PROMINEO TECH

Week 4 Coding Assignment

URL to GitHub Repository: sabaalshaeer/Week4Assignment (github.com)

URL to Public Link of your Video: https://youtu.be/eZvxNFSbTTM

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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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 it.

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Week 4 Coding Assignment

```
package Week4Assignment;

import java.util.Arrays;


public class Assignment {

	public static void main(String[] args) {

		//1.  Create an array of int called ages that contains the following values: 3, 9, 23, 64, 2, 8, 28, 93.
		int[] ages = {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.

		// Subtract the value of the first element from the last element
		int subFirstelementFromLastElement = ages[ages.length -1] - ages[0];
		System.out.println("Result of Subtraction is: " +subFirstelementFromLastElement);

		//b.  Add a new age to your array and repeat the step above to ensure it is dynamic (works for arrays of different lengths).
		// Add a new age to the array

	    int newAge = 50;
	    //creating a new array with a larger size  by using(ages.length + 1)
	    int[] newAges = new int[ages.length + 1];
	    for (int i = 0; i < ages.length; i++) {
	        //copying all the elements from ages to newAges
	        newAges[i] = ages[i];
	    }
	    //set the last element of newAges to the new age (newAge).
	    newAges[newAges.length - 1] = newAge;

	    for(int ele: newAges) {
	        System.out.println(ele);
	    }

	    // Subtract the value of the first element from the last element again
	    int newSubtractionResult = newAges[newAges.length - 1] - newAges[0];
	    System.out.println("New of Subtraction is: " + newSubtractionResult);

	    //c.	Use a loop to iterate through the array and calculate the average age. Print the result to the console.
	    // Calculate the average age
	    int sum = 0;
	    for (int age : newAges) {
	        sum += age;
```

```
        }
        double average = (double) sum / newAges.length;
        System.out.println("Average Age is: " + average);

        System.out.println(".....................................");

        //2.      Create an array of String called names that contains the
following values: "Sam", "Tommy", "Tim", "Sally", "Buck", "Bob".
        String[] names = {"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.
        int sumNumOfLetters =0;
        for(String name: names) {
            //add the length of each name to the sumNumOfLetters variable
            sumNumOfLetters += name.length();
        }
        //divide the total sum by (names.length) to get the average number of
letters per name.
        double averageNumOfLetter = (double)sumNumOfLetters / names.length;
        System.out.println("Avg number of letters per name: "+ averageNumOfLetter);


        //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.
        StringBuilder sb = new StringBuilder();

        for(int i =0; i < names.length; i++) {
            sb.append(names[i]);
            if( i != names.length -1) {
                  sb.append(" ");
                  }
            }
            System.out.println(sb.toString());

            System.out.println(".....................................");
            //3.  How do you access the last element of any array? By Using the
index array.length - 1.
            int lastElement =newAges[newAges.length -1];
            System.out.println(lastElement);
//            for(Integer age: newAges) {
//                System.out.println(age);
//            }
            System.out.println(".....................................");

            //4.  How do you access the first element of any array? buy using  the
index 0 which represents the first element of the array
            int firstElement =newAges[0];
            System.out.println(firstElement);
            System.out.println(".....................................");
```


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```
            //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.

            //declare a new array of integers called nameLengths with the same
length as the names array.
            int[] nameLengths = new int[names.length];
            //iterate over the names array
            for (int i = 0; i < names.length; i++) {
                  //then assign the length of each name to corresponding index in
the nameLengths array
                nameLengths[i] = names[i].length();
            }
            // Print the nameLengths array
            for (int length : nameLengths) {
                System.out.println(length);
            }
            System.out.println(".....................................");

            //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
            int sumOfLength = 0;
            for(int length : nameLengths) {
                  sumOfLength += length;
            }
            System.out.println(sumOfLength);
            System.out.println(".....................................");

            //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”).
            System.out.println(concatenateWordsNTime("Hello", 3));
            System.out.println("Q7.....................................");

            //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).
            System.out.println(getFullName("Saba", "Alshaeer"));
            System.out.println(".....................................");

            //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.
            int[] numbers = {4,6,9,34,67};
            System.out.println(returnIfsumOfIntGreaterThan(numbers));
            System.out.println(".....................................");

            //10. Write a method that takes an array of double and returns the
average of all the elements in the array.
            double[] arryOfNumbers = {3.5, 4.8, 2.2, 6.6, 8.1};
```



```
            double avgOfElements = calculateAverage(arryOfNumbers);
            System.out.println("Average of elements in arr : " + avgOfElements);
            System.out.println("Q10.....................................");


            //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.
            double[] arryOfNumbers2 = {1.5, 1.8, 1.2, 1.6, 1.1};
            boolean avgOfElements2 = compareAvgOftwoArrays(arryOfNumbers,
arryOfNumbers2);
            System.out.println(avgOfElements2);
            System.out.println(".....................................");

            //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.
            System.out.println(willBuyDrink(false, 11.0));
            System.out.println("Q12.................................");

            //13. Create a method of your own that solves a problem. In comments,
write what the method does and why you created it.
            /*
             * findMaxValue method.I chose this method because it is a common task
to find a max value in array also used in various scenarios
             * such as finding the highest score in a list of student scores.
             *
             * the method takes an array of int and return maximum value in the
array
             */
            int[] arrayNums = {5, 9, 3, 12, 7};
                  int maxNum = findMaxValue(arrayNums);
                  System.out.println("The maximum value is: " + maxNum);


      }

      //method for Q7:
      public static String concatenateWordsNTime(String word, int n) {
            String conString = "";
            for(int i =0;i<n; i++) {
                  conString += word;
            }
            return conString;
      }
      //method for Q8:
            public static String getFullName(String firstName, String lastName) {
                  return firstName+ " "+ lastName;
            }
```


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```
	//method for Q9:
		public static boolean returnIfsumOfIntGreaterThan(int[] arr) {
			int sum =0;
			for(int i =0; i < arr.length; i++) {
				sum += arr[i];
				if(sum > 100) {
					return true;
				}
			}
			return false;
		}
	//method for Q10:
	public static double calculateAverage(double[] arr) {
		double sum =0;
		for(int i =0; i < arr.length; i++) {
			sum += arr[i];
			}
		return sum /arr.length;

	}
	//method for Q11:
	public static boolean compareAvgOftwoArrays(double[] arr1, double[]
arr2) {
//		double sum1 =0;
//		double sum2 =0;
//		for(int i =0; i < arr1.length; i++) {
//			sum1 += arr1[i];
//			}
//		double avarage1 = sum1 /arr1.length;
//		for(int j =0; j < arr2.length; j++) {
//			sum2 += arr2[j];
//			}
//		double avarage2 = sum2 /arr2.length;
//
//		return avarage1 > avarage2;

		//short way, using calculateAverage() method
		 double average1 = calculateAverage(arr1);
		 double average2 = calculateAverage(arr2);
		 return average1 > average2;
	}

	//method for Q12
	public static boolean willBuyDrink(boolean isHotOutside, double
moneyInPocket) {
		return (isHotOutside && moneyInPocket > 10.50);
	}
	//method for Q13
	public static int findMaxValue(int[] arr) {
		int max = Integer.MIN_VALUE;
		for (int num : arr) {
			if (num > max) {
```



```
                    max = num;
                }
            }
            return max;
        }



}
```

