

Rajalakshmi Engineering College

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Branch: REC

Department: AI & ML - Section 3

Batch: 2028

Degree: B.E - AI & ML

Scan to verify results



2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 5_Q2

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

You are working as a developer for CityBank, which wants to build a basic account management system.

Each customer at the bank has:

An Account Number (integer)
A Customer Name (string)
An Initial Balance (double)

The bank allows two types of transactions:

Deposit – increases the balance.
Withdrawal – decreases the balance only if enough funds are available.

If the withdrawal amount is greater than the balance, the withdrawal should not happen, and the balance should remain the same.

You are required to implement this system using:

A class with attributes for account details. A constructor to initialize account 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 account details after all transactions.

Input Format

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

For each customer:

- The next line contains the account number (integer).
- The following line contains the customer name (string).
- The next line contains the initial balance (double).
- The next line contains the deposit amount (double).
- The next line contains the withdrawal amount (double).

Output Format

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

1. Account Number: <account_number>
2. Customer Name: <customer_name>
3. Final Balance: <final_balance> (rounded to one decimal place)

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1

1234

Rahul Sharma

5000

2000

3000

Output: Account Number: 1234

Customer Name: Rahul Sharma

Final Balance: 4000.0

Answer

```
// You are using Java
import java.util.Scanner;

class BankAccount {
    private int accountNumber;
    private String customerName;
    private double balance;

    // Constructor to initialize account details
    public BankAccount(int accountNumber, String customerName, double
initialBalance) {
        this.accountNumber = accountNumber;
        this.customerName = customerName;
        this.balance = initialBalance;
    }

    // Getter methods
    public int getAccountNumber() {
        return accountNumber;
    }

    public String getCustomerName() {
        return customerName;
    }

    public double getBalance() {
        return balance;
    }

    // Setter methods
    public void setAccountNumber(int accountNumber) {
        this.accountNumber = accountNumber;
    }

    public void setCustomerName(String customerName) {
        this.customerName = customerName;
    }

    public void setBalance(double balance) {
```

```
this.balance = balance;
}

// Method to deposit money
public void deposit(double amount) {
    if (amount > 0) {
        balance += amount;
    }
}

// Method to withdraw money
public void withdraw(double amount) {
    if (amount > 0 && amount <= balance) {
        balance -= amount;
    }
    // If amount > balance, withdrawal is ignored (balance remains same)
}

// Method to display account details
public void displayAccountDetails() {
    System.out.println("Account Number: " + accountNumber);
    System.out.println("Customer Name: " + customerName);
    System.out.printf("Final Balance: %.1f%n", balance);
    System.out.println(); // Empty line after each customer's details
}
}

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

        // Read number of customers
        int n = scanner.nextInt();

        // Create array to store bank accounts
        BankAccount[] accounts = new BankAccount[n];

        // Process each customer
        for (int i = 0; i < n; i++) {
            // Read account details
            int accountNumber = scanner.nextInt();
            scanner.nextLine(); // Consume newline after integer input
        }
    }
}
```

```
String customerName = scanner.nextLine();
double initialBalance = scanner.nextDouble();
double depositAmount = scanner.nextDouble();
double withdrawalAmount = scanner.nextDouble();

// Create bank account object
accounts[i] = new BankAccount(accountNumber, customerName,
initialBalance);

// Perform deposit
accounts[i].deposit(depositAmount);

// Perform withdrawal
accounts[i].withdraw(withdrawalAmount);
}

// Display all customer account details
for (int i = 0; i < n; i++) {
    accounts[i].displayAccountDetails();
}

scanner.close();
}
```

Status : Correct

Marks : 10/10

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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 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

```
// You are using Java
```

```
import java.util.Scanner;

class ElectricityAccount {
    private int customerId;
    private String customerName;
    private double unitsConsumed;

    // Constants for bill calculation
    private static final double FIRST_SLAB_RATE = 5.0; // First 100 units
    private static final double SECOND_SLAB_RATE = 7.0; // Next 100 units
    (101-200)
    private static final double THIRD_SLAB_RATE = 10.0; // Units above 200
    private static final double FIRST_SLAB_LIMIT = 100.0;
    private static final double SECOND_SLAB_LIMIT = 200.0;
    private static final double DISCOUNT_THRESHOLD = 2000.0; // Bills above
    2000
    private static final double DISCOUNT_RATE = 0.05; // 5% discount

    // Constructor to initialize customer details
    public ElectricityAccount(int customerId, String customerName, double
    unitsConsumed) {
        this.customerId = customerId;
        this.customerName = customerName;
        this.unitsConsumed = unitsConsumed;
    }

    // Getter methods
    public int getCustomerId() {
        return customerId;
    }

    public String getCustomerName() {
        return customerName;
    }

    public double getUnitsConsumed() {
        return unitsConsumed;
    }

    // Setter methods
    public void setCustomerId(int customerId) {
        this.customerId = customerId;
    }
```

```
    }

    public void setCustomerName(String customerName) {
        this.customerName = customerName;
    }

    public void setUnitsConsumed(double unitsConsumed) {
        this.unitsConsumed = unitsConsumed;
    }

    // Method to calculate final bill
    public double calculateFinalBill() {
        double totalBill = 0.0;
        double remainingUnits = unitsConsumed;

        // Calculate bill for first 100 units (0-100) at 5 units per unit
        if (remainingUnits > 0) {
            double unitsInFirstSlab = Math.min(remainingUnits, FIRST_SLAB_LIMIT);
            totalBill += unitsInFirstSlab * FIRST_SLAB_RATE;
            remainingUnits -= unitsInFirstSlab;
        }

        // Calculate bill for next 100 units (101-200) at 7 units per unit
        if (remainingUnits > 0) {
            double unitsInSecondSlab = Math.min(remainingUnits,
                FIRST_SLAB_LIMIT);
            totalBill += unitsInSecondSlab * SECOND_SLAB_RATE;
            remainingUnits -= unitsInSecondSlab;
        }

        // Calculate bill for remaining units (above 200) at 10 units per unit
        if (remainingUnits > 0) {
            totalBill += remainingUnits * THIRD_SLAB_RATE;
        }

        // Apply 5% discount if total bill exceeds 2000
        if (totalBill > DISCOUNT_THRESHOLD) {
            totalBill = totalBill * (1 - DISCOUNT_RATE);
        }
    }

    return totalBill;
}
```

```
// Method to display customer details and final bill
public void displayCustomerDetails() {
    System.out.println("Customer ID: " + customerId);
    System.out.println("Customer Name: " + customerName);
    System.out.printf("Final Bill: %.1f%n", calculateFinalBill());
    System.out.println(); // Empty line after each customer's details
}
}

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

        // Read number of customers
        int n = scanner.nextInt();

        // Create array to store electricity accounts
        ElectricityAccount[] accounts = new ElectricityAccount[n];

        // Process each customer
        for (int i = 0; i < n; i++) {
            // Read customer details
            int customerId = scanner.nextInt();
            scanner.nextLine(); // Consume newline after integer input
            String customerName = scanner.nextLine();
            double unitsConsumed = scanner.nextDouble();

            // Create electricity account object
            accounts[i] = new ElectricityAccount(customerId, customerName,
                unitsConsumed);
        }

        // Display all customer details and final bills
        for (int i = 0; i < n; i++) {
            accounts[i].displayCustomerDetails();
        }

        scanner.close();
    }
}
```

Status : Correct

Marks : 10/10

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 5_Q5

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Ram is working as a developer for BrightEdu Coaching Center, which wants to build a student fee management system.

Each student's enrollment has:

An Enrollment ID (integer) A Student Name (string) The Number of Subjects (integer)

The fee calculation rules are:

Registration Fee = 1000 units (flat for every student). Per Subject Fee = 800 units. If the student enrolls in more than 5 subjects, a 20% scholarship (discount) is applied on the total fee.

Ram has been asked to implement this system using:

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

Finally, display each student's details and final fee.

Input Format

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

For each student:

- The next line contains the Enrollment ID (integer).
- The following line contains the student's name (string).
- The next line contains the Number of subjects (integer).

Output Format

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

- Enrollment ID: <enrollment_id>
- Student Name: <student_name>
- Final Fee: <final_fee> (rounded to one decimal place)

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1

1234

Ravi Kumar

3

Output: Enrollment ID: 1234

Student Name: Ravi Kumar

Final Fee: 3400.0

Answer

```
// You are using Java  
import java.util.Scanner;  
  
class StudentEnrollment{
```

```
private int enrollmentId;
private String studentName;
private int numberOfSubjects;

// Constants for fee calculation
private static final int REGISTRATION_FEE = 1000;
private static final int PER SUBJECT_FEE = 800;
private static final double SCHOLARSHIP_RATE = 0.20; // 20% discount
private static final int SCHOLARSHIP_THRESHOLD = 5; // More than 5 subjects

// Constructor to initialize student details
public StudentEnrollment(int enrollmentId, String studentName, int
numberOfSubjects) {
    this.enrollmentId = enrollmentId;
    this.studentName = studentName;
    this.numberOfSubjects = numberOfSubjects;
}

// Getter methods
public int getEnrollmentId() {
    return enrollmentId;
}

public String getStudentName() {
    return studentName;
}

public int getNumberOfSubjects() {
    return numberOfSubjects;
}

// Setter methods
public void setEnrollmentId(int enrollmentId) {
    this.enrollmentId = enrollmentId;
}

public void setStudentName(String studentName) {
    this.studentName = studentName;
}

public void setNumberOfSubjects(int numberOfSubjects) {
    this.numberOfSubjects = numberOfSubjects;
}
```

```
// Method to calculate final fee
public double calculateFinalFee() {
    // Calculate base fee = Registration Fee + (Number of Subjects * Per Subject
    Fee)
    double totalFee = REGISTRATION_FEE + (numberOfSubjects *
    PER SUBJECT_FEE);

    // Apply 20% scholarship if more than 5 subjects
    if (numberOfSubjects > SCHOLARSHIP_THRESHOLD) {
        totalFee = totalFee * (1 - SCHOLARSHIP_RATE);
    }
    return totalFee;
}

// Method to display student details and final fee
public void displayStudentDetails() {
    System.out.println("Enrollment ID: " + enrollmentId);
    System.out.println("Student Name: " + studentName);
    System.out.printf("Final Fee: %.1f%n", calculateFinalFee());
    System.out.println(); // Empty line after each student's details
}
}

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

        // Read number of students
        int n = scanner.nextInt();

        // Create array to store student enrollments
        StudentEnrollment[] students = new StudentEnrollment[n];

        // Process each student
        for (int i = 0; i < n; i++) {
            // Read student details
            int enrollmentId = scanner.nextInt();
            scanner.nextLine(); // Consume newline after integer input
            String studentName = scanner.nextLine();
        }
    }
}
```

```
    int numberOfSubjects = scanner.nextInt();

    // Create student enrollment object
    students[i] = new StudentEnrollment(enrollmentId, studentName,
    numberOfSubjects);
}

// Display all student details and final fees
for (int i = 0; i < n; i++) {
    students[i].displayStudentDetails();
}

scanner.close();
}
```

Status : Correct

Marks : 10/10