

Rajalakshmi Engineering College

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Branch: REC
Department: AI & DS - Section 3
Batch: 2028
Degree: B.E - AI & DS

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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

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

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

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

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

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

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

    public int getAccountNumber() {
        return accountNumber;
    }

    public String getCustomerName() {
        return customerName;
    }

    public double getBalance() {
        return balance;
    }
}
```

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

public void withdraw(double amount) {
    if (amount <= balance) {
        balance -= amount;
    }
}

public void displayDetails() {
    System.out.println("Account Number: " + accountNumber);
    System.out.println("Customer Name: " + customerName);
    System.out.println("Final Balance: " + String.format("%.1f", balance));
}
}

class BankManagementSystem {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int N = Integer.parseInt(sc.nextLine().trim());

        BankAccount[] accounts = new BankAccount[N];

        for (int i = 0; i < N; i++) {
            int accountNumber = Integer.parseInt(sc.nextLine().trim());
            String customerName = sc.nextLine().trim();
            double initialBalance = Double.parseDouble(sc.nextLine().trim());
            double depositAmount = Double.parseDouble(sc.nextLine().trim());
            double withdrawalAmount = Double.parseDouble(sc.nextLine().trim());

            BankAccount account = new BankAccount(accountNumber,
customerName, initialBalance);
            account.deposit(depositAmount);
            account.withdraw(withdrawalAmount);

            accounts[i] = account;
        }

        for (BankAccount account : accounts) {
```

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

Status : Correct

Marks : 10/10

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Section 1 : Coding

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Deposit – increases the balance.
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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;

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

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

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

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

    public int getAccountNumber() {
        return accountNumber;
    }

    public String getCustomerName() {
        return customerName;
    }

    public double getBalance() {
        return balance;
    }
}
```

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

public void withdraw(double amount) {
    if (amount <= balance) {
        balance -= amount;
    }
}

public void displayDetails() {
    System.out.println("Account Number: " + accountNumber);
    System.out.println("Customer Name: " + customerName);
    System.out.println("Final Balance: " + String.format("%.1f", balance));
}
}

class BankManagementSystem {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int N = Integer.parseInt(sc.nextLine().trim());

        BankAccount[] accounts = new BankAccount[N];

        for (int i = 0; i < N; i++) {
            int accountNumber = Integer.parseInt(sc.nextLine().trim());
            String customerName = sc.nextLine().trim();
            double initialBalance = Double.parseDouble(sc.nextLine().trim());
            double depositAmount = Double.parseDouble(sc.nextLine().trim());
            double withdrawalAmount = Double.parseDouble(sc.nextLine().trim());

            BankAccount account = new BankAccount(accountNumber,
customerName, initialBalance);
            account.deposit(depositAmount);
            account.withdraw(withdrawalAmount);

            accounts[i] = account;
        }

        for (BankAccount account : accounts) {
```

```
        account.displayDetails();  
    }  
    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_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 Customer {
    private int customerId;
    private String customerName;
    private double unitsConsumed;

    public Customer(int customerId, String customerName, double
unitsConsumed) {
        this.customerId = customerId;
        this.customerName = customerName;
        this.unitsConsumed = unitsConsumed;
    }

    public void setCustomerId(int customerId) {
        this.customerId = customerId;
    }

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

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

    public int getCustomerId() {
        return customerId;
    }

    public String getCustomerName() {
        return customerName;
    }

    public double getUnitsConsumed() {
        return unitsConsumed;
    }

    public double calculateFinalBill() {
        double bill = 0;
        double units = unitsConsumed;
```

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

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

return bill;
}

public void displayDetails() {
    System.out.println("Customer ID: " + customerId);
    System.out.println("Customer Name: " + customerName);
    System.out.println("Final Bill: " + String.format("%.1f", calculateFinalBill()));
}
}

class ElectricityBillingSystem {
public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    int N = Integer.parseInt(sc.nextLine().trim());

    Customer[] customers = new Customer[N];

    for (int i = 0; i < N; i++) {
        int customerId = Integer.parseInt(sc.nextLine().trim());
        String customerName = sc.nextLine().trim();
        double unitsConsumed = Double.parseDouble(sc.nextLine().trim());
        customers[i] = new Customer(customerId, customerName,
        unitsConsumed);
    }

    for (Customer c : customers) {
        c.displayDetails();
    }
}

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_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.Scanner;
```

```
class Booking {
```

```
private int bookingId;
private String customerName;
private double distance;

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

public void setBookingId(int bookingId) {
    this.bookingId = bookingId;
}

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

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

public int getBookingId() {
    return bookingId;
}

public String getCustomerName() {
    return customerName;
}

public double getDistance() {
    return distance;
}

public double calculateFinalFare() {
    double totalFare = 50 + (10 * distance);
    if (distance > 20) {
        totalFare *= 0.9;
    }
    return totalFare;
}
```

```
public void displayDetails() {
    System.out.println("Booking ID: " + bookingId);
    System.out.println("Customer Name: " + customerName);
    System.out.println("Final Fare: " + String.format("%.1f",
calculateFinalFare()));
}
}

class RideFareSystem {
public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    int N = Integer.parseInt(sc.nextLine().trim());

    Booking[] bookings = new Booking[N];

    for (int i = 0; i < N; i++) {
        int bookingId = Integer.parseInt(sc.nextLine().trim());
        String customerName = sc.nextLine().trim();
        double distance = Double.parseDouble(sc.nextLine().trim());
        bookings[i] = new Booking(bookingId, customerName, distance);
    }

    for (Booking b : bookings) {
        b.displayDetails();
    }
}

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.Scanner;
```

```
class Student {  
    private int enrollmentId;
```

```
private String studentName;
private int numSubjects;

public Student(int enrollmentId, String studentName, int numSubjects) {
    this.enrollmentId = enrollmentId;
    this.studentName = studentName;
    this.numSubjects = numSubjects;
}

public double calculateFinalFee() {
    double totalFee = 1000 + (800 * numSubjects);
    if (numSubjects > 5) {
        totalFee *= 0.8;
    }
    return totalFee;
}

public void displayDetails() {
    System.out.println("Enrollment ID: " + enrollmentId);
    System.out.println("Student Name: " + studentName);
    System.out.println("Final Fee: " + String.format("%.1f", calculateFinalFee()));
}
}

class FeeManagementSystem {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int N = Integer.parseInt(sc.nextLine().trim());

        Student[] students = new Student[N];

        for (int i = 0; i < N; i++) {
            int enrollmentId = Integer.parseInt(sc.nextLine().trim());
            String studentName = sc.nextLine().trim();
            int numSubjects = Integer.parseInt(sc.nextLine().trim());
            students[i] = new Student(enrollmentId, studentName, numSubjects);
        }

        for (Student s : students) {
            s.displayDetails();
        }
    }
}
```

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

Status : Correct

Marks : 10/10