

Rajalakshmi Engineering College

Name: Dharshan UJ

Email: 240701811@rajalakshmi.edu.in

Roll no: 240701811

Phone: 9025494910

Branch: REC

Department: CSE - Section 6

Batch: 2028

Degree: B.E - CSE

Scan to verify results



2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 11

Attempt : 2

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 addMenuItem(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();  
    }  
}  
  
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();  
    scanner.nextLine();
```

```
    String sql = "INSERT INTO menu (item_id, name, category, price) VALUES  
(?, ?, ?, ?);"
```

```
    PreparedStatement pstmt = conn.prepareStatement(sql);  
    pstmt.setInt(1, itemId);  
    pstmt.setString(2, name);  
    pstmt.setString(3, category);  
    pstmt.setDouble(4, price);
```

```
        int rows = pstmt.executeUpdate();
        if (rows > 0) System.out.println("Menu item added successfully");
        else System.out.println("Failed to add item.");

        pstmt.close();

    } catch (Exception e)

    {

        System.out.println("Failed to add item.");
    }
}

public static void updateItemPrice(Connection conn, Scanner scanner)

{

    try

    {

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

        String sql = "UPDATE menu SET price = ? WHERE item_id = ?";
        PreparedStatement pstmt = conn.prepareStatement(sql);
        pstmt.setDouble(1, newPrice);
        pstmt.setInt(2, itemId);

        int rows = pstmt.executeUpdate();
        if (rows > 0) System.out.println("Item price updated successfully");
        else System.out.println("Item not found.");
    }
}
```

```
        pstmt.close();

    } catch (Exception e)

    {

        System.out.println("Item not found.");

    }

}

public static void viewItemDetails(Connection conn, Scanner scanner)

{

    try

    {

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

        String sql = "SELECT item_id, name, category, price FROM menu WHERE
item_id = ?";
        PreparedStatement pstmt = conn.prepareStatement(sql);
        pstmt.setInt(1, itemId);

        ResultSet rs = pstmt.executeQuery();

        if (rs.next())

        {

            System.out.printf("ID: %d | Name: %s | Category: %s | Price: %.2f%n",
                rs.getInt("item_id"),
                rs.getString("name"),
                rs.getString("category"),
                rs.getDouble("price"));

        }

    }

}
```

```
        rs.getInt("item_id"),
        rs.getString("name"),
        rs.getString("category"),
        rs.getDouble("price"));

    } else
    {
        System.out.println("Item not found.");
    }

    rs.close();
    pstmt.close();

} catch (Exception e)
{
    System.out.println("Item not found.");
}

}

public static void displayAllMenuItems(Connection conn)
{
    try
    {
```

```
String sql = "SELECT item_id, name, category, price FROM menu ORDER BY
item_id";
Statement stmt = conn.createStatement();
ResultSet rs = stmt.executeQuery(sql);

System.out.println("ID | Name | Category | Price");

while (rs.next())

{

    System.out.printf("%d | %s | %s | %.2f%n",
        rs.getInt("item_id"),
        rs.getString("name"),
        rs.getString("category"),
        rs.getDouble("price"));

}

rs.close();
stmt.close();

} catch (SQLException e)

{
    System.out.println("Database Error: " + e.getMessage());
}

}

class MenuItem{

    private int itemId;
```

```
private String name;
private String category;
private double price;

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;  
  
}  
}  
}  
}  
//
```

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();
        }
    }
}
```

```
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 sql = "INSERT INTO patients (patient_id, name, age, status) VALUES  
        (?, ?, ?, ?)";  
        PreparedStatement pstmt = conn.prepareStatement(sql);  
  
        pstmt.setInt(1, patientId);  
        pstmt.setString(2, name);  
        pstmt.setInt(3, age);  
        pstmt.setString(4, status);  
  
        int rows = pstmt.executeUpdate();  
        if (rows > 0) System.out.println("Patient added successfully");  
        else System.out.println("Failed to add patient.");  
  
        pstmt.close();  
  
    } catch (Exception e)  
  
    {  
  
        System.out.println("Failed to add patient.");  
    }  
}
```

```
        }  
    }  
  
    public static void updatePatientStatus(Connection conn, Scanner scanner)  
    {  
  
        try  
        {  
  
            int patientId = scanner.nextInt();  
            scanner.nextLine();  
            String newStatus = scanner.nextLine();  
  
            String sql = "UPDATE patients SET status = ? WHERE patient_id = ?";  
            PreparedStatement pstmt = conn.prepareStatement(sql);  
  
            pstmt.setString(1, newStatus);  
            pstmt.setInt(2, patientId);  
  
            int rows = pstmt.executeUpdate();  
            if (rows > 0) System.out.println("Patient status updated successfully");  
            else System.out.println("Patient not found.");  
  
            pstmt.close();  
  
        } catch (Exception e)  
        {  
  
            System.out.println("Patient not found.");  
  
        }  
    }  
}
```

```
}

public static void viewPatientRecord(Connection conn, Scanner scanner)
{

    try
    {

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

        String sql = "SELECT patient_id, name, age, status FROM patients WHERE
patient_id = ?";
        PreparedStatement pstmt = conn.prepareStatement(sql);
        pstmt.setInt(1, patientId);

        ResultSet rs = pstmt.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.");
        }
    }
}
```

```
        }

        rs.close();
        pstmt.close();

    } catch (Exception e)

    {

        System.out.println("Patient not found.");

    }

}

public static void displayAllPatients(Connection conn)

{

    try

    {

        String sql = "SELECT patient_id, name, age, status FROM patients ORDER BY patient_id";

        Statement stmt = conn.createStatement();
        ResultSet rs = stmt.executeQuery(sql);

        System.out.println("ID | Name | Age | Status");

        while (rs.next())
    }
}
```

```
        System.out.println(  
            rs.getInt("patient_id") + " | " +  
            rs.getString("name") + " | " +  
            rs.getInt("age") + " | " +  
            rs.getString("status")  
        );  
  
    }  
  
    rs.close();  
    stmt.close();  
  
} catch (SQLException e)  
  
{  
  
    System.out.println("Database Error: " + e.getMessage());  
  
}  
}  
}
```

Status : Correct

Marks : 10/10