
54                if (counter < names.length-1) {
55                    result = result.concat(" ");
56                }
57            } System.out.println(result);
58
59
60    //3. how do you access the last element of any array?
61            //array[array.length-1]
62
63    //4. how do you access the first element of any array?
64            //array[0]
65
66    //5. create new array of int called nameLengths,
67    //   write a loop to iterate over the previously created names array and
68    //   add the length of each name to the nameLengths array
69            int [] nameLengths = new int[6];
70            for (int a = 0; a < nameLengths.length; a++) {
71                nameLengths[a] = names[a].length();
72            }
73
74    //6. write loop to iterate over the nameLengths array and calculate the sum of all elements in array, print result
75            int total = 0;
76            for (int b : nameLengths) {
77                total += b;
78            }
79
80            System.out.println(total);
81
82    //7. write method that takes String, word and an int, n, as arguments and returns the word concatenated to itself n number of times
83            System.out.println(dupword("Hello",4));
84
85
86    //8. write method that takes two Strings, firstName & lastName, and returns full name as a String separated by a space
```

```java
86      //8. write method that takes two Strings, firstName & lastName, and returns full name as a String separated by a space
87          String name1 = "John";
88          String name2 = "Jones";
89          String allNames = fullName(name1, name2);
90
91          System.out.println(allNames);
92
93      //9. write method that takes array of int and returns true if sum of all int in array is greater than 100
94          int[] numArray = new int [3];
95          numArray[0] = 63;
96          numArray[1] = 88;
97          numArray[2] = 35;
98
99          System.out.println(sumArray(numArray));
100
101     //10. write method that takes array of double and returns the average of all elements in array
102         double[] grades = new double[5];
103         grades[0] = 73.5;
104         grades[1] = 99;
105         grades[2] = 80.5;
106         grades[3] = 100;
107         grades[4] = 63.5;
108
109         System.out.println(calcAve(grades));
110
111     //11. write method that takes two arrays of double and returns true if the average of the elements in first array
112        // is greater than average of elements in second array
113         double[] doubleArr = {29, 83.5, 2.98, 88};
114
115         System.out.println(isFirstAveGT(grades, doubleArr));
116
117     //12.  write method called willBuyDrink that takes boolean isHotOutside and a double moneyInPocket and
118        //  returns true if it is hot outside and if moneyInPocket is greater than 10.5
119         double moneyInPocket = 13;
120         boolean isHotOutside = true;
121
122         System.out.println(willBuyDrink(isHotOutside, moneyInPocket));
123
124
125
126     //13. create method of your own: return the age of a person based on year of birth
127         Scanner year = new Scanner(System.in);
128             System.out.println("What year were you born? ");
129
```

```java
126         //13. create method of your own: return the age of a person based on year of birth
127             Scanner year = new Scanner(System.in);
128                 System.out.println("What year were you born? ");
129
130                 int birthYear = year.nextInt();
131
132             System.out.println(getAge(birthYear));
133
134
135     }
136
137     //7.
138     public static String dupword(String word, int n) {
139         String dupword = "";
140         for (int i = 0; i < n; i++) {
141             dupword += word;
142         }
143         return dupword;
144     }
145
146     //8.
147     public static String fullName(String first, String last) {
148         return first + " " + last;
149     }
150
151     //9.
152     public static boolean sumArray(int[] numbers) {
153         return Arrays.stream(numbers).sum() > 100;
154     }
155
156     //10.
157     public static double calcAve(double[] numbers) {
158     //  double sum = 0;
159     //  for (double number : numbers) {
160     //      sum += number;
161     //  }
162         return Arrays.stream(numbers).average().orElse(Double.NaN);
163             //sum / numbers.length;
164     }
165
166     //11.
167     public static boolean isFirstAveGT(double[] firstArr, double[] secondArr) {
168         double firstAve = Arrays.stream(firstArr).average().orElse(Double.NaN);
169         double secondAve = Arrays.stream(secondArr).average().orElse(Double.NaN);
```

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```
156     //10.
157⊖    public static double calcAve(double[] numbers) {
158     //  double sum = 0;
159     //  for (double number : numbers) {
160     //      sum += number;
161     //  }
162         return Arrays.stream(numbers).average().orElse(Double.NaN);
163             //sum / numbers.length;
164     }
165
166     //11.
167⊖    public static boolean isFirstAveGT(double[] firstArr, double[] secondArr) {
168         double firstAve = Arrays.stream(firstArr).average().orElse(Double.NaN);
169         double secondAve = Arrays.stream(secondArr).average().orElse(Double.NaN);
170
171         return firstAve > secondAve;
172     }
173
174     //12.
175⊖    public static boolean willBuyDrink(boolean isHotOutside, double moneyInPocket) {
176         boolean buyDrink;
177
178         if (isHotOutside == true && moneyInPocket > 10.5) {
179             buyDrink = true;
180         } else {
181             buyDrink = false;
182         }
183         return buyDrink;
184     }
185
186     //13.
187⊖    public static int getAge (int birthYear) {
188         return Year.now().getValue() - birthYear;
189     }
190
191
192 }
193
194
195
```

Screenshots of Running Application:

🔲 Problems @ Javadoc 🔲 Declaration 🔎 Search 🖥 Console ✕

<terminated> Week3Code [Java Application] C:\Users\scarter\.p2\pool\plugins\org.ecl

```
90
32
29.0
3.0
Sam Tommy Tim Sally Buck Bob
23
HelloHelloHelloHello
John Jones
true
83.3
true
false
What year were you born?
1988
34
```

URL to GitHub Repository: scarter99/Week3 (github.com)