

Rajalakshmi Engineering College

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Branch: REC

Department: AI & ML - Section 4

Batch: 2028

Degree: B.E - AI & ML

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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 6_MCQ

Attempt : 1

Total Mark : 15

Marks Obtained : 15

Section 1 : MCQ

1. What will be the output of the following Java program?

```
class Vehicle {  
    void start() {  
        System.out.println("Vehicle starts");  
    }  
}  
class Car extends Vehicle {  
  
    void start() {  
        System.out.println("Car starts");  
    }  
}  
class ElectricCar extends Car {  
    void start() {  
        System.out.println("Electric Car starts silently");  
    }  
}
```

```
        }
    }
class Test {
    public static void main(String[] args) {
        Vehicle v = new ElectricCar();
        v.start();
    }
}
```

Answer

Electric Car starts silently

Status : Correct

Marks : 1/1

2. What will be the output of the following program?

```
class A {
    public int i;
    private int j;
}
class B extends A {
    void display() {
        super.j = super.i + 1;
        System.out.println(super.i + " " + super.j);
    }
}
class inheritance {
    public static void main(String args[]) {
        B obj = new B();
        obj.i=1;
        obj.j=2;
        obj.display();
    }
}
```

Answer

Compile Time Error

Status : Correct

Marks : 1/1

3. What will be the output of the following program?

```
class A {  
    int x = 10;  
}
```

```
class B extends A {  
    int x = 20;  
}
```

```
class C extends B {  
    int x = 30;  
  
    void display() {  
        System.out.println(x);  
        System.out.println(super.x);  
    }  
}
```

```
class Test {  
    public static void main(String[] args) {  
        C obj = new C();  
        obj.display();  
    }  
}
```

Answer

3020

Status : Correct

Marks : 1/1

4. What will be the output of the following code?

```
class A {  
    int sum(int x) {  
        return x + 2;  
    }  
}
```

```
class B extends A {  
    int sum(int x) {  
        return super.sum(x) * 2;  
    }  
}  
  
class C extends B {  
    int sum(int x) {  
        return super.sum(x) - 3;  
    }  
}  
  
class Test {  
    public static void main(String[] args) {  
        C obj = new C();  
        System.out.println(obj.sum(4));  
    }  
}
```

Answer

9

Status : Correct

Marks : 1/1

5. What will be the output of the following Java program?

```
class A {  
    void display() {  
        System.out.println("Class A");  
    }  
}
```

```
class B extends A {  
    void show() {  
        System.out.println("Class B");  
    }  
}  
  
class C extends B {
```

```
void print() {  
    System.out.println("Class C");  
}  
  
}  
  
class Test {  
    public static void main(String[] args) {  
        C obj = new C();  
        obj.display();  
        obj.show();  
        obj.print();  
    }  
}
```

Answer

Class A
Class B
Class C

Status : Correct

Marks : 1/1

6. What will be the output of the following Java program?

```
class Test {  
    void display(int a, int b) {  
        System.out.println("Method 1");  
    }  
    void display(double a, double b) {  
        System.out.println("Method 2");  
    }  
    public static void main(String[] args) {  
        Test obj = new Test();  
        obj.display(10, 10.0);  
    }  
}
```

Answer

Method 2

Status : Correct

Marks : 1/1

7. Which of the following is the correct way for class B to inherit from class A?

Answer

class B extends A {}

Status : Correct

Marks : 1/1

8. Which of the following is true about method overriding in Java?

Answer

The method must have the same name, same parameters, and must be in different classes with an inheritance relationship

Status : Correct

Marks : 1/1

9. What will be the output of the following Java program?

```
class A {  
    int value = 10;  
    void display() {  
        System.out.println("A's display: " + value);  
    }  
}  
class B extends A {  
    int value = 20;  
    void display() {  
        System.out.println("B's display: " + value);  
    }  
}  
class Test {  
    public static void main(String[] args) {  
        A obj = new B();  
        obj.display();  
        System.out.println("Value: " + obj.value);  
    }  
}
```

Answer

B's display: 20 Value: 10

Status : Correct

Marks : 1/1

10. What will be the output of the following Java program?

```
class Test {  
    void show(int a) {  
        System.out.println("Integer method");  
    }  
    void show(String s) {  
        System.out.println("String method");  
    }  
    public static void main(String[] args) {  
        Test obj = new Test();  
        obj.show(null);  
    }  
}
```

Answer

String method

Status : Correct

Marks : 1/1

11. What will be the output of the following code?

```
class A {  
    void display() {  
        System.out.println("Display A");  
    }  
}
```

```
class B extends A {  
    void display() {  
        System.out.println("Display B");  
    }  
}
```

```
241501225 class C extends B {  
241501225     void display() {  
241501225         super.display();  
241501225     }  
241501225 }  
241501225  
241501225 class Test {  
241501225     public static void main(String[] args) {  
241501225         C obj = new C();  
241501225         obj.display();  
241501225     }  
241501225 }
```

Answer

Display B

Status : Correct

Marks : 1/1

12. What will be the output of the following program?

```
241501225 class Vehicle {  
241501225     String type = "Vehicle";  
241501225 }  
241501225  
241501225 class Car extends Vehicle {  
241501225     String type = "Car";  
241501225 }  
241501225  
241501225 class Test {  
241501225     public static void main(String[] args) {  
241501225         Car c = new Car();  
241501225         System.out.println(c.type);  
241501225     }  
241501225 }
```

Answer

Car

Status : Correct

Marks : 1/1

13. What will be the output of the following Java program?

```
class Parent {  
    void show() {  
        System.out.println("Parent class");  
    }  
}  
class Child extends Parent {  
    void show() {  
        System.out.println("Child class");  
    }  
}  
class Test {  
    public static void main(String[] args) {  
        Parent obj = new Child();  
        obj.show();  
    }  
}
```

Answer

Child class

Status : Correct

Marks : 1/1

14. What will be the output of the following Java program?

```
class Vehicle {  
    void startEngine() {  
        System.out.println("Vehicle engine started");  
    }  
}
```

```
class Car extends Vehicle {  
    void startEngine() {  
        System.out.println("Car engine started");  
    }  
}
```

```
class Main {
```

```
public static void main(String[] args) {  
    Vehicle myVehicle = new Car();  
    myVehicle.startEngine();  
}  
}
```

Answer

Car engine started

Status : Correct

Marks : 1/1

15. Select the correct keyword for implementing inheritance through the class.

Answer

extends

Status : Correct

Marks : 1/1

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 6_Q1

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Elsa subscribes to a premium service with a base monthly cost, a service tax and an extra feature cost. Assist her in writing an inheritance program that takes input for these values and calculates the total monthly cost.

Refer to the below class diagram:

Input Format

The first line of input consists of a double value, representing the base monthly cost.

The second line consists of a double value, representing the service tax.

The third line consists of a double value, representing the extra feature cost.

Output Format

The output prints "Rs. X" where X is a double value, rounded off to two decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10.0

2.5

5.0

Output: Rs. 17.50

Answer

```
import java.util.Scanner;

// You are using Java
class Subscription {
    double baseMonthlyCost;

    Subscription(double baseMonthlyCost) {
        this.baseMonthlyCost = baseMonthlyCost;
    }
}

class PremiumSubscription extends Subscription {
    double serviceTax;
    double extraFeatureCost;

    PremiumSubscription(double baseMonthlyCost, double serviceTax, double
extraFeatureCost) {
        super(baseMonthlyCost);
        this.serviceTax = serviceTax;
        this.extraFeatureCost = extraFeatureCost;
    }

    double calculateMonthlyCost() {
        return baseMonthlyCost + serviceTax + extraFeatureCost;
    }
}
```

```
public class Main {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
  
        double baseMonthlyCost = scanner.nextDouble();  
        double serviceTax = scanner.nextDouble();  
        double extraFeatureCost = scanner.nextDouble();  
  
        PremiumSubscription premiumSubscription = new  
        PremiumSubscription(baseMonthlyCost, serviceTax, extraFeatureCost);  
  
        double totalMonthlyCost = premiumSubscription.calculateMonthlyCost();  
  
        System.out.printf("Rs. %.2f%n", totalMonthlyCost);  
        scanner.close();  
    }  
}
```

Status : Correct

Marks : 10/10

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 6_Q2

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Alice is managing an online store and wants to implement a program using inheritance to calculate the selling price of products after applying discounts.

Guide her by following the instructions:

Create a base class called Product with a public double attribute price. Create a subclass called DiscountedProduct, which extends Product and includes a private double attribute discount rate. This subclass has a method called calculateSellingPrice() to determine the final selling price after applying the discount.

Formula: Discounted selling price = price * (1 - discount rate)

Input Format

The first line of input consists of a double value p , the initial price of the product.

The second line consists of a double value d , the discount rate.

Output Format

The output prints "Rs. X", where X is a double value, representing the calculated discounted selling price, rounded off to two decimal places.

If the discount rate is greater than 1, print "Not applicable".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 50.00

0.20

Output: Rs. 40.00

Answer

```
import java.util.Scanner;  
  
// You are using Java  
class Product {  
    public double price;  
  
    Product(double price) {  
        this.price = price;  
    }  
}  
  
class DiscountedProduct extends Product {  
    private double discountRate;  
  
    DiscountedProduct(double price, double discountRate) {  
        super(price);  
        this.discountRate = discountRate;  
    }  
  
    double calculateSellingPrice() {  
        if(discountRate > 1.0) {
```

```
        return -1;
    }
    return price * (1 - discountRate);
}
}

class ProductPricing {
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);

    double initialPrice = scanner.nextDouble();
    double discountRate = scanner.nextDouble();
    DiscountedProduct discountedProduct = new
DiscountedProduct(initialPrice, discountRate);
    double sellingPrice = discountedProduct.calculateSellingPrice();

    if (sellingPrice >= 0){
        System.out.printf("Rs. %.2f%n", sellingPrice);
    } else {
        System.out.println("Not applicable");
    }
    scanner.close();
}
}
```

Status : Correct

Marks : 10/10

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 6_Q3

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Preethi is working on a project to automate sales tax calculations for items in a store. She wants to create a program that takes the price of an item and the sales tax rate as input and calculates the final price of the item after applying the sales tax.

Write a program using the class SalesTaxCalculator, which contains an overloaded method named calculateFinalPrice to handle both integer and double inputs. The program should also include a Main class that takes user input, calls the appropriate method from SalesTaxCalculator, and prints the final price of the item.

Formula Used: Final price = price + ((price * sales tax rate) / 100)

Input Format

The first line of input consists of an integer price (the price of the item for integer inputs).

The second line of input consists of an integer taxRate (the sales tax rate for integer inputs).

The third line of input consists of a double price (the price of the item for double inputs).

The fourth line of input consists of a double taxRate (the sales tax rate for double inputs).

Output Format

The first line of output prints an integer, representing the final price of the item after applying the sales tax for integer inputs (a and b).

The second line prints a double value, representing the final price of the item after applying the sales tax for double-value inputs (m and n), rounded to two decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 100

10

100.0

5.0

Output: 110

105.00

Answer

```
import java.util.Scanner;  
  
// You are using Java  
class SalesTaxCalculator {  
    public static int calculateFinalPrice(int price, int taxRate) {  
        return price + ((price * taxRate) / 100);  
    }  
}
```

```
public static double calculateFinalPrice(double price, double taxRate) {  
    return price + ((price * taxRate) / 100);  
}  
  
}  
  
class Main {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
        int intPrice = scanner.nextInt();  
        int intTaxRate = scanner.nextInt();  
        double doublePrice = scanner.nextDouble();  
        double doubleTaxRate = scanner.nextDouble();  
  
        int finalPriceInt = SalesTaxCalculator.calculateFinalPrice(intPrice,  
intTaxRate);  
        double finalPriceDouble =  
SalesTaxCalculator.calculateFinalPrice(doublePrice, doubleTaxRate);  
  
        System.out.println(finalPriceInt);  
        System.out.format("%.2f", finalPriceDouble);  
    }  
}
```

Status : Correct

Marks : 10/10