✅ Case Study 1: Online Course Registration System

🎯 Objective:

Allow students to register/unregister for courses and view course details.

📊 Table Structure:

```
CREATE DATABASE course_db;
USE course_db;

CREATE TABLE courses
     ( course_id INT PRIMARY KEY,
     course_name VARCHAR(100),
     faculty VARCHAR(100),
     credits INT
);
```

MY QUERIES:

```
use course_db;
create table courses(course_id INT PRIMARY KEY, course_name
VARCHAR(100), faculty VARCHAR(100), credits INT
);
select*from courses;
```

🔁 JDBC Operations:

- **INSERT**: Add new courses.

```
package jdbctask;

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

public class AddCourse {
   public static void main(String[] args) {
      String url = "jdbc:mysql://localhost:3306/course_db";
      String user = "root";
      String password = "Akhi.sai1310@";

      try {
         Class.forName("com.mysql.cj.jdbc.Driver");
         Connection conn = DriverManager.getConnection(url, user, password);

         Scanner sc = new Scanner(System.in);
         System.out.print("Enter Course ID: ");
```

```
            int id = sc.nextInt();
            sc.nextLine(); // consume newline
            System.out.print("Enter Course Name: ");
            String name = sc.nextLine();
            System.out.print("Enter Faculty Name: ");
            String faculty = sc.nextLine();
            System.out.print("Enter Credits: ");
            int credits = sc.nextInt();

            String query = "INSERT INTO courses VALUES (?, ?, ?, ?)";
            PreparedStatement stmt = conn.prepareStatement(query);
            stmt.setInt(1, id);
            stmt.setString(2, name);
            stmt.setString(3, faculty);
            stmt.setInt(4, credits);

            int rows = stmt.executeUpdate();
            System.out.println(rows + " course(s) inserted.");
            conn.close();
            sc.close();
        } catch (Exception e) {
            System.out.println("Error: " + e);
        }
    }
}
```

MY OUTPUT:

```
Enter Course ID: 5
Enter Course Name: .net
Enter Faculty Name: bhavani
Enter Credits: 10
1 course(s) inserted.
```

- **SELECT**: List available courses.

```
package jdbctask;

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/course_db";

        String user = "root";

        String password = "Akhi.sai1310@";
```

```
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn = DriverManager.getConnection(url, user, password);
            Statement stmt = conn.createStatement();
            ResultSet rs = stmt.executeQuery("SELECT * FROM courses");
            while (rs.next()) {
                System.out.println("Course ID: " + rs.getInt("course_id"));
                System.out.println("Course Name: " + rs.getString("course_name"));
                System.out.println("Faculty: " + rs.getString("faculty"));
                System.out.println("Credits: " + rs.getInt("credits"));
                System.out.println("************");
            }
            conn.close();
        } catch (Exception e) {
            System.out.println("Error: " + e);
        }
    }
}
```

MY OUTPUT:

```
Course ID: 1
Course Name: java
Faculty: bhuavana
Credits: 9
************
Course ID: 2
Course Name: python
Faculty: amulya
Credits: 8
************
Course ID: 3
Course Name: vardhana
Faculty: maths
Credits: 7
************
Course ID: 5
Course Name: .net
Faculty: bhavani
Credits: 10
************
```

- **UPDATE**: Modify faculty or credit values.

```
package jdbctask;

import java.sql.*;
import java.util.Scanner;

public class UpdateCourse {
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);

System.out.print("Enter Course ID to update: ");
int id = sc.nextInt();
sc.nextLine();

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

System.out.print("Enter new Credit value: ");
int credits = sc.nextInt();

try {
Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/course_db", "root",
"Akhi.sai1310@");
String sql = "UPDATE courses SET faculty = ?, credits = ? WHERE course_id = ?";
PreparedStatement ps = con.prepareStatement(sql);
ps.setString(1, faculty);
ps.setInt(2, credits);
ps.setInt(3, id);

int rows = ps.executeUpdate();
if (rows > 0) {
System.out.println("Course updated successfully.");
} else {
System.out.println("Course ID not found.");
}

ps.close();
con.close();
sc.close();
} catch (Exception e) {
e.printStackTrace();
}
}
}
MY OUTPUT:
Enter Course ID to update: 2
Enter new Faculty Name: yamini
Enter new Credit value: 6
Course updated successfully.
```

- **DELETE**: Remove obsolete courses.

```
package jdbctask;

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

```java
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 = "Akhi.sai1310@";

try {
Class.forName("com.mysql.cj.jdbc.Driver");
Connection conn = DriverManager.getConnection(url, user, password);

Scanner sc = new Scanner(System.in);
System.out.print("Enter Course ID to delete: ");
int id = sc.nextInt();

String query = "DELETE FROM courses WHERE course_id = ?";
PreparedStatement stmt = conn.prepareStatement(query);
stmt.setInt(1, id);

int rows = stmt.executeUpdate();
System.out.println(rows + " course(s) deleted.");
conn.close();
sc.close();
} catch (Exception e) {
System.out.println("Error: " + e);
}
}
}
```

MY OUTPUT:

```
Enter Course ID to delete: 3
1 course(s) deleted.
```

✅ Case Study 2: Product Inventory System

🎯 Objective:

Track product stock in a retail store.

📊 Table Structure:C

```
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)
```

```
);
```

MY QUERIES:

```
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)
);
select*from product
```

JDBC Operations:

- **INSERT**: Add new products to inventory.

```
package jdbctask;

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

public class InsertProduct {
public static void main(String[] args) {
String url = "jdbc:mysql://localhost:3306/inventory_db";
String user = "root";
String password = "Akhi.sai1310@";

try {
Class.forName("com.mysql.cj.jdbc.Driver");
Connection conn = DriverManager.getConnection(url, user, password);

Scanner sc = new Scanner(System.in);
System.out.print("Enter Product ID: ");
int id = sc.nextInt();
sc.nextLine(); // consume newline
System.out.print("Enter Product Name: ");
String name = sc.nextLine();
System.out.print("Enter Quantity: ");
int quantity = sc.nextInt();
System.out.print("Enter Price: ");
double price = sc.nextDouble();

String query = "INSERT INTO products VALUES (?, ?, ?, ?)";
PreparedStatement pstmt = conn.prepareStatement(query);
pstmt.setInt(1, id);
pstmt.setString(2, name);
pstmt.setInt(3, quantity);
pstmt.setDouble(4, price);

int rows = pstmt.executeUpdate();
System.out.println(rows + " product(s) inserted.");
conn.close();
} catch (Exception e) {
```

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

MY OUTPUT:

```
Enter Product ID: 1
Enter Product Name: refridgerater
Enter Quantity: 1400
Enter Price: 25000
1 product(s) inserted.
```

- **SELECT**: View stock levels and prices.

```
package jdbctask;

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

public class ViewProducts {
public static void main(String[] args) {
String url = "jdbc:mysql://localhost:3306/inventory_db";
String user = "root";
String password = "Akhi.sai1310@";

try {
Class.forName("com.mysql.cj.jdbc.Driver");
Connection conn = DriverManager.getConnection(url, user, password);

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

System.out.println("Product ID | Product Name | Quantity | Price");
while (rs.next()) {
System.out.printf("%10d | %-12s | %8d | %.2f\n",
rs.getInt("product_id"),
rs.getString("product_name"),
rs.getInt("quantity"),
rs.getDouble("price")
);
}
conn.close();
} catch (Exception e) {
System.out.println("Select Error: " + e);
}
}
}
```

MY OUTPUT:

```
Product ID | Product Name | Quantity | Price
1 | refridgerater | 1400 | 25000.00
```

- **UPDATE**: Update quantity after sale/purchase.

```
package jdbctask;
```

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

public class UpdateProduct {
public static void main(String[] args) {
String url = "jdbc:mysql://localhost:3306/inventory_db";
String user = "root";
String password = "Akhi.sai1310@";

try {
Class.forName("com.mysql.cj.jdbc.Driver");
Connection conn = DriverManager.getConnection(url, user, password);

Scanner sc = new Scanner(System.in);
System.out.print("Enter Product ID to update quantity: ");
int id = sc.nextInt();
System.out.print("Enter new Quantity: ");
int quantity = sc.nextInt();

String query = "UPDATE products SET quantity = ? WHERE product_id = ?";
PreparedStatement pstmt = conn.prepareStatement(query);
pstmt.setInt(1, quantity);
pstmt.setInt(2, id);

int rows = pstmt.executeUpdate();
System.out.println(rows + " product(s) updated.");
conn.close();
sc.close();
} catch (Exception e) {
System.out.println("Update Error: " + e);
}
}
}
```

MY OUTPUT:

```
Enter Product ID to update quantity: 1
Enter new Quantity: 1800
1 product(s) updated.
```

- **DELETE**: Remove discontinued products.

```
package jdbctask;

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/inventory_db";
String user = "root";
String password = "Akhi.sai1310@";
```

```
try {
Class.forName("com.mysql.cj.jdbc.Driver");
Connection conn = DriverManager.getConnection(url, user, password);

Scanner sc = new Scanner(System.in);
System.out.print("Enter Product ID to delete: ");
int id = sc.nextInt();

String query = "DELETE FROM products WHERE product_id = ?";
PreparedStatement pstmt = conn.prepareStatement(query);
pstmt.setInt(1, id);

int rows = pstmt.executeUpdate();
System.out.println(rows + " product(s) deleted.");
conn.close();
sc.close();
} catch (Exception e) {
System.out.println("Delete Error: " + e);
}
}
}
```

MY OUTPUT:

```
Enter Product ID to delete: 1
1 product(s) deleted.
```