Rajalakshmi Engineering College

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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 BasicSubscription {
    protected double baseMonthlyCost;

    // Constructor
    public BasicSubscription(double baseMonthlyCost) {
        this.baseMonthlyCost = baseMonthlyCost;
    }

    // Method to get base monthly cost
    public double getBaseMonthlyCost() {
        return baseMonthlyCost;
    }
}

// Intermediate class that extends BasicSubscription and adds service tax
class TaxedSubscription extends BasicSubscription {
    protected double serviceTax;

    // Constructor
    public TaxedSubscription(double baseMonthlyCost, double serviceTax) {
        super(baseMonthlyCost);
        this.serviceTax = serviceTax;
    }
```

```
    // Method to calculate cost with tax
    public double calculateCostWithTax() {
        return baseMonthlyCost + serviceTax;
    }

    // Getter for service tax
    public double getServiceTax() {
        return serviceTax;
    }
}

// Premium class that extends TaxedSubscription and adds extra feature cost
class PremiumSubscription extends TaxedSubscription {
    private double extraFeatureCost;

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

    // Method to calculate total monthly cost
    public double calculateMonthlyCost() {
        return baseMonthlyCost + serviceTax + extraFeatureCost;
    }

    // Getter for extra feature cost
    public double getExtraFeatureCost() {
        return 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 J
class Product {
    public double price;

    // Constructor
    public Product(double price) {
        this.price = price;
    }
}

// DiscountedProduct subclass extends Product
class DiscountedProduct extends Product {
    private double discountRate;

    // Constructor
    public DiscountedProduct(double price, double discountRate) {
        super(price);
        this.discountRate = discountRate;
    }
```

```
    // Method to calculate selling price after discount
    public double calculateSellingPrice() {
        // Check if discount rate is greater than 1
        if (discountRate > 1.0) {
            return -1; // Return negative value to indicate invalid discount
        }

        // Calculate discounted selling price using the formula:
        // Discounted selling price = price * (1 - discount rate)
        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 {

    // Overloaded static method for integer inputs
    public static int calculateFinalPrice(int price, int taxRate) {
        // Calculate sales tax: (price * taxRate) / 100
```

```
        int salesTax = (price * taxRate) / 100;
        // Calculate final price: price + sales tax
        int finalPrice = price + salesTax;
        return finalPrice;
    }

    // Overloaded static method for double inputs
    public static double calculateFinalPrice(double price, double taxRate) {
        // Calculate sales tax: (price * taxRate) / 100
        double salesTax = (price * taxRate) / 100.0;
        // Calculate final price: price + sales tax
        double finalPrice = price + salesTax;
        return finalPrice;
    }
}
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**