

# Rajalakshmi Engineering College

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Batch: 2028

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 5\_Q3

Attempt : 2

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 unit  
For the next 100 units (101–200) 7 units charge per unit  
For units above 200 10 units charge per unit  
If 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***

```
import java.util.Scanner;
```

```
class Customer {  
    private int customerId;  
    private String customerName;  
    private double unitsConsumed;  
    private double finalBill;  
  
    public Customer(int customerId, String customerName, double  
unitsConsumed) {  
        this.customerId = customerId;  
        this.customerName = customerName;  
        this.unitsConsumed = unitsConsumed;  
        calculateBill();  
    }  
  
    public int getCustomerId() {  
        return customerId;  
    }  
  
    public String getCustomerName() {  
        return customerName;  
    }  
  
    public double getFinalBill() {  
        return finalBill;  
    }  
  
    public void setCustomerId(int customerId) {  
        this.customerId = customerId;  
    }  
  
    public void setCustomerName(String customerName) {  
        this.customerName = customerName;  
    }  
  
    public void setUnitsConsumed(double unitsConsumed) {  
        this.unitsConsumed = unitsConsumed;  
        calculateBill();  
    }  
}
```

```
private void calculateBill() {
    double bill = 0.0;
    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;
    }

    if (bill > 2000) {
        bill = bill * 0.95;
    }
    this.finalBill = bill;
}

public void displayDetails() {
    System.out.printf("Customer ID: %d\n", customerId);
    System.out.printf("Customer Name: %s\n", customerName);
    System.out.printf("Final Bill: %.1f\n", finalBill);
}

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

        int n = Integer.parseInt(sc.nextLine());

        for (int i = 0; i < n; i++) {
            int customerId = Integer.parseInt(sc.nextLine());
            String customerName = sc.nextLine();
            double unitsConsumed = Double.parseDouble(sc.nextLine());

            Customer customer = new Customer(customerId, customerName,
                unitsConsumed);
            customer.displayDetails();
        }
    }
}
```

```
        sc.close();  
    }  
}
```

**Status : Correct**

**Marks : 10/10**