```
class BankAccount {
    private String accountNumber;
    private double balance;
    private int pin;

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

    public boolean validatePin(int enteredPin) {
        return enteredPin == pin;
    }

    public void debit(double amount) {
        if (amount <= balance) {
            balance -= amount;
            System.out.println("₹" + amount + " withdrawn. Remaining
balance: ₹" + balance);
        } else {
            System.out.println("Insufficient balance. Transaction
failed.");
        }
    }
}

class ATM {
    private BankAccount linkedAccount;

    public ATM(BankAccount linkedAccount) {
        this.linkedAccount = linkedAccount;
    }

    public void withdraw(int enteredPin, double amount) {
        System.out.println("insertCard()");
        System.out.println("enterPIN()");
        System.out.println("requestWithdrawal(" + amount + ")");
        if (linkedAccount.validatePin(enteredPin)) {
            linkedAccount.debit(amount);
```

```
            System.out.println("dispenseCash()");
            System.out.println("showConfirmation()");
        } else {
            System.out.println("Invalid PIN. Transaction failed.");
        }
    }
}

class Customer {
    private String name;
    private ATM atm;

    public Customer(String name, ATM atm) {
        this.name = name;
        this.atm = atm;
    }

    public void performWithdrawal(int pin, double amount) {
        System.out.println(name + " is requesting withdrawal...");
        atm.withdraw(pin, amount);
    }
}

public class ATMDemo {
    public static void main(String[] args) {
        BankAccount account = new BankAccount("1234567890", 50000.0,
1234);
        ATM atm = new ATM(account);
        Customer customer = new Customer("Ravi", atm);

        // Correct PIN
        customer.performWithdrawal(1234, 10000.0);

        System.out.println();

        // Incorrect PIN
        customer.performWithdrawal(9999, 5000.0);
    }
}
```

```
PS E:\JAVA PROGRAMS\steparyansingh\year2\uml> java ATMDemo
Ravi is requesting withdrawal...
insertCard()
enterPIN()
requestWithdrawal(10000.0)
?10000.0 withdrawn. Remaining balance: ?40000.0
dispenseCash()
showConfirmation()

Ravi is requesting withdrawal...
insertCard()
enterPIN()
requestWithdrawal(5000.0)
Invalid PIN. Transaction failed.
```

```java
import java.util.*;

class Book {
    private String title;
    private String author;
    private String isbn;

    public Book(String title, String author, String isbn) {
        this.title = title;
        this.author = author;
        this.isbn = isbn;
    }

    public void showDetails() {
        System.out.println("Title: " + title + ", Author: " + author + ",
ISBN: " + isbn);
    }
```

```
    public String getTitle() {
        return title;
    }
}

class Library {
    private String name;
    private List<Book> books;

    public Library(String name) {
        this.name = name;
        this.books = new ArrayList<>();
    }

    public void addBook(Book book) {
        books.add(book);
        System.out.println("Added book '" + book.getTitle() + "' to " +
name + " Library");
    }

    public void showBooks() {
        System.out.println("Books in " + name + " Library:");
        for (Book book : books) {
            book.showDetails();
        }
    }
}

class Member {
    private String name;
    private List<Book> borrowedBooks;

    public Member(String name) {
        this.name = name;
        this.borrowedBooks = new ArrayList<>();
    }

    public void borrowBook(Book book) {
        borrowedBooks.add(book);
```

```
        System.out.println(name + " borrowed book: " + book.getTitle());
    }

    public void showBorrowedBooks() {
        System.out.println("Books borrowed by " + name + ":");
        for (Book book : borrowedBooks) {
            book.showDetails();
        }
    }
}

public class LibraryManagementSystem {
    public static void main(String[] args) {
        Library lib = new Library("Central City");

        Book b1 = new Book("1984", "George Orwell", "ISBN001");
        Book b2 = new Book("Clean Code", "Robert C. Martin", "ISBN002");
        Book b3 = new Book("The Pragmatic Programmer", "Andrew Hunt",
"ISBN003");

        lib.addBook(b1);
        lib.addBook(b2);
        lib.addBook(b3);

        lib.showBooks();

        Member m1 = new Member("Ravi");
        m1.borrowBook(b1);
        m1.borrowBook(b3);

        m1.showBorrowedBooks();
    }
}
```

```
PS E:\JAVA PROGRAMS\steparyansingh\year2\uml> java LibraryManagementSystem
Added book '1984' to Central City Library
Added book 'Clean Code' to Central City Library
Added book 'The Pragmatic Programmer' to Central City Library
Books in Central City Library:
Title: 1984, Author: George Orwell, ISBN: ISBN001
Title: Clean Code, Author: Robert C. Martin, ISBN: ISBN002
Title: The Pragmatic Programmer, Author: Andrew Hunt, ISBN: ISBN003
Ravi borrowed book: 1984
Ravi borrowed book: The Pragmatic Programmer
Books borrowed by Ravi:
Title: 1984, Author: George Orwell, ISBN: ISBN001
Title: The Pragmatic Programmer, Author: Andrew Hunt, ISBN: ISBN003
```

```java
import java.util.*;

class Product {
    private String name;
    private double price;

    public Product(String name, double price) {
        this.name = name;
        this.price = price;
    }

    public void showDetails() {
        System.out.println("Product: " + name + ", Price: ₹" + price);
    }
}

class Order {
    private List<Product> products;

    public Order() {
        this.products = new ArrayList<>();
    }
```

```
    public void addProduct(Product product) {
        products.add(product);
    }

    public void showOrderDetails() {
        System.out.println("Order contains:");
        for (Product product : products) {
            product.showDetails();
        }
    }
}

class Customer {
    private String name;
    private String email;
    private List<Order> orders;

    public Customer(String name, String email) {
        this.name = name;
        this.email = email;
        this.orders = new ArrayList<>();
    }

    public void placeOrder(Order order) {
        orders.add(order);
    }

    public void showCustomerDetails() {
        System.out.println("Customer: " + name + ", Email: " + email);
        for (Order order : orders) {
            order.showOrderDetails();
        }
    }
}

public class OnlineShoppingSystem {
    public static void main(String[] args) {
        // Create Products
        Product product1 = new Product("Laptop", 75000.0);
```

```
        Product product2 = new Product("Mouse", 1500.0);
        Product product3 = new Product("Keyboard", 2500.0);

        // Create Orders and add Products
        Order order1 = new Order();
        order1.addProduct(product1);
        order1.addProduct(product2);

        Order order2 = new Order();
        order2.addProduct(product3);

        // Create Customer and place Orders
        Customer customer1 = new Customer("Amit", "amit@example.com");
        customer1.placeOrder(order1);
        customer1.placeOrder(order2);

        // Display full details
        customer1.showCustomerDetails();
    }
}
```

```
PS E:\JAVA PROGRAMS\steparyansingh\year2\uml> javac OnlineShoppingSystem.java
PS E:\JAVA PROGRAMS\steparyansingh\year2\uml> java OnlineShoppingSystem.java
Customer: Amit, Email: amit@example.com
Order contains:
Product: Laptop, Price: ?75000.0
Product: Mouse, Price: ?1500.0
Order contains:
Product: Keyboard, Price: ?2500.0
PS E:\JAVA PROGRAMS\steparyansingh\year2\uml>
```