

1) Portability and security of Java as a result? 3 marks

**c) Bytecode is executed by JVM**

2) Which of the following for loop declaration is not valid? 3 marks

**a) for ( int i = 77; i >= 0; i / 7 )**

As it's not changing the value of i in the loop

3) What is the initial quantity of the ArrayList list? 3 marks

**b) 10**

4) Which of these have the highest precedence? 3 marks

**c) ()**

5) What is the return type of a method that does not return any value? 3 marks

**c) void**

6) What is the difference between continue and break statement? 5 marks

**Continue just ignore the rest of the loop and stay in the loop, while break will terminate the loop and kick the code out. So if we use continue in for loop, it will go to the next iteration but if we use break then it will just go out of the for loop.**

7) Why are Strings in Java called Immutable? 5marks

**According to the javatpoint.com, "The String is immutable in Java because of the security, synchronization and concurrency, caching, and class loading."**

8) What is the default switch case? Give an example.5 marks

**If no cases run in the switch then it will go to the last default one, like else in if...else if...else statements.**

9) A developer imports a package "uofR.\*", all classes in the package named university are loaded, but no classes from the sub-package are loaded. To load the classes from its sub-package (say "CS"), a developer has to import it explicitly as? 5 marks

**university.CS**

10) Can we have two methods in a class with the same name? Explain? 5marks

**Yes we can have two methods with the same name, given if they have different parameters or different conditions or data type of the parameter or even the data type of the method name. It's called method overloading**

## **Programming Question**

**1.**

**1.1.     /\*\*\*\*\***

**1.2.     \* Student Name: Nisarg Patel**

1.3.    \* Class: CS 203

1.4.    \* Program Question:

1.5.    Write two overloaded methods in a class named MaxOfArray that return the maximum number of an array with the

1.6.    following headers:

1.7.

1.8.    public static int average(int[] array)

1.9.    public static double average(double[] array)

1.10.

1.11.   Write a main method that prompts the user to enter ten double values, invokes this method, and displays the max

1.12.   value. Use CamelCase Notation for all identifiers in your program.

1.13.    \*\*\*\*\*/

1.14.

1.15.    /\*

1.16.    Doubt: What's the use of the int function

1.17.    as it will always go in double, isn't it?

1.18.    \*/

1.19.

1.20.   import java.util.Scanner; // Import the Scanner class

1.21.

1.22.   public class Main {

1.23.       public static int average(int[] array) {

1.24.

1.25.           int maxVal = array[0];

1.26.           for (int i = 0; i < array.length; i++)

1.27.           {

1.28.               if(maxVal < array[i])

1.29.               maxVal = array[i];

1.30.           }

1.31.

1.32.           return maxVal;

1.33.       };

1.34.

1.35.   public static double average(double[] array) {

1.36.

1.37.       double maxVal = array[0];

1.38.       for (int i = 0; i < array.length; i++)

1.39.       {

1.40.           if(maxVal < array[i])

1.41.           maxVal = array[i];

1.42.       }

1.43.

1.44.       return maxVal;

```

1.45.     };
1.46.
1.47.     public static void main(String[] args) {
1.48.
1.49.         Scanner myObj = new Scanner(System.in); // Create a Scanner object
1.50.
1.51.         //Asking the user for all the required input
1.52.         System.out.println("Enter the size of the A: ");
1.53.         int sizeA = myObj.nextInt(); // Read user input for size
1.54.
1.55.         //Creating the arrays
1.56.         double[] arrayA = new double[sizeA];
1.57.
1.58.         //Input for array A
1.59.         System.out.println("Enter the elements of the A: ");
1.60.         for (int i = 0; i < sizeA; i++)
1.61.             arrayA[i] = myObj.nextDouble(); // Read user input for size
1.62.
1.63.
1.64.         System.out.println("The max number from the given array is: " +
            average(arrayA) + "\n");
1.65.
1.66.         myObj.close();
1.67.     };
1.68.
1.69. }

```

The screenshot shows an IDE with two panels. The left panel displays the Java code for `Main.java`, which includes a multi-line comment with student information and a program question, followed by two overloaded `average` methods and a `main` method. The right panel shows the console output, where the program is compiled and run. The user enters the size of the array as 6 and then enters the elements 12, 4, 687, 4, 3, and 4. The program outputs the maximum value, 687.0.

```

Main.java x +
1 1 /*****
2 2 * Student Name: Nisarg Patel
3 3 * Class: CS 203
4 4 * Program Question:
5 5 Write two overloaded methods in a class named MaxOfArray
6 6 that return the maximum number of an array with the
7 7 following headers:
8 8 public static int average(int[] array)
9 9 public static double average(double[] array)
10 10
11 11 Write a main method that prompts the user to enter ten
12 12 double values, invokes this method, and displays the max
13 13 value. Use CamelCase Notation for all identifiers in your
14 14 program.
15 15 *****/
16 16 /*
17 17 Doubt: What's the use of the int function
18 18 as it will always go in double, isn't it?
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```

2.

```
2.1.  /*****
2.2.   * Student Name: Nisarg Patel
2.3.   * Class: CS 203
2.4.   * Program Question:
2.5.   Write a program in java to ask a string of characters (minimum of 10
2.6.   characters) from the user. The program goes
2.7.   ahead to capitalize on the first character and checks the number of vowels
2.8.   in the string and the total number of
2.9.   characters in the string.
2.10.  NB: Implement a method
2.11.  *****/
2.12.
2.13.
2.14.  import java.util.Scanner; // Import the Scanner class
2.15.
2.16.  class Main {
2.17.      public static void main(String[] args) {
2.18.
2.19.          System.out.println("Please enter the string (minimum it should be more
2.20.          than 10 character long): ");
2.21.          String str;
2.22.          Scanner myObj = new Scanner(System.in); // Create a Scanner object
2.23.          do {
2.24.              str = myObj.nextLine();
2.25.
2.26.              if (str.length() <= 10)
2.27.                  System.out.println("Hello user, you have enter a string less than 10
2.28.                  character, Please enter again:");
2.29.              } while (str.length() <= 10);
2.30.
2.31.              // capitalize first letter
2.32.              str = str.substring(0, 1).toUpperCase() + str.substring(1);
2.33.
2.34.              int vowelcount = 0;
2.35.              int charactercount = 0;
2.36.              for (int i = 0; i < str.length(); i++) {
2.37.                  char test = str.charAt(i);
2.38.                  test = Character.toLowerCase(test);
2.39.                  if (test == 'a' || test == 'e' || test == 'i' || test == 'o' || test == 'u')
2.40.                      vowelcount++;
2.41.
2.42.                  // To make the code not count the space as the character for the string
2.43.                  if (test != ' ')
```

```

2.40.         charactercount++;
2.41.     }
2.42.
2.43.         System.out.println("The string after capitalizing the first character is: " +
str);
2.44.
2.45.         System.out.println("The number of vowels is: " + vowelcount);
2.46.         System.out.println("The number of characters is: " + charactercount);
2.47.
2.48.         myObj.close();
2.49.     }
2.50. }

```

The screenshot shows an IDE with two panels. The left panel displays a Java file named 'Main.java' with the following content:

```

1 1 /*****
2 2 * Student Name: Nisarg Patel
3 3 * Class: CS 203
4 4 * Program Question:
5 5 Write a program in java to ask a string of characters
6 6 (minimum of 10 characters) from the user. The program
7 7 goes
8 8 ahead to capitalize on the first character and checks the
9 9 number of vowels in the string and the total number of
10 10 characters in the string.
11 11 NB: Implement a method
12 12 *****/
13 13
14 14 import java.util.Scanner; // Import the Scanner class
15 15
16 16 class Main {
17 17     public static void main(String[] args) {
18 18         System.out.println("Please enter the string (minimum
19 19 it should be more than 10 character long): ");
20 20         String str;

```

The right panel shows the console output for the command `sh -c javac -classpath .:target/dependency/* -d . $ (find . -type f -name '*.java')` and `java -classpath .:target/dependency/* Main`. The output is as follows:

```

Please enter the string (minimum it should be more th
an 10 character long):
askAdhkjhh ajsdhk
The string after capitalizing the first character is:
AskAdhkjhh ajsdhk
The number of vowels is: 3
The number of characters is: 16

```