## Case Study 1: Online Course Registration System

CREATE DATABASE coursedb;

USE course db; CREATE

TABLE courses ( course id INT

PRIMARY KEY, course name

VARCHAR(100), faculty

VARCHAR(100), credits INT

); DBC Operations:
Creating Table: package
jdbc.demo;

import java.sql.Connection; import

java.sql.DriverManager;

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

        // Connection details
        String url = "jdbc:mysql://localhost:3306/coursedb";
        String user = "root";
        String password = "Pdeepika@84";
 try {
            // Load MySQL JDBC driver
            Class.forName("com.mysql.cj.jdbc.Driver");

            // Connect to database
            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println(" Connected to coursedb database!");

            // Close connection conn.close();

        } catch (Exception e) {
            System.out.println(" Connection error: " + e); }
    }
```

}

OUTPUT:

Connected to coursedb database!

INSERT: Add new
courses. package
jdbc.demo; import
java.sql.Connection;
import
java.sql.DriverManager;
import
java.sql.PreparedStatem
ent; public
class InsertedCourses {

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

        String url = "jdbc:mysql://localhost:3306/coursedb";
        String user = "root";
        String password = Pdeepika@84";
try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println("Connected to course_db");

            String sql = "INSERT INTO courses (course_id, course_name, faculty,
credits) VALUES (?, ?, ?, ?)";
            PreparedStatement ps = conn.prepareStatement(sql);

              ps.setInt(1, 101);                          // course_id
              ps.setString(2, "Java"); //
            course_name    ps.setString(3,
            "Ms.Latha ");          // faculty
```

```
                ps.setInt(4, 3);                    // credits
                int rowsInserted = ps.executeUpdate();

                if (rowsInserted > 0) {
                    System.out.println("Course inserted successfully."); }
 conn.close();

            } catch (Exception e) {
                System.out.println("Error: " +
       e); }  }
}
```

OUTPUT:

Connected to coursedb

Course inserted successfully.

SELECT: List available courses. package jdbc.demo;

```
 import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;

public class SelectCourses {
 public static void main(String[] args) {

            String url = "jdbc:mysql://localhost:3306/coursedb";
            String user = "root";
            String password = " Pdeepika@84";
 try {
                Class.forName("com.mysql.cj.jdbc.Driver");
                Connection conn = DriverManager.getConnection(url, user, password);
                System.out.println("Connected to course_db");

                String sql = "SELECT * FROM courses";
```

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

                System.out.println("Course List:");
                System.out.println(" ---------------------------------------------------------------------
                -------- ");
                System.out.printf("%-10s %-20s %-15s %-10s%n", "ID", "Course Name",
"Faculty", "Credits");
                System.out.println(" ---------------------------------------------------------------------
                -------- ");
 while (rs.next()) { int id = rs.getInt("course_id");
                        String name =
                        rs.getString("course_name");  String
                        faculty = rs.getString("faculty");  int
                        credits = rs.getInt("credits");

                        System.out.printf("%-10d %-20s %-15s %-10d%n", id, name,
faculty, credits); }
 conn.close();

            } catch (Exception e) {
                System.out.println("Error: " +
      e); }  }
}
```

OUTPUT:

```
Connected to course_db
Course List:
---------------------------------------------------------------------
ID          Course Name          Faculty          Credits
---------------------------------------------------------------------
101         Java                 Ram              5
301         Java                 MS.Latha         3
```

UPDATE: Modify faculty or credit values. package jdbc.demo;

```
 import java.sql.Connection;
import
```

```
java.sql.DriverManager;
import
java.sql.PreparedStatement;
import java.util.Scanner;

public class UpdateCourse {
 public static void main(String[] args) {

        String url = "jdbc:mysql://localhost:3306/coursedb";
        String user = "root";
        String password = " Pdeepika@84";
 try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println("Connected to coursedb");

            Scanner sc = new Scanner(System.in);

            // Get input from user
            System.out.print("Enter Course ID to update: ");
            int courseId = sc.nextInt();
            sc.nextLine(); // consume newline

            System.out.print("Enter new Faculty Name: ");
            String newFaculty = sc.nextLine();

            System.out.print("Enter new Credits:
            ");  int newCredits = sc.nextInt();
            // Update query
            String sql = "UPDATE courses SET faculty = ?, credits = ? WHERE
course_id = ?";
            PreparedStatement ps = conn.prepareStatement(sql);
             ps.setString(1, newFaculty);
ps.setInt(2, newCredits);
```

```
ps.setInt(3, courseId);                    int
rowsUpdated = ps.executeUpdate();

                if (rowsUpdated > 0) {
                    System.out.println("Course updated successfully.");
                } else {
                    System.out.println("Course ID not found."); }
 conn.close(); sc.close();

            } catch (Exception e) {
                System.out.println("Error: " +
      e); }  }
}
```

OUTPUT:

Connected to course_db

Enter Course ID to update: 301

Enter new Faculty Name: ssdmemer

Enter new Credits: 5

Course updated successfully.

DELETE: Remove obsoleteÂ courses. package jdbc.demo;

```
 import java.sql.Connection;
import
java.sql.DriverManager;
import
java.sql.PreparedStatement;
import java.util.Scanner;

public class DeleteCourse {
 public static void main(String[] args) {

            String url = "jdbc:mysql://localhost:3306/course_db";
```

```
        String user = "root";
        String password = " Pdeepika@84";
try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println("Connected to coursedb");

            Scanner sc = new Scanner(System.in);

            // Get Course ID from user
            System.out.print("Enter Course ID to
            delete: ");  int courseId = sc.nextInt();

            // Delete query
            String sql = "DELETE FROM courses WHERE course_id =
            ?";  PreparedStatement  ps  =  conn.prepareStatement(sql);
            ps.setInt(1, courseId);  int rowsDeleted = ps.executeUpdate();
            if (rowsDeleted > 0) {
                System.out.println("Course deleted successfully.");
            } else {
                System.out.println("Course ID not found."); }
conn.close(); sc.close();

        } catch (Exception e) {
            System.out.println("Error: " +
    e); }  }
}
```

OUTPUT:

```
Connected to cours_db Enter
Course ID to delete: 301
Course deleted successfully.
```

## Case Study 2: Product Inventory System

CREATE DATABASE inventory_db;

USE inventory_db;

CREATE TABLE products (product_id INT PRIMARY KEY, product name VARCHAR(100), quantity INT, price DECIMAL(10,2));

JDBC Operations:

Creating Table: package jdbc.demo;

```
import java.sql.Connection;
import
java.sql.DriverManager;
public class
InventoryConnection {
 public static void main(String[] args) {

        String url = "jdbc:mysql://localhost:3306/inventory_db";
        String user = "root";
        String password = " Pdeepika@84";
 try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user,
            password);  System.out.println("Connected to inventory_db");
            conn.close();
        } catch (Exception e) {
            System.out.println("Error: " +
    e); } }
}
```

OUTPUT:

Connected to inventory_db

INSERT: Add new products to inventory. package jdbc.demo;

```
 import java.sql.Connection;
import
```

```
java.sql.DriverManager;

import

java.sql.PreparedStatement;

public

class InsertProduct {

    public static void main(String[] args) {


        String url = "jdbc:mysql://localhost:3306/inventory_db";

        String user = "root";

        String password = " Pdeepika@84";

 try {

            Class.forName("com.mysql.cj.jdbc.Driver");

            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println("Connected to inventory_db");


            String sql = "INSERT INTO products (product_id, product_name,

quantity, price) VALUES (?, ?, ?, ?)";

            PreparedStatement ps = conn.prepareStatement(sql);


            // Set product details

            ps.setInt(1, 101);      // product_id  ps.setString(2, "Pen");          //
            product_name  ps.setInt(3, 50);       // quantity  ps.setDouble(4,
            10.50);          // price
            int rowsInserted = ps.executeUpdate();

            if (rowsInserted > 0) {

                System.out.println("Product inserted successfully."); }

 conn.close();


        } catch (Exception e) {

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

}
```

OUTPUT:

Connected to inventory_db
Product inserted successfully.

SELECT: View stock levels and prices. package jdbc.demo;

```
 import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;

public class SelectProducts {
 public static void main(String[] args) {

        String url = "jdbc:mysql://localhost:3306/inventory_db";
        String user = "root";
        String password = Pdeepika@123";
 try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println("Connected to inventory_db");

            String sql = "SELECT * FROM products";
            Statement stmt = conn.createStatement();
            ResultSet rs = stmt.executeQuery(sql);

            System.out.println("Product List:");

System.out.println("----------------------------------------------------------------------------------------
-------
--- ");
            System.out.printf("%-10s %-20s %-10s %-10s%n", "ID", "Product Name",
"Quantity", "Price");

System.out.println("----------------------------------------------------------------------------------------
-------
```

```
--- ");
 while (rs.next()) { int id = rs.getInt("product_id");
                        String name = rs.getString("product_name");
                        int qty = rs.getInt("quantity");
                        double price =
                        rs.getDouble("price");


          System.out.printf("%-10d %-20s %-10d %-10.2f%n", id, name, qty, price);
                    }
 conn.close();


              } catch (Exception e) {
                    System.out.println("Error: " +
       e); } }
}
```

OUTPUT:

Connected to inventory_db

Product List:

| ID | Product Name | Quantity | Price |
|---|---|---|---|
| 101 | Pen | 50 | 10.50 |

UPDATE: Update quantity after sale/purchase.

```
package jdbc.demo;

import java.sql.Connection;
import
java.sql.DriverManager;
import
java.sql.PreparedStatement;
import java.util.Scanner;

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

```
        String url = "jdbc:mysql://localhost:3306/inventorydb";
        String user = "root";
        String password = " Pdeepika@84";
try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println("Connected to inventory_db");

            Scanner sc = new Scanner(System.in);

            // Get product ID and quantity change from user
            System.out.print("Enter Product ID to update quantity:
            ");  int productId = sc.nextInt();

            System.out.print("Enter new quantity:
            ");  int newQuantity = sc.nextInt();


            // Update query
      String sql = "UPDATE products SET quantity = ? WHERE product_id = ?";
            PreparedStatement ps =
            conn.prepareStatement(sql);  ps.setInt(1,
            newQuantity);  ps.setInt(2, productId);  int
            rowsUpdated = ps.executeUpdate();

            if (rowsUpdated > 0) {
                        System.out.println("Product quantity updated successfully.");
            } else {
                System.out.println("Product ID not found."); }
conn.close(); sc.close();

        } catch (Exception e) {
            System.out.println("Error: " +
    e); }  }
}
```

OUTPUT:

Connected to inventorydb

Enter Product ID to update quantity: 101

Enter new quantity: 6

Product quantity updated successfully.

DELETE: Remove discontinued products. package jdbc.demo;

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.util.Scanner;

public class DeleteProduct {
 public static void main(String[] args) {

        String url = "jdbc:mysql://localhost:3306/inventorydb";
        String user = "root";
        String password = “Pdeepika@84";
try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user, password);
            System.out.println("Connected to inventorydb");

            Scanner sc = new Scanner(System.in);

            // Get product ID to delete
            System.out.print("Enter Product ID to delete: "); int productId =
            sc.nextInt();

            String sql = "DELETE FROM products WHERE product_id =
            ?"; PreparedStatement ps = conn.prepareStatement(sql);
            ps.setInt(1, productId); int rowsDeleted = ps.executeUpdate();
```

```
                if (rowsDeleted > 0) {
                    System.out.println("Product deleted successfully.");
                } else {
                    System.out.println("Product ID not found."); }
 conn.close(); sc.close();

            } catch (Exception e) {
                System.out.println("Error: " +
       e); }  }
}
```

OUTPUT:

```
Connected      to        inventorydb
          Enter Product ID to delete: 101
Product deleted successfully.
```