

# Rajalakshmi Engineering College

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Branch: REC

Department: AI & ML - Section 1

Batch: 2028

Degree: B.E - AI & ML

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

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

Attempt : 1

Total Mark : 15

Marks Obtained : 14

#### Section 1 : MCQ

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

```
class Alpha {  
    void greet(String name) {  
        System.out.println("Hello " + name);  
    }  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        Alpha obj = new Alpha();  
        obj.greet("Anu");  
    }  
}
```

**Answer**

Hello Anu

**Status :** Correct

**Marks :** 1/1

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

```
class A {  
    int val = 20;  
}  
  
public class Main {  
    public static void main(String[] args) {  
        A obj1 = new A();  
        A obj2 = obj1;  
        obj2.val += 5;  
        System.out.println(obj1.val);  
    }  
}
```

**Answer**

25

**Status :** Correct

**Marks :** 1/1

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

```
class MathUtils {  
    int add(int x) {  
        return x + x;  
    }  
}  
  
public class Main {  
    public static void main(String[] args) {  
        MathUtils m = new MathUtils();  
        System.out.println(m.add(5));  
    }  
}
```

**Answer**

10

**Status :** Correct

**Marks :** 1/1

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

```
class Person {  
    int age = 18;  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Person p = new Person();  
        p.age += 2;  
        System.out.println("Age: " + p.age);  
    }  
}
```

**Answer**

Age: 20

**Status :** Correct

**Marks :** 1/1

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

```
class Test {  
    private int value;  
    Test(int value) {  
        this.value = value;  
    }  
    public int getValue() {  
        return value;  
    }  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Test obj = new Test(10);
```

```
        System.out.println(obj.value);
    }
}
```

**Answer**

Compile-time error

**Status :** Correct

**Marks :** 1/1

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

```
class A {
    int y = 30;
}

public class Main {
    public static void main(String[] args) {
        A a1 = new A();
        A a2 = new A();
        a1.y = 50;
        System.out.println(a2.y);
    }
}
```

**Answer**

30

**Status :** Correct

**Marks :** 1/1

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

```
class A {
    int x = 50;
}

public class Main {
    public static void main(String[] args) {
        A obj1 = new A();
        A obj2 = obj1;
    }
}
```

```
obj2.x = 100;  
System.out.println(obj1.x);  
}  
}
```

**Answer**

100

**Status :** Correct

**Marks :** 1/1

8. What is the output of the following code?

```
class Box {  
    int height;  
    Box(int height) {  
        this.height = height;  
    }  
    void modifyHeight(Box b) {  
        b.height += 10;  
    }  
}  
public class Main {  
    public static void main(String[] args) {  
        Box b1 = new Box(20);  
        b1.modifyHeight(b1);  
        System.out.println(b1.height);  
    }  
}
```

**Answer**

30

**Status :** Correct

**Marks :** 1/1

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

```
class Ball {  
    int size = 11;  
}
```

```
class Game {  
    public static void main(String[] args) {  
        Ball b1 = new Ball();  
        Ball b2 = new Ball();  
        b2.size = 10;  
        System.out.println(b1.size);  
    }  
}
```

**Answer**

10

**Status :** Wrong

**Marks :** 0/1

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

```
class Person {  
    String name;  
    void setName(String n) {  
        name = n;  
    }  
    void printName() {  
        System.out.println(name);  
    }  
}
```

```
class Test {  
    public static void main(String[] args) {  
        Person p = new Person();  
        p.printName();  
    }  
}
```

**Answer**

null

**Status :** Correct

**Marks :** 1/1

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

```
class Box {  
    int length = 5;  
    int width = 4;  
  
    int area() {  
        return length * width;  
    }  
  
    public static void main(String[] args) {  
        Box b = new Box();  
        System.out.println("Area = " + b.area());  
    }  
}
```

**Answer**

Area = 20

**Status :** Correct

**Marks :** 1/1

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

```
class Demo {  
    void printMessage() {  
        System.out.println("Hello from Demo");  
    }  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Demo d = new Demo();  
        d.printMessage();  
    }  
}
```

**Answer**

Hello from Demo

**Status :** Correct

**Marks :** 1/1

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

```
class Box {  
    int volume(int l, int b, int h) {  
        return l * b * h;  
    }  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Box b = new Box();  
        System.out.println(b.volume(2, 3, 4));  
    }  
}
```

**Answer**

24

**Status :** Correct

**Marks :** 1/1

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

```
class Sample {  
    int x = 10;  
  
    void display() {  
        System.out.println("x = " + x);  
    }  
  
    public static void main(String[] args) {  
        Sample s = new Sample();  
        s.display();  
    }  
}
```

**Answer**

x = 10

**Status :** Correct

**Marks :** 1/1



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

```
class A {  
    int p = 5;  
    int q = 2;  
}  
  
class Main {  
    public static void main(String[] args) {  
        A obj = new A();  
        System.out.println(obj.p + obj.q);  
    }  
}
```

**Answer**

7

**Status :** Correct

**Marks :** 1/1

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## 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**

```
import java.util.*;

class CustomerAccount {
    // Attributes
    private int accountNumber;
    private String customerName;
    private double balance;

    // Constructor
    public CustomerAccount(int accountNumber, String customerName, double
balance) {
        this.accountNumber = accountNumber;
        this.customerName = customerName;
        this.balance = balance;
    }

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

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

    public String getCustomerName() {
        return customerName;
    }

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

    public double getBalance() {
        return balance;
    }

    public void setBalance(double balance) {
        this.balance = balance;
    }
}
```

```
}  
// Deposit method  
public void deposit(double amount) {  
    if (amount >= 0) {  
        balance += amount;  
    }  
}
```

```
// Withdrawal method  
public void withdraw(double amount) {  
    if (amount <= balance) {  
        balance -= amount;  
    }  
}
```

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

```
        int N = sc.nextInt();  
        sc.nextLine(); // consume newline
```

```
        CustomerAccount[] customers = new CustomerAccount[N];
```

```
        for (int i = 0; i < N; i++) {  
            int accNumber = sc.nextInt();  
            sc.nextLine(); // consume newline  
            String name = sc.nextLine();  
            double initialBalance = sc.nextDouble();  
            double depositAmount = sc.nextDouble();  
            double withdrawalAmount = sc.nextDouble();  
            if(sc.hasNextLine()) sc.nextLine(); // consume newline if present
```

```
            customers[i] = new CustomerAccount(accNumber, name, initialBalance);
```

```
            // Perform transactions  
            customers[i].deposit(depositAmount);  
            customers[i].withdraw(withdrawalAmount);  
        }
```

```
// Display final account details
for (CustomerAccount c : customers) {
    System.out.println("Account Number: " + c.getAccountNumber());
    System.out.println("Customer Name: " + c.getCustomerName());
    System.out.println("Final Balance: " + String.format("%.1f",
c.getBalance()));
}

    sc.close();
}
}
// You are using Java
```

**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***

```
import java.util.*;
```



```
class ElectricityAccount {
    // Attributes
    private int customerID;
    private String customerName;
    private double unitsConsumed;

    // Constructor
    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 the bill
```

```

public double calculateBill() {
    double bill = 0.0;
    double units = unitsConsumed;

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

    // Apply 5% discount if bill exceeds 2000
    if (bill > 2000) {
        bill = bill * 0.95;
    }

    return bill;
}
}

```

```

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

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

        ElectricityAccount[] customers = new ElectricityAccount[N];

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

            customers[i] = new ElectricityAccount(id, name, units);
        }

        // Display the bill for each customer
        for (ElectricityAccount c : customers) {

```

```
        System.out.println("Customer ID: " + c.getCustomerID());
        System.out.println("Customer Name: " + c.getCustomerName());
        System.out.println("Final Bill: " + String.format("%.1f", c.calculateBill()));
    }

    sc.close();
}
// You are using Java
```

**Status :** Correct

**Marks :** 10/10

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

### 2028\_REC\_OOPS using Java\_Week 5\_Q4

Attempt : 1

Total Mark : 10

Marks Obtained : 10

### Section 1 : Coding

#### 1. Problem Statement

You are working as a developer for CityCab, a taxi service company that wants to build a ride fare management system.

Each customer booking has:

A Booking ID (integer) A Customer Name (string) A Distance Travelled in km (double)

The fare calculation rules are:

Base Fare = 50 units (flat charge for every ride). Per km charge = 10 units/km. If the distance is greater than 20 km, a 10% discount is applied on the total fare.

You are required to implement this system using:

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

Finally, display each booking's details and final fare.

### ***Input Format***

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

For each booking:

- The next line contains the booking ID (integer).
- The following line contains the customer's name (string).
- The next line contains the distance travelled (double).

### ***Output Format***

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

1. Booking ID: <booking\_id>
2. Customer Name: <customer\_name>
3. Final Fare: <final\_fare> (rounded to one decimal place)

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: 1  
1234  
Rahul Sharma  
15

Output: Booking ID: 1234  
Customer Name: Rahul Sharma  
Final Fare: 200.0

### ***Answer***

```
import java.util.*;  
  
class Booking {
```

```
// Attributes
private int bookingID;
private String customerName;
private double distance;

// Constructor
public Booking(int bookingID, String customerName, double distance) {
    this.bookingID = bookingID;
    this.customerName = customerName;
    this.distance = distance;
}

// Getter and Setter methods
public int getBookingID() {
    return bookingID;
}

public void setBookingID(int bookingID) {
    this.bookingID = bookingID;
}

public String getCustomerName() {
    return customerName;
}

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

public double getDistance() {
    return distance;
}

public void setDistance(double distance) {
    this.distance = distance;
}

// Method to calculate final fare
public double calculateFare() {
    double fare = 50 + (distance * 10); // Base fare + per km charge

    if (distance > 20) {
```

```

        fare = fare * 0.9; // 10% discount
    }

    return fare;
}

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

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

        Booking[] bookings = new Booking[N];

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

            bookings[i] = new Booking(id, name, distance);
        }

        // Display final fare for each booking
        for (Booking b : bookings) {
            System.out.println("Booking ID: " + b.getBookingID());
            System.out.println("Customer Name: " + b.getCustomerName());
            System.out.println("Final Fare: " + String.format("%.1f", b.calculateFare()));
        }

        sc.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***

```
import java.util.*;
```

```
class Student {  
    // Attributes
```

```
private int enrollmentID;
private String studentName;
private int numSubjects;

// Constructor
public Student(int enrollmentID, String studentName, int numSubjects) {
    this.enrollmentID = enrollmentID;
    this.studentName = studentName;
    this.numSubjects = numSubjects;
}

// Getter methods
public int getEnrollmentID() {
    return enrollmentID;
}

public String getStudentName() {
    return studentName;
}

public int getNumSubjects() {
    return numSubjects;
}

// Setter methods
public void setEnrollmentID(int enrollmentID) {
    this.enrollmentID = enrollmentID;
}

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

public void setNumSubjects(int numSubjects) {
    this.numSubjects = numSubjects;
}

// Method to calculate final fee
public double calculateFee() {
    double fee = 1000 + (numSubjects * 800); // Registration + per subject fee

    // Apply 20% discount if subjects > 5
```

```

        if (numSubjects > 5) {
            fee = fee * 0.8;
        }

        return fee;
    }
}

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

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

        Student[] students = new Student[N];

        for (int i = 0; i < N; i++) {
            int id = sc.nextInt();
            sc.nextLine(); // consume newline
            String name = sc.nextLine();
            int subjects = sc.nextInt();
            if(sc.hasNextLine()) sc.nextLine(); // consume newline if present

            students[i] = new Student(id, name, subjects);
        }

        // Display each student's details and final fee
        for (Student s : students) {
            System.out.println("Enrollment ID: " + s.getEnrollmentID());
            System.out.println("Student Name: " + s.getStudentName());
            System.out.println("Final Fee: " + String.format("%.1f", s.calculateFee()));
        }

        sc.close();
    }
}
// You are using Java

```

**Status :** Correct

**Marks : 10/10**