

# Rajalakshmi Engineering College

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

### REC\_2028\_OOPS using Java\_Week 11

Attempt : 1  
Total Mark : 20  
Marks Obtained : 20

#### Section 1 : Project

##### 1. Problem Statement

In Café Central, the menu is cataloged and stored in a database.

To efficiently manage the restaurant's menu using Java and JDBC, you must build a Restaurant Management System that supports:

Adding new menu items

Updating menu item prices

Viewing details of a menu item

Displaying all menu items in sorted order

You are given two files:

File 1: MenuItem.java (POJO Class)

This class represents the MenuItem entity.

A MenuItem contains the following details:

Field	Description
itemId	Unique Menu Item ID (Integer)
name	Item Name (String)
category	Item Category (String)
price	Item Price (Double)

Students must write code in the marked area:

```
class MenuItem {  
    private int itemId;  
    private String name;  
    private String category;  
    private double price;  
  
    public MenuItem() {}  
  
    public MenuItem(int itemId, String name, String category, double price) {  
        // write your code here  
    }  
  
    // Include getters and setters  
}
```

Expected in this part:

Assign parameter values to instance variables inside the constructor.

Add getters and setters for all attributes.

File 2: MenuItemDAO.java (Data Access Layer)

This class handles all database operations using JDBC.

Students must complete the missing JDBC logic in the following methods:

```
class MenuItemDAO {

    public void addItem(Connection conn, MenuItem menuItem)
    throws SQLException {

        // write your code here

    }

    public void updateItemPrice(Connection conn, int itemId, double
    newPrice) throws SQLException {

        // write your code here

    }

    public void deleteMenuItem(Connection conn, int itemId) throws
    SQLException {

        // write your code here

    }

    public MenuItem viewItemDetails(Connection conn, int itemId) throws
    SQLException {

        // write your code here

    }

    public List<MenuItem> displayAllMenuItems(Connection conn) throws
    SQLException {

        // write your code here

    }

    private MenuItem mapToMenuItem(ResultSet rs) throws SQLException {
        return new MenuItem(
```

```
// write your code here
);
}
}
```

Expected in this part:

Write SQL queries for INSERT, UPDATE, DELETE, SELECT.

Execute queries using PreparedStatement or Statement.

Map ResultSet rows to MenuItem objects using mapToMenuItem().

Return a List<MenuItem> where required.

The system should connect to a MySQL database using the following default credentials:

DB URL: jdbc:mysql://localhost/ri\_db

USER: test

PWD: test123

The menu table has already been created with the following structure:

Table Name: menu

### ***Input Format***

The first line of input consists of an integer choice, representing the operation to be performed (1 for Add Item, 2 for Restock item, 3 for reduce item, 4 for Display, 5 for Exit).

For choice 1 (Add Menu Item):

- The second line consists of an integer item\_id.
- The third line consists of a string name.
- The fourth line consists of a string category.
- The fifth line consists of a double price.

For choice 2 (Update Item Price):

- The second line consists of an integer item\_id.
- The third line consists of a double new\_price.

For choice 3 (View Item Details):

- The second line consists of an integer item\_id.

For choice 4 (Display All Menu Items):

- No additional inputs are required.

For choice 5 (Exit):

- No additional inputs are required.

### ***Output Format***

For choice 1 (Add Menu Item):

- Print "Menu item added successfully" if the item was added.
- Print "Failed to add item." if the insertion failed.

For choice 2 (Update Item Price):

- Print "Item price updated successfully" if the price update was successful.
- Print "Item not found." if the specified item ID does not exist.

For choice 3 (View Item Details):

- Display the item details in the format:
- ID: [item\_id] | Name: [name] | Category: [category] | Price: [price]
- Print "Item not found." if the specified item ID does not exist.

For choice 4 (Display All Menu Items):

- Display each item on a new line in the format:
- ID | Name | Category | Price
- If no items are available, print nothing (or handle with an appropriate message if desired).

For choice 5 (Exit):

- Print "Exiting Restaurant Management System."

For invalid input:

- Print "Invalid choice. Please try again."

### **Sample Test Case**

Input: 1

11

Margherita Pizza

Main Course

12.99

4

5

Output: Menu item added successfully

ID | Name | Category | Price

11 | Margherita Pizza | Main Course | 12.99

Exiting Restaurant Management System.

### **Answer**

```
import java.sql.*;
```

```
import java.util.Scanner;
```

```
class RestaurantManagementSystem {
```

```
    public static void main(String[] args) {
```

```
        try (Connection conn = DriverManager.getConnection("jdbc:mysql://localhost/ri_db", "test", "test123"));
```

```
            Scanner scanner = new Scanner(System.in)) {
```

```
                boolean running = true;
```

```
                while (running) {
```

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

```
                    switch (choice) {
```

```
                        case 1:
```

```
                            addMenuItem(conn, scanner);
```

```
                            break;
```

```
                        case 2:
```

```
                            updateItemPrice(conn, scanner);
```

```
                            break;
```

```

        case 3:
            viewItemDetails(conn, scanner);
            break;
        case 4:
            displayAllMenuItems(conn);
            break;
        case 5:
            System.out.println("Exiting Restaurant Management System.");
            running = false;
            break;
        default:
            System.out.println("Invalid choice. Please try again.");
    }
}
} catch (SQLException e) {
    e.printStackTrace();
}
}

```

// You are using Java

```

public static void addMenuItem(Connection conn, Scanner scanner) {
    try {
        int itemId = scanner.nextInt();
        scanner.nextLine();
        String name = scanner.nextLine();
        String category = scanner.nextLine();
        double price = scanner.nextDouble();

        String sql = "INSERT INTO menu (item_id, name, category, price) VALUES
        (?, ?, ?, ?)";
        try (PreparedStatement ps = conn.prepareStatement(sql)) {
            ps.setInt(1, itemId);
            ps.setString(2, name);
            ps.setString(3, category);
            ps.setDouble(4, price);
            int rows = ps.executeUpdate();
            if (rows > 0) {
                System.out.println("Menu item added successfully");
            } else {
                System.out.println("Failed to add item.");
            }
        }
    } catch (SQLException e) {

```

```

        System.out.println("Error adding item: " + e.getMessage());
    }
}

public static void updateItemPrice(Connection conn, Scanner scanner) {
    try {

        int itemId = scanner.nextInt();
        double newPrice = scanner.nextDouble();

        String sql = "UPDATE menu SET price = ? WHERE item_id = ?";
        try (PreparedStatement ps = conn.prepareStatement(sql)) {
            ps.setDouble(1, newPrice);
            ps.setInt(2, itemId);
            int rows = ps.executeUpdate();
            if (rows > 0) {
                System.out.println("Item price updated successfully");
            } else {
                System.out.println("Item not found.");
            }
        }
    } catch (SQLException e) {
        System.out.println("Error updating price: " + e.getMessage());
    }
}

```

```

public static void deleteMenuItem(Connection conn, Scanner scanner) {
    try {
        int itemId = scanner.nextInt();

        String sql = "DELETE FROM menu WHERE item_id = ?";
        try (PreparedStatement ps = conn.prepareStatement(sql)) {
            ps.setInt(1, itemId);
            int rows = ps.executeUpdate();
            if (rows > 0) {
                System.out.println("Menu item deleted successfully");
            } else {
                System.out.println("Item not found.");
            }
        }
    } catch (SQLException e) {
        System.out.println("Error deleting item: " + e.getMessage());
    }
}

```

```

    }
}

public static void viewItemDetails(Connection conn, Scanner scanner) {
    try {
        int itemId = scanner.nextInt();

        String sql = "SELECT * FROM menu WHERE item_id = ?";
        try (PreparedStatement ps = conn.prepareStatement(sql)) {
            ps.setInt(1, itemId);
            ResultSet rs = ps.executeQuery();
            if (rs.next()) {
                System.out.println("ID: " + rs.getInt("item_id") +
                    " | Name: " + rs.getString("name") +
                    " | Category: " + rs.getString("category") +
                    " | Price: " + String.format("%.2f", rs.getDouble("price")));
            } else {
                System.out.println("Item not found.");
            }
        }
    } catch (SQLException e) {
        System.out.println("Error viewing item: " + e.getMessage());
    }
}

```

```

public static void displayAllMenuItems(Connection conn) {
    String sql = "SELECT * FROM menu ORDER BY item_id ASC";
    try (Statement st = conn.createStatement()) {
        ResultSet rs = st.executeQuery(sql);
        System.out.println("ID | Name | Category | Price");
        boolean hasData = false;
        while (rs.next()) {
            hasData = true;
            System.out.printf("%d | %s | %s | %.2f%n",
                rs.getInt("item_id"),
                rs.getString("name"),
                rs.getString("category"),
                rs.getDouble("price"));
        }
        if (!hasData) {
            System.out.println("No menu items found.");
        }
    }
}

```

```
} catch (SQLException e) {  
    System.out.println("Error displaying items: " + e.getMessage());  
}  
}  
}  
class MenuItem {  
  
    private int itemId;  
    private String name;  
    private String category;  
    private double price;  
  
    public MenuItem() {}  
  
    public MenuItem(int itemId, String name, String category, double price) {  
        this.itemId = itemId;  
        this.name = name;  
        this.category = category;  
        this.price = price;  
    }  
  
    public int getItemId() {  
        return itemId;  
    }  
  
    public void setItemId(int itemId) {  
        this.itemId = itemId;  
    }  
  
    public String getName() {  
        return name;  
    }  
  
    public void setName(String name) {  
        this.name = name;  
    }  
  
    public String getCategory() {  
        return category;  
    }  
  
    public void setCategory(String category) {
```

```
        this.category = category;
    }

    public double getPrice() {
        return price;
    }

    public void setPrice(double price) {
        this.price = price;
    }
}

/*class MenuItem {
    private int itemId;
    private String name;
    private String category;
    private double price;

    // Constructor
    public MenuItem(int itemId, String name, String category, double price) {
        this.itemId = itemId;
        this.name = name;
        this.category = category;
        this.price = price;
    }

    //Include getters and setters
    int getItemId(){
        return itemId;
    }

    String getName(){
        return name;
    }
    String getCategory(){
        return category;
    }
    double getPrice(){
        return price;
    }
}
```

```
void setItemId(int itemId){
    this.itemId=itemId;
}
void setName(String name){
    this.name=name;
}

void setCategory(String category){
    this.category=category;
}
void setPrice(double price){
    this.price=price;
}
}*/
```

//

**Status :** Correct

**Marks :** 10/10

## 2. Problem Statement

Create a JDBC-based Hospital Management System that handles runtime input to manage patient records. The system should allow users to:

Add a new patient (patient ID, name, age, status).

Update a patient's status.

View a specific patient's record by patient ID.

Display all patient records in the database.

Exit the application.

The system should connect to a MySQL database using the following default credentials:

DB URL: jdbc:mysql://localhost/ri\_db

USER: test

PWD: test123

The patients table has already been created with the following structure:

Table Name: patients

### ***Input Format***

The first line of input consists of an integer choice, representing the operation to be performed:

(1 for Add Patient, 2 for Update Patient Status, 3 for View Patient Record, 4 for Display All Patients, 5 for Exit)

For choice 1 (Add Patient):

- The second line consists of an integer patient\_id.
- The third line consists of a string name.
- The fourth line consists of an integer age.
- The fifth line consists of a string status.

For choice 2 (Update Patient Status):

- The second line consists of an integer patient\_id.
- The third line consists of a string new\_status.

For choice 3 (View Patient Record):

- The second line consists of an integer patient\_id.

For choice 4 (Display All Patients):

- No additional inputs are required.

For choice 5 (Exit):

- No additional inputs are required.

### **Output Format**

For choice 1 (Add Patient):

- Print "Patient added successfully" if the patient was added.
- Print "Failed to add patient." if the insertion failed.

For choice 2 (Update Patient Status):

- Print "Patient status updated successfully" if the update was successful.
- Print "Patient not found." if the specified patient ID does not exist.

For choice 3 (View Patient Record):

- Display the patient details in the format:
- ID: [patient\_id] | Name: [name] | Age: [age] | Status: [status]
- Print "Patient not found." if the specified patient ID does not exist.

For choice 4 (Display All Patients):

- Display each patient on a new line in the format:
- ID | Name | Age | Status
- If no records are available, print nothing (or handle it with an appropriate message if desired).

For choice 5 (Exit):

- Print "Exiting Hospital Management System."

For invalid input:

- Print "Invalid choice. Please try again."

### **Sample Test Case**

Input: 1

101

John Doe

45

Admitted

4

5

Output: Patient added successfully

ID | Name | Age | Status

101 | John Doe | 45 | Admitted

Exiting Hospital Management System.

### **Answer**

```
import java.sql.*;
```

```
import java.util.Scanner;
```

```
class HospitalManagementSystem {
```

```
    public static void main(String[] args) {
```

```
        try (Connection conn = DriverManager.getConnection("jdbc:mysql://localhost/ri_db", "test", "test123"));
```

```
            Scanner scanner = new Scanner(System.in)) {
```

```
                boolean running = true;
```

```
                while (running) {
```

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

```
                    switch (choice) {
```

```
                        case 1:
```

```
                            addPatient(conn, scanner);
```

```
                            break;
```

```
                        case 2:
```

```
                            updatePatientStatus(conn, scanner);
```

```
                            break;
```

```
                        case 3:
```

```
                            viewPatientRecord(conn, scanner);
```

```
                            break;
```

```
                        case 4:
```

```
                            displayAllPatients(conn);
```

```
                            break;
```

```
                        case 5:
```

```
                            System.out.println("Exiting Hospital Management System.");
```

```
                            running = false;
```

```
                            break;
```

```
                    default:
```

```
                        System.out.println("Invalid choice. Please try again.");
```

```
                }
```

```

    }
    } catch (SQLException e) {
        e.printStackTrace();
    }
}

// You are using Java
public static void addPatient(Connection conn, Scanner scanner) {
    try {
        int patientId = scanner.nextInt();
        scanner.nextLine();

        String name = scanner.nextLine();

        int age = scanner.nextInt();
        scanner.nextLine();

        String status = scanner.nextLine();

        String insertQuery = "INSERT INTO patients (patient_id, name, age, status)
VALUES (?, ?, ?, ?)";
        try (PreparedStatement stmt = conn.prepareStatement(insertQuery)) {
            stmt.setInt(1, patientId);
            stmt.setString(2, name);
            stmt.setInt(3, age);
            stmt.setString(4, status);

            int rowsInserted = stmt.executeUpdate();
            System.out.println(rowsInserted > 0 ? "Patient added successfully" :
"Failed to add patient.");
        } catch (SQLException e) {
            System.out.println("Error adding patient: " + e.getMessage());
        }
    } catch (Exception e) {
        System.out.println("Error: " + e.getMessage());
    }
}

public static void updatePatientStatus(Connection conn, Scanner scanner) {
    try {
        int patientId = scanner.nextInt();
        scanner.nextLine();

```

```

String newStatus = scanner.nextLine();

String updateQuery = "UPDATE patients SET status = ? WHERE patient_id
= ?";
try (PreparedStatement stmt = conn.prepareStatement(updateQuery)) {
    stmt.setString(1, newStatus);
    stmt.setInt(2, patientId);

    int rowsUpdated = stmt.executeUpdate();
    System.out.println(rowsUpdated > 0 ? "Patient status updated
successfully" : "Patient not found.");
} catch (SQLException e) {
    System.out.println("Error updating patient status: " + e.getMessage());
}
} catch (Exception e) {
    System.out.println("Error: " + e.getMessage());
}
}

```

```

public static void viewPatientRecord(Connection conn, Scanner scanner) {
    try {
        int patientId = scanner.nextInt();

        String selectQuery = "SELECT * FROM patients WHERE patient_id = ?";
        try (PreparedStatement stmt = conn.prepareStatement(selectQuery)) {
            stmt.setInt(1, patientId);

            ResultSet rs = stmt.executeQuery();
            if (rs.next()) {
                System.out.printf("ID: %d | Name: %s | Age: %d | Status: %s%n",
                    rs.getInt("patient_id"),
                    rs.getString("name"),
                    rs.getInt("age"),
                    rs.getString("status"));
            } else {
                System.out.println("Patient not found.");
            }
        } catch (SQLException e) {
            System.out.println("Error retrieving patient record: " + e.getMessage());
        }
    } catch (Exception e) {
        System.out.println("Error: " + e.getMessage());
    }
}

```

```

    }
}

public static void displayAllPatients(Connection conn) {
    try {
        String displayQuery = "SELECT * FROM patients ORDER BY patient_id";
        try (Statement stmt = conn.createStatement();
            ResultSet rs = stmt.executeQuery(displayQuery)) {

            System.out.println("ID | Name | Age | Status");
            while (rs.next()) {
                System.out.printf("%d | %s | %d | %s%n",
                    rs.getInt("patient_id"),
                    rs.getString("name"),
                    rs.getInt("age"),
                    rs.getString("status"));
            }
        } catch (SQLException e) {
            System.out.println("Error displaying patients: " + e.getMessage());
        }
    } catch (Exception e) {
        System.out.println("Error: " + e.getMessage());
    }
}

```

**Status :** Correct

**Marks :** 10/10