JA111 C3 Evaluation

Note
There are a total of 6 questions.
All the questions are compulsory.
*Duration of the test is **3 hours.***
Mode of Submission: Github Link
Don't seek help from any person/resource during the test.
Marks Distribution is as follows:

Question	*Marks*
1	***5***
2	***2***
3	***4***
4	***2***
5	***3***
6	***4***

Question 1:

Create a java bean class Student with the following fields-

```
Roll;
Name;
Marks;
```

Create another Java Bean class Employee with the following fields-

```
Id;
Name;
Salary;
```

Create a class Main and inside main method implement the following-

Create an Array of size 4 which have student object, employee object,String and Integer.
{new Student(23, "rakesh", 450),new Employee(12, "Lokesh", 84000),"String",50};

Create a method changeArray() inside Main class which takes an array as an argument and also return the array.
Implement this method in the manner that in an array-

- If there is a student object then we need to grace the student marks by 10;
- If there is a Employee object then we need to increment the employee's salary by 10000;
- If there is a string then you have to reverse it.
- If there is an integer then increase that number by 20.

Call the method changeArray with the given array, and then print the details of the array returned from this method.

```
Class Main{

   method changeArray(): It will return the modified array

     public static void main(String[] args) {

       Array given=>{new Student(23, "rakesh", 450),new Employee(12, "Lokesh",
```

```
                        84000),"String",50};

            //call changeArray and then print the details of the array returned
      }
}
```

Sample Output:

```
Student [roll=23, name=rakesh, marks=460]
Employee [employeeId=12, name=Lokesh, salary=94000.0]
gnirtS
70
```

Question 2:

Briefly explain the difference between Early and Late Binding with examples.

Question 3:

Create a abstract class Evaluation that has a following members-

```
private final int numberOfQuestions;
abstract void evaluationTiming();
void printNoOfQuestions() {
   System.out.println("No. of Questions in Evaluation is :" +numberOfQuestions);
}
```

Create two classes **CodingEvaluation** and **DsaEvaluation** as a child of this **Evaluation** class.
Override the evaluationTiming() in **DsaEvaluation** such that it prints-
“Evaluation timing is 9:30 to 11:00”

Override the evaluationTiming() in **CodingEvaluation** such that it prints-
“Evaluation timing is 2:00 to 3:30”

Create a class **Main** that has following methods:
messageToStudents(Evaluation evaluation) : void
public static void main(String[] args);

Implement this messageToStudents method in such a way that if argument is a DsaEvaluation object then you have to print “Its a DSA Evaluation” and call printNoOfQuestions(), evaluationTiming() on DsaEvaluation object and if the argument is a CodingEvaluation object then you have to print “Its a Coding Evaluation” and call printNoOfQuestions(), evaluationTiming() on its object.

Implement this messageToStudents method using the below reference-

```
Class Main{
      public static void main(String[] args) {
            messageToStudents(new DsaEvaluation(5));
            messageToStudents(new CodingEvaluation(4));
       }
}
```

Sample Output ->

Its a DSA Evaluation
No. of Questions in Evaluation is :5
Evaluation timing is 9:30 to 11:00
==========

Its a Coding Evaluation
No. of Questions in Evaluation is :4
Evaluation timing is 2:00 to 3:30
==========

Question 4:

Write a Java program to get the character at the given index within the String and if the index is invalid then again asks the user to enter a new position. Take the input with the help of Scanner class-

Sample Output :

```
Enter a String =>
Masai
Enter a position =>
13
Invalid position, Please enter a valid position =>
7
Invalid position, Please enter a valid position =>
3
Character at the position 3 => a
```

Question 5:

a) Does the below code compile successfully? If not, why?

```
interface A{
     int i = 111;
}

class B implements A{
     void methodB(){
          i = 222;
     }
}
```

b) Create an interface Vehicle with a method run() and a class fuelCar and ElectricCar which implements the interface Vehicle.

```
interface Vehicle{

     run(): void

}
```

In a main method of main class, create object of fuelCar and ElectricCar and call the run method.

Now create one service method such that it can be called on fuelCars and ElectricCar objects.

Note: You can not write service method inside class fuelCar and ElectricCar.

```
public class Main{

    public static void main(String[] args) {

          //Create an object of FuelCar

          fuelCar.run();//calling run method on fuelcar object
          fuelCar.service();//calling service method on fuelcar object
    }
```

Sample Output:

```
Fuel Car is running
Car needs service
```

Q6) Create a Interface Student with method:

```
findPercentage(): double
```

Create a java bean class ArtStudent with following subjects:

```
int hindiMarks;
int englishMarks;
int historyMarks;
```

Create a java bean class ScienceStudent with following subjects:

```
int physicsMarks;
int chemistryMarks;
int mathsMarks;
int biologyMarks;
```

Create a java bean class CommerceStudent with following subjects:

```
int accountMarks;
int economicsMarks;
int businessStudiesMarks;
```

ScienceStudent, ArtStudent, CommerceStudent class implements the Student Interface override the findPercentage() method such that:

- If the user asks the percentage of ArtStudent it will return the ArtStudent percentage.
- If the user asks the percentage of ScienceStudent it will return ScienceStudent percentage.
- If the user asks the percentage of CommerceStudent it will return CommerceStudent percentage.

Create The Main class and inside the Main class create one static method:

```
public static double getStudent(int choice)
```

From the Main class main method call this getStudent(int choice) method which will implement such that:

- If the user passes 1 It will return the percentage of ArtStudent.

- If the user passes 2 It will return the percentage of ScienceStudent.
- If the user passes 3 It will return the percentage of CommerceStudent
- If the user passes any other number it will return 0

Note: Take input from the user for choice and marks.

Sample output:

```
Which Student percentage do you want to find:
 1. ArtStudent
 2. ScienceStudent
 3. CommerceStudent
2
Enter the Marks for Maths:
45
Enter the Marks for Chemistry:
90
Enter the Marks for Physics:
34
Enter the Marks for Biology:
70
Percentage is: 59.0
```