PROMINEO TECH

Week 4 Coding Assignment

URL to GitHub Repository:

URL to Public Link of your Video:

Instructions:

1. Follow the **Coding Steps** below to complete this assignment.
    - 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.
    - Create a new repository on GitHub for this week's assignment and push your completed code to this dedicated repo.
    - Create a video showcasing your work:
        - In this video: record and present your project verbally while showing the results of the working project.
        - Easy way to Create a video: Start a meeting in Zoom, share your screen, open Eclipse with the code and your Console window, start recording & record yourself describing and running the program showing the results.
        - Your video should be a maximum of 5 minutes.
        - Upload your video with a public link.
        - Easy way to Create a Public Video Link: Upload your video recording to YouTube with a public link.
2. In addition, please include the following in your Coding Assignment Document:
    - The URL for this week's GitHub repository.
    - The URL of the public link of your video.
3. Save the Coding Assignment Document as a .pdf and do the following:
    - Push the .pdf to the GitHub repo for this week.
    - Upload the .pdf to the LMS in your Coding Assignment Submission.

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Week 4 Coding Assignment

Coding Steps — Arrays and Methods

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 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
14.
15.

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16. it.

```
package week4project;
import java.util.Arrays;
public class week4 {
        public static void main(String[] args) {
        // 1. Create an array of int called ages
        int[] ages = {3, 9, 23, 64, 2, 8, 28, 93};
        // 2. Subtract the first element from the last element
        int result = ages[ages.length - 1] - ages[0];
        System.out.println("1. Result: " + result);
        // 3. Add a new age to the array and repeat the previous step
        int newAge = 45;
        ages = Arrays.copyOf(ages, ages.length + 1);
        ages[ages.length - 1] = newAge;
        result = ages[ages.length - 1] - ages[0];
        System.out.println("2. Result: " + result);
        // 4. Calculate the average age using a loop
        int sum = 0;
        for (int age : ages) {
        sum += age;
        }
        double averageAge = (double) sum / ages.length;
        System.out.println("3. Average Age: " + averageAge);
        // 5. Create an array of String called names
        String[] names = {"Sam", "Tommy", "Tim", "Sally", "Buck", "Bob"};
        // 6. Calculate the average number of letters per name using a loop
        int totalLetters = 0;
        for (String name : names) {
        totalLetters += name.length();
        }
        double averageLetters = (double) totalLetters / names.length;
        System.out.println("4. Average Letters per Name: " + averageLetters);
        // 7. Concatenate all the names using a loop
        String allNames = "";
        for (String name : names) {
        allNames += name + " ";
        }
        System.out.println("5. All Names: " + allNames.trim());
        // 8. Access the last element of any array
        int lastElement = ages[ages.length - 1];
        System.out.println("6. Last Element of ages: " + lastElement);
        // 9. Access the first element of any array
        int firstElement = ages[0];
```

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```
        System.out.println("7. First Element of ages: " + firstElement);
        // 10. Create a new array of int called nameLengths
        int[] nameLengths = new int[names.length];
        for (int i = 0; i < names.length; i++) {
        nameLengths[i] = names[i].length();
        }
        // 11. Calculate the sum of all elements in the nameLengths array
        int sumNameLengths = 0;
        for (int length : nameLengths) {
        sumNameLengths += length;
        }
        System.out.println("8. Sum of Name Lengths: " + sumNameLengths);
        // 12. Method that concatenates a word to itself n number of times
        System.out.println("9. Concatenated Word: " + concatenateWord("Hello",
3));
        // 13. Method that returns a full name from first and last name
        System.out.println("10. Full Name: " + getFullName("John", "Doe"));
        // 14. Method that checks if the sum of array elements is greater than
100
        int[] array1 = {40, 30, 20, 15};
        int[] array2 = {10, 20, 30, 40};
        System.out.println("11. Array 1 Sum > 100? " +
isSumGreaterThan100(array1));
        System.out.println(" Array 2 Sum > 100? " +
isSumGreaterThan100(array2));
        // 15. Method that calculates the average of elements in a double array
        double[] values = {10.5, 20.5, 30.5, 40.5};
        System.out.println("12. Array Average: " + calculateAverage(values));
        // 16. Method that compares the averages of two double arrays
        double[] array3 = {10.5, 20.5, 30.5};
        double[] array4 = {5.5, 15.5, 25.5};
        System.out.println("13. Array 3 Average > Array 4 Average? " +
isAverageGreater(array3, array4));
        // 17. Method that determines whether to buy a drink based on conditions
        System.out.println("14. Will Buy Drink? " + willBuyDrink(true, 12.5));
        }
        // Custom Method: Concatenates a word to itself n number of times
        public static String concatenateWord(String word, int n) {
        StringBuilder result = new StringBuilder();
        for (int i = 0; i < n; i++) {
        result.append(word);
        }
        return result.toString();
        }
```


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```
98.         // Custom Method: Returns a full name from first and last name
99.         public static String getFullName(String firstName, String lastName) {
100.        return firstName + " " + lastName;
101.        }
102.        // Custom Method: Checks if the sum of elements in an int array is
    greater than 100
103.        public static boolean isSumGreaterThan100(int[] array) {
104.        int sum = 0;
105.        for (int num : array) {
106.        sum += num;
107.        }
108.        return sum > 100;
109.        }
110.        // Custom Method: Calculates the average of elements in a double array
111.        public static double calculateAverage(double[] array) {
112.        double sum = 0;
113.        for (double num : array) {
114.        sum += num;
115.        }
116.        return sum / array.length;
117.        }
118.        // Custom Method: Compares the averages of two double arrays
119.        public static boolean isAverageGreater(double[] array1, double[] array2)
    {
120.        double avg1 = calculateAverage(array1);
121.        double avg2 = calculateAverage(array2);
122.        return avg1 > avg2;
123.        }
124.        // Custom Method: Determines whether to buy a drink based on conditions
125.        public static boolean willBuyDrink(boolean isHotOutside, double
    moneyInPocket) {
126.        return isHotOutside && moneyInPocket > 10.50;
127.        }
128.       }
129.
```

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Week 4 Coding Assignment

```
1. Result: 90
2. Result: 42
3. Average Age: 30.555555555555557
4. Average Letters per Name: 3.8333333333333335
5. All Names: Sam Tommy Tim Sally Buck Bob
6. Last Element of ages: 45
7. First Element of ages: 3
8. Sum of Name Lengths: 23
9. Concatenated Word: HelloHelloHello
10. Full Name: John Doe
11. Array 1 Sum > 100? true
   Array 2 Sum > 100? false
12. Array Average: 25.5
13. Array 3 Average > Array 4 Average? true
14. Will Buy Drink? true
```


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