

❖ Problem 01 :

```
class BankAccount {  
    String accountNumber;  
    double balance;  
  
    BankAccount(String accNo) {  
        accountNumber = accNo;  
        balance = 0;  
    }  
  
    void deposit(double amount) {  
        balance += amount;  
    }  
  
    void withdraw(double amount) {  
        if (amount <= balance)  
            balance -= amount;  
        else  
            System.out.println("Insufficient Balance!");  
    }  
  
    void displayAccount() {  
        System.out.println("Account No: " + accountNumber);  
        System.out.println("Balance: " + balance);  
    }  
}  
  
class Customer {  
    String name;  
    int customerID;  
    BankAccount account;  
  
    Customer(String name, int id) {  
        this.name = name;  
        this.customerID = id;  
    }  
  
    void addBankAccount(BankAccount acc) {  
        account = acc;  
    }  
}
```

```
    }

    void deposit(double amount) {
        account.deposit(amount);
    }

    void withdraw(double amount) {
        account.withdraw(amount);
    }

    void displayCustomer() {
        System.out.println("Name: " + name);
        System.out.println("ID: " + customerID);
        account.displayAccount();
    }
}

public class Main {
    public static void main(String[] args) {
        Customer c1 = new Customer("Amit Sarkar", 283);
        BankAccount b1 = new BankAccount("ACC1001");

        c1.addBankAccount(b1);

        c1.deposit(5000);
        c1.withdraw(1500);

        c1.displayCustomer();
    }
}
```

❖ OutPut:

```
C:\Users\User\.jdks\openjdk-25.0.1\bin\java.exe "-  
javaagent:C:\Program Files\JetBrains\IntelliJ IDEA  
2025.3.1.1\lib\idea_rt.jar=55876" -Dfile.encoding=UTF-8 -  
Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -  
classpath C:\Java-  
Programming\BankingSystem\out\production\BankingSystem Main
```

Name: Amit Sarkar

ID: 283

Account No: ACC1001

Balance: 3500.0

Process finished with exit code 0

❖ Problem 02 :

```
class Book {  
    String title;  
    String author;  
    int yearPublished;  
  
    Book(String t, String a, int y) {  
        title = t;  
        author = a;  
        yearPublished = y;  
    }  
  
    void displayInfo() {  
        System.out.println(title + " | " + author + " | " +  
yearPublished);  
    }  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Book b1 = new Book("Java Basics", "James", 2018);  
        Book b2 = new Book("DSA Guide", "Rahul", 2022);  
  
        b1.displayInfo();  
        b2.displayInfo();  
    }  
}
```

❖ OutPut :

```
C:\Users\User\.jdks\openjdk-25.0.1\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2025.3.1.1\lib\idea_rt.jar=55891" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath C:\Java-Programming\BankingSystem\out\production\BookTest Main  
Java Basics | James | 2018  
DSA Guide | Rahul | 2022
```

Process finished with exit code 0

❖ Problem 03 :

```
class MetroTicket {  
    String name, source, destination, seatClass, discount;  
    boolean roundTrip;  
  
    MetroTicket(String n, String s, String d) {  
        this(n, s, d, false, "Regular", "");  
    }  
  
    MetroTicket(String n, String s, String d, boolean r) {  
        this(n, s, d, r, "Regular", "");  
    }
```

```

        MetroTicket(String n, String s, String d, boolean r,
String seat) {
    this(n, s, d, r, seat, "");
}

MetroTicket(String n, String s, String d, boolean r,
String seat, String dis) {
    name = n;
    source = s;
    destination = d;
    roundTrip = r;
    seatClass = (seat.equals("Premium")) ? "Premium" :
"Regular";
    discount = dis;
}

double calculateFare() {
    double fare;

    if (!roundTrip)
        fare = seatClass.equals("Premium") ? 150 : 100;
    else
        fare = seatClass.equals("Premium") ? 270 : 180;

    if (discount.equals("DIS10"))
        fare *= 0.9;

    return fare;
}

void displayTicketDetails() {
    System.out.println(name + " | " + source + " -> " +
destination);
    System.out.println("Seat: " + seatClass + " | "
Round: " + roundTrip);
    System.out.println("Fare: " + calculateFare());
    System.out.println();
}
}

public class Main {

```

```

        public static void main(String[] args) {
            MetroTicket t1 = new MetroTicket("A", "Dhaka",
"Mirpur");
            MetroTicket t2 = new MetroTicket("B", "Uttara",
"Banani", true);
            MetroTicket t3 = new MetroTicket("C", "Farmgate",
"Gulshan", false, "Premium");
            MetroTicket t4 = new MetroTicket("D", "Motijheel",
"Airport", true, "Premium", "DIS10");

            t1.displayTicketDetails();
            t2.displayTicketDetails();
            t3.displayTicketDetails();
            t4.displayTicketDetails();
        }
    }
}

```

❖ OutPut 03 :

```

C:\Users\User\.jdks\openjdk-25.0.1\bin\java.exe "--
javaagent:C:\Program Files\JetBrains\IntelliJ IDEA
2025.3.1.1\lib\idea_rt.jar=55913" -Dfile.encoding=UTF-8 -
Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -
classpath C:\Java-
Programming\BankingSystem\out\production\MetroTest Main
A | Dhaka -> Mirpur
Seat: Regular | Round: false
Fare: 100.0

B | Uttara -> Banani
Seat: Regular | Round: true
Fare: 180.0

C | Farmgate -> Gulshan
Seat: Premium | Round: false
Fare: 150.0

D | Motijheel -> Airport
Seat: Premium | Round: true

```

Fare: 243.0

Process finished with exit code 0

❖ Problem 04 :

```
class Student {  
    int id;  
    String name;  
    double cgpa;  
  
    Student(int i, String n, double c) {  
        id = i;  
        name = n;  
        cgpa = c;  
    }  
  
    void display() {  
        System.out.println(id + " | " + name + " | " +  
        cgpa);  
    }  
}  
  
class Department {  
    Student[] students = new Student[5];  
    int count = 0;  
  
    void register(Student s) {  
        if (count < students.length) {  
            students[count++] = s;  
        } else {  
            System.out.println("No more space!");  
        }  
    }  
  
    void search(int id) {  
        for (int i = 0; i < count; i++) {  
            if (students[i].id == id) {  
                System.out.println("Student found: " + students[i]);  
            }  
        }  
    }  
}
```

```

        students[i].display();
        return;
    }
}

System.out.println("Student not found");
}

void displayAll() {
    for (int i = 0; i < count; i++)
        students[i].display();
}
}

public class Main {
    public static void main(String[] args) {
        Department d = new Department();

        d.register(new Student(1, "Amit", 3.20));
        d.register(new Student(2, "Rafi", 3.50));

        d.search(2);
        d.displayAll();
    }
}

```

❖ OutPut :

```

C:\Users\User\.jdks\openjdk-25.0.1\bin\java.exe
"-javaagent:C:\Program Files\JetBrains\IntelliJ
IDEA 2025.3.1.1\lib\idea_rt.jar=55943" -
Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8
-Dsun.stderr.encoding=UTF-8 -classpath C:\Java-
Programming\BankingSystem\out\production\Students
ystem Main
2 | Rafi | 3.5
1 | Amit | 3.2
2 | Rafi | 3.5

```

Process finished with exit code 0

