Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 5_Q3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Neha is working as a developer for CityElectricity Board, which wants to build a household electricity billing system.

Each customer's electricity account has:

A Customer ID (integer)A Customer Name (string)Units Consumed (double)

The electricity bill is calculated based on these rules:

For the first 100 units   5 units charge per unitFor the next 100 units (101–200)   7 units charge per unitFor units above 200   10 units charge per unitIf the total bill exceeds 2000 units, a 5% discount is applied on the final bill.

Neha has been asked to implement this system using:

A class with attributes for customer details.A constructor to initialize customer details.Setter methods to update details if needed.Getter methods to retrieve details.Objects of the class to represent customers.

Finally, display each customer's details and final bill amount.

Input Format

The first line of input contains an integer N, representing the number of customers.

For each customer:

- The next line contains the Customer ID (integer).
- The following line contains the Customer Name (string).
- The next line contains the Units Consumed (double).

Output Format

For each customer, print the details in the following format:

Customer ID: <customer_id>

Customer Name: <customer_name>

Final Bill: <final_bill> (rounded to one decimal place)

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
1001
Ravi Kumar
80
Output: Customer ID: 1001
Customer Name: Ravi Kumar
Final Bill: 400.0

Answer

// You are using Java

```java
import java.util.Scanner;

class Customer {
    int customerId;
    String customerName;
    double unitsConsumed;

    // Constructor
    Customer(int id, String name, double units) {
        customerId = id;
        customerName = name;
        unitsConsumed = units;
    }

    // Method to calculate bill
    double calculateBill() {
        double bill = 0;

        if (unitsConsumed <= 100) {
            bill = unitsConsumed * 5;
        } else if (unitsConsumed <= 200) {
            bill = (100 * 5) + ((unitsConsumed - 100) * 7);
        } else {
            bill = (100 * 5) + (100 * 7) + ((unitsConsumed - 200) * 10);
        }

        // Apply discount if bill > 2000
        if (bill > 2000) {
            bill = bill - (bill * 0.05); // 5% discount
        }

        return bill;
    }

    // Display customer details
    void display() {
        double finalBill = calculateBill();
        System.out.println("Customer ID: " + customerId);
        System.out.println("Customer Name: " + customerName);
        System.out.println("Final Bill: " + String.format("%.1f", finalBill));
    }
}
```

```java
public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        int N = sc.nextInt(); // number of customers
        sc.nextLine(); // consume newline

        for (int i = 0; i < N; i++) {
            int id = sc.nextInt();
            sc.nextLine(); // consume newline
            String name = sc.nextLine();
            double units = sc.nextDouble();

            // create customer object
            Customer cust = new Customer(id, name, units);

            // display details with bill
            cust.display();
        }

        sc.close();
    }
}
```

Status : Correct   **Marks : 10/10**