Experiment 7

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Subject: Java **Subject Code:22CSH-359**

Problem - 7.1

Aim:

1.Setup MySQL Database

- Ensure MySQL is installed and running.
- Create a database and an `Employee` table with columns `EmpID`, `Name`, and `Salary`.

2. Update Database Credentials

- Replace `your_database`, `your_username`, and `your_password` in the code with actual database credentials.

3. Add MySQL JDBC Driver

- Download and add `mysql-connector-java.jar` to your project's classpath.

4. Compile and Run the Program

- Compile: `javac MySQLConnection.java`
- Run: `java MySQLConnection`

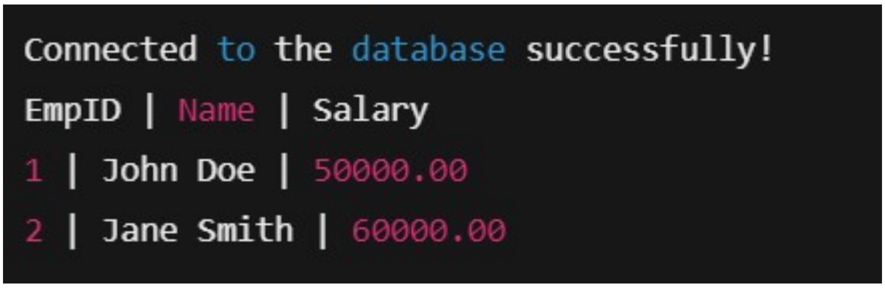
5. Verify Output

- Ensure that employee records are displayed correctly from the database.

Code:

```
   import java.sql.*;

public class MySQLConnection
{
   public static void main(String[] args)
   {
    String url = "jdbc:mysql://localhost:3306/your_database";
String user = "Aditya";
    String password = "123456";
    Connection conn = null;
    Statement stmt = null;
    ResultSet rs = null;
     try
{

      Class.forName("com.mysql.cj.jdbc.Driver");          conn =
DriverManager.getConnection(url, user, password);
System.out.println("Connected to the database successfully!");

      stmt = conn.createStatement();
      String query = "SELECT * FROM Employee";
      rs = stmt.executeQuery(query);

      System.out.println("EmpID | Name | Salary");
      while (rs.next()) {
        int id = rs.getInt("EmpID");
String name = rs.getString("Name");
double salary = rs.getDouble("Salary");
        System.out.println(id + " | " + name + " | " + salary);
      }
    } catch (ClassNotFoundException e) {
      System.out.println("MySQL JDBC Driver not found!");
e.printStackTrace();        } catch (SQLException e) {
      System.out.println("Database connection error!");
e.printStackTrace();        } finally {          try {
        if (rs != null) rs.close();
if (stmt != null) stmt.close();
if (conn != null) conn.close();          }
catch (SQLException e) {
e.printStackTrace();
      }
    }
  } }
```

Output:



```
Connected to the database successfully!
EmpID | Name | Salary
1 | John Doe | 50000.00
2 | Jane Smith | 60000.00
```

Problem - 7.2

Aim : Instructions to Run the Java CRUD Program

1. Setup MySQL Database

- Ensure MySQL is installed and running.

- Create a database and a `Product` table with columns `ProductID`, `ProductName`, `Price`, and `Quantity`

2.Update Database Credentials

- Replace `your_database`, `your_username`, and `your_password` in the code with actual database credentials

3. Add MySQL JDBC Driver

- Download and add `mysql-connector-java.jar` to your project’s classpath.

4. Compile and Run the Progra

- Compile: `javac ProductCRUD.java`

- Run: `java ProductCRUD`

5. Menu-Driven Operations

- Select options to **Create**, **Read**, **Update**, or **Delete** products.

- Input values as prompted.

6. Transaction Handling

- Transactions ensure data integrity.

- If an error occurs, changes are rolled back.
7.Verify Output

- Ensure product records are correctly manipulated in the database.

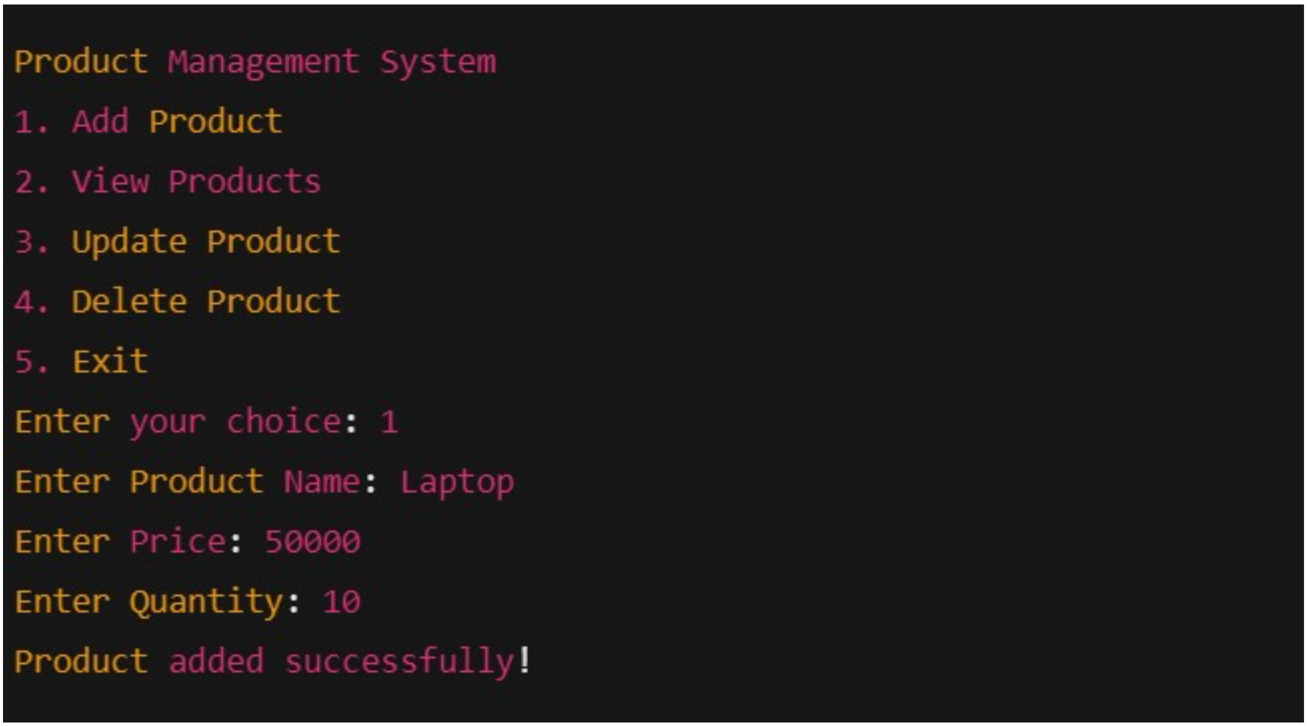
Code :

```
import java.sql.*; import java.util.Scanner public class ProductCRUD {     private static
final String URL = "jdbc:mysql://localhost:3306/your_database";     private static final
String USER = "Aditya";     private static final String PASSWORD = "123456";
public static void main(String[] args) {         try (Connection conn =
DriverManager.getConnection(URL, USER, PASSWORD);
             Scanner scanner = new Scanner(System.in)) {
Class.forName("com.mysql.cj.jdbc.Driver")
            while (true) {
                System.out.println("\nProduct Management System");
                System.out.println("1. Add Product");
                System.out.println("2. View Products");
                System.out.println("3. Update Product");
                System.out.println("4. Delete Product");
                System.out.println("5. Exit");
                System.out.print("Enter your choice: ");
int choice = scanner.nextInt();                switch
(choice) {                    case 1: addProduct(conn,
scanner); break;                    case 2:
viewProducts(conn); break;                    case 3:
```

```
updateProduct(conn, scanner); break;

case 4: deleteProduct(conn, scanner); break;

case 5: System.out.println("Exiting..."); return;

default: System.out.println("Invalid choice, try

again.");

            }

         }

      } catch (Exception e) {

         e.printStackTrace();

      }

   private static void addProduct(Connection conn, Scanner scanner) throws SQLException {

      System.out.print("Enter Product Name: ");

      String name = scanner.next();

System.out.print("Enter Price: ");

double price = scanner.nextDouble();

System.out.print("Enter Quantity: ");

int quantity = scanner.nextInt();

      String sql = "INSERT INTO Product (ProductName, Price, Quantity) VALUES (?, ?, ?)";

try (PreparedStatement pstmt = conn.prepareStatement(sql)) {          pstmt.setString(1,

name);          pstmt.setDouble(2, price);          pstmt.setInt(3, quantity);

pstmt.executeUpdate();

         System.out.println("Product added successfully!");

      }
   }
```

```
    private static void viewProducts(Connection conn) throws SQLException {         String
sql = "SELECT * FROM Product";         try (Statement stmt = conn.createStatement();
ResultSet rs = stmt.executeQuery(sql)) {            System.out.println("\nProductID |
ProductName | Price | Quantity");
            while (rs.next()) {
                System.out.println(rs.getInt("ProductID") + " | " +
rs.getString("ProductName") + " | " +
rs.getDouble("Price") + " | " +
rs.getInt("Quantity"));
            }
        }
    }
    private static void updateProduct(Connection conn, Scanner scanner) throws SQLException {
System.out.print("Enter Product ID to update: ");         int id = scanner.nextInt();
        System.out.print("Enter new Price: ");
double price = scanner.nextDouble();
System.out.print("Enter new Quantity: ");
int quantity = scanner.nextInt();

        String sql = "UPDATE Product SET Price = ?, Quantity = ? WHERE ProductID = ?";
try (PreparedStatement pstmt = conn.prepareStatement(sql)) {            pstmt.setDouble(1,
price);            pstmt.setInt(2, quantity);
            pstmt.setInt(3, id);
            int rowsUpdated = pstmt.executeUpdate();
if (rowsUpdated > 0) {
                System.out.println("Product updated successfully!");
            } else {
                System.out.println("Product not found.");
            }
        }
    }
    private static void deleteProduct(Connection conn, Scanner scanner) throws SQLException {
System.out.print("Enter Product ID to delete: ");        int id = scanner.nextInt();

        String sql = "DELETE FROM Product WHERE ProductID = ?";
        try (PreparedStatement pstmt = conn.prepareStatement(sql)) {
            pstmt.setInt(1, id);
            int rowsDeleted = pstmt.executeUpdate();
if (rowsDeleted > 0) {
                System.out.println("Product deleted successfully!");
            } else {
                System.out.println("Product not found.");
            }
        }
    }
}
```

Output :



```
Product Management System
1. Add Product
2. View Products
3. Update Product
4. Delete Product
5. Exit
Enter your choice: 1
Enter Product Name: Laptop
Enter Price: 50000
Enter Quantity: 10
Product added successfully!
```