GAM/IT/2022/F/0079 – J.S.Senarath

Simple Servlet - Display Static Message

1. **Create a Java Servlet (DisplayMessageServlet)** that outputs a static message.
2. **Configure the servlet** using the @WebServlet annotation or the web.xml deployment descriptor.

Code:

```
package com.example;

import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

@WebServlet("/displayMessage")

public class DisplayMessageServlet extends HttpServlet {

 protected void doGet(HttpServletRequest request, HttpServletResponse  response)

 throws ServletException, IOException {

 response.setContentType("text/html");

 PrintWriter out = response.getWriter();

 out.println("<html><body>");

 out.println("<h1>Welcome to the Java Servlet Lab!</h1>");  out.println("</body></html>");


 }

}
```

```java
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;


@WebServlet("/displayMessage")

public class DisplayMessageServlet extends HttpServlet {
        @Override
        protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {

            response.setContentType("text/html");
            PrintWriter out = response.getWriter();
            out.println("<html><body>");
            out.println("<h1>Welcome to the Java Servlet Lab!</h1>");
            out.println("</body></html>");
}
}
```

Deployment Descriptor (web.xml) (if not using annotations):

<web-app xmlns="http://java.sun.com/xml/ns/javaee"

version="3.0">

<servlet>

<servlet-name>DisplayMessageServlet</servlet-name> <servlet-class>com.example.DisplayMessageServlet</servlet-class> </servlet>

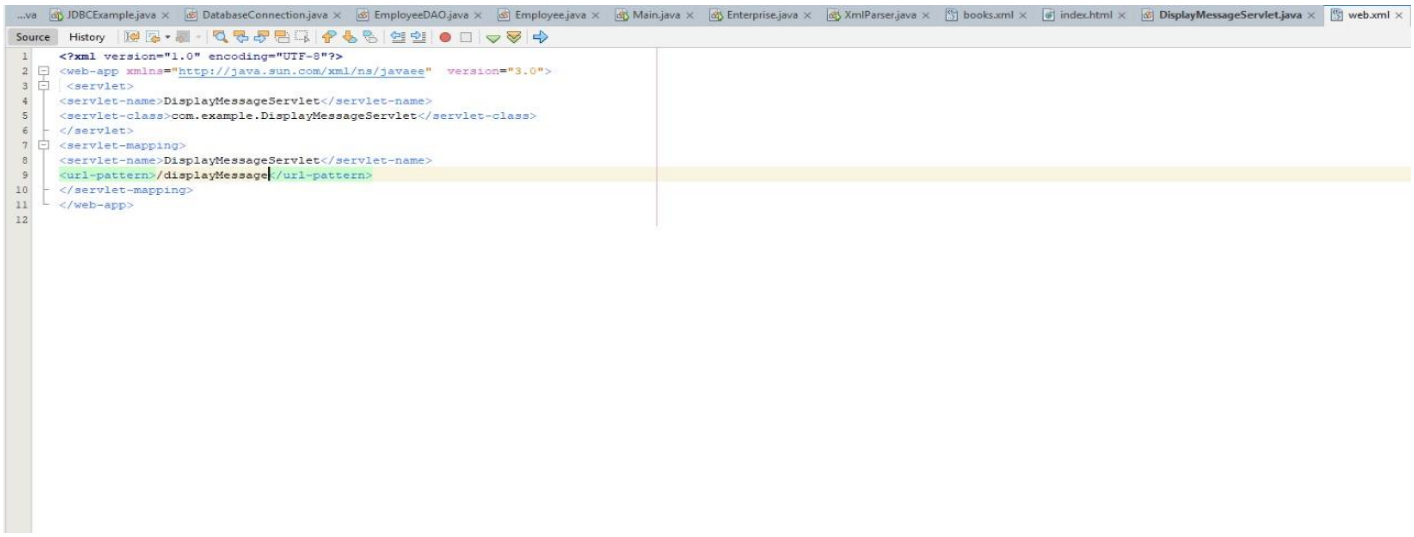
<servlet-mapping>

<servlet-name>DisplayMessageServlet</servlet-name>

<url-pattern>/displayMessage</url-pattern>

</servlet-mapping>

</web-app>



2. Create an HTML form to collect the user's name.

Create a Servlet (GetUserInputServlet) to handle the form submission and display the user's name.

HTML Form (index.html):

<!DOCTYPE html>

<html>

<head><title>Input Form</title></head>

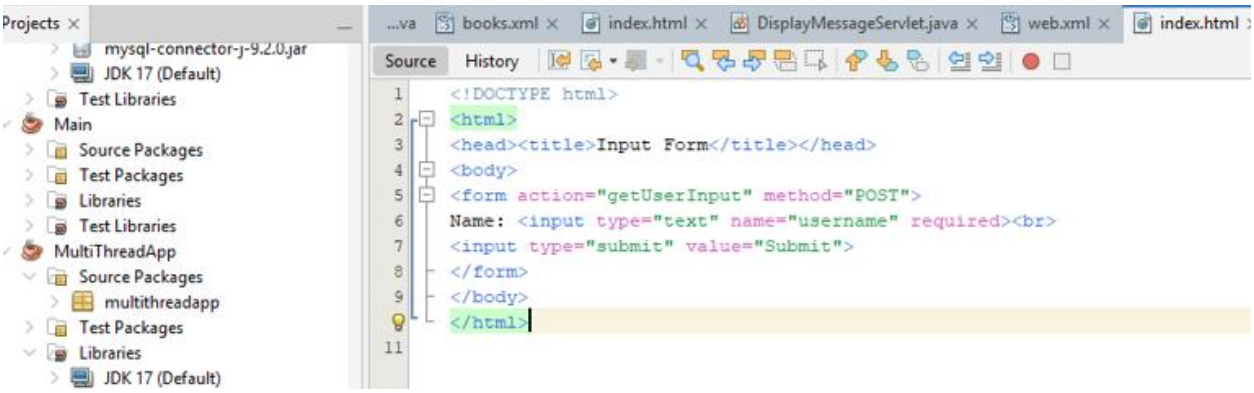
<body>

<form action="getUserInput" method="POST">

Name: <input type="text" name="username" required>
 <input type="submit" value="Submit">

</form>

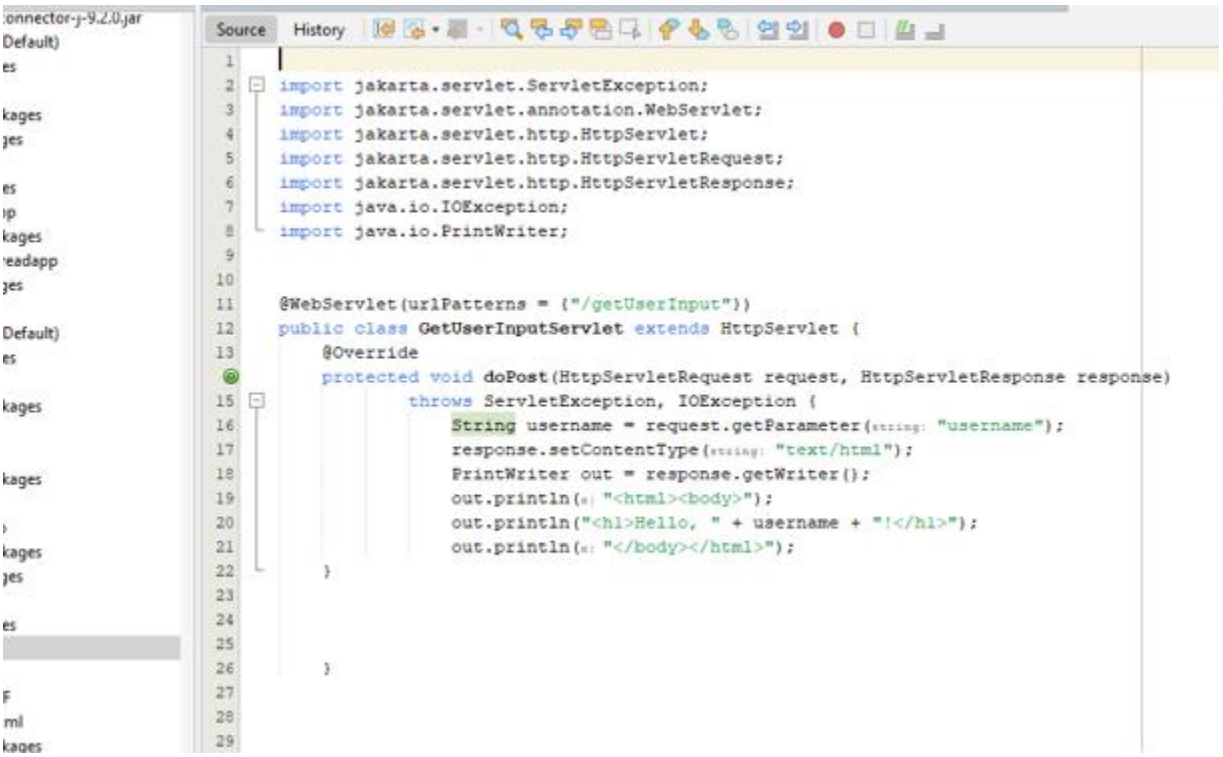
</body> </html>



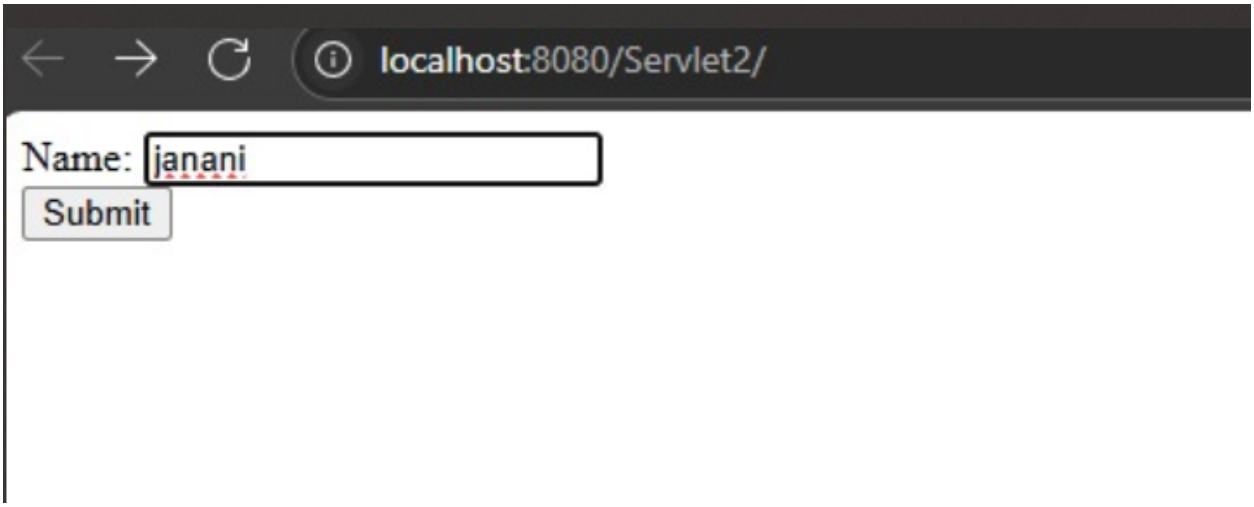
Servlet Code (GetUserInputServlet.java):

```
package com.example;

import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

@WebServlet("/getUserInput")

public class GetUserInputServlet extends HttpServlet {

 protected void doPost(HttpServletRequest request, HttpServletResponse  response)

 throws ServletException, IOException {

 String username = request.getParameter("username");

 response.setContentType("text/html");

 PrintWriter out = response.getWriter();

 out.println("<html><body>");

 out.println("<h1>Hello, " + username + "!</h1>");

 out.println("</body></html>");
```

} }


Source
History
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;
@WebServlet(urlPatterns = {"/getUserInput"})
public class GetUserInputServlet extends HttpServlet {
@Override
protected void doPost(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
String username = request.getParameter("username");
response.setContentType("text/html");
PrintWriter out = response.getWriter();
out.println("<html><body>");
out.println("<h1>Hello, " + username + "!</h1>");
out.println("</body></html>");
}
}

Output:


localhost:8080/Servlet2/
Name: janani
Submit

3. Create an HTML form to take inputs for two numbers.

Create a Servlet (CalculateSumServlet) to calculate the sum of the numbers and display the result.

HTML Form (calculate.html):

<!DOCTYPE html>

<html>

<head><title>Sum Calculator</title></head>

<body>

<form action="calculateSum" method="POST">

First Number: <input type="number" name="num1" required>
 Second Number: <input type="number" name="num2" required>
 <input type="submit" value="Calculate Sum">

</form>

</body>

</html>

Source History

```
1  <!DOCTYPE html>
2  <html>
3  <head><title>Sum Calculator</title></head>
4  <body>
5  <form action="calculateSum" method="POST">
6  First Number: <input type="number" name="num1" required><br>
7  Second Number: <input type="number" name="num2" required><br>
8  <input type="submit" value="Calculate Sum">
9  </form>
10 </body>
11 </html>
12
```

Output

GlassFish Server | Servlet_3 (run)

```
compile:
compile-jsps:
In-place deployment at D:\practicals\Servlet 3\build\web
run-deploy:
Browsing: http://localhost:8080/Servlet_3
run-display-browser:
run:
BUILD SUCCESSFUL (total time: 0 seconds)
```

Servlet Code (CalculateSumServlet.java):

```
package com.example;

import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

@WebServlet("/calculateSum")

public class CalculateSumServlet extends HttpServlet {

 protected void doPost(HttpServletRequest request, HttpServletResponse  response)

 throws ServletException, IOException {

 int num1 = Integer.parseInt(request.getParameter("num1"));  int num2 =
Integer.parseInt(request.getParameter("num2"));  int sum = num1 + num2;

 response.setContentType("text/html");

 PrintWriter out = response.getWriter();

 out.println("<html><body>");

 out.println("<h1>The sum of " + num1 + " and " + num2 + " is: " + sum  + "</h1>");

 out.println("</body></html>");

 } }
```

Source History

```java
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;

@WebServlet(urlPatterns = {"/calculateSum"})
public class CalculateSumServlet extends HttpServlet {

    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
     int num1 = Integer.parseInt(s: request.getParameter(string: "num1"));
    int num2 = Integer.parseInt(s: request.getParameter(string: "num2"));
    int sum = num1 + num2;
    response.setContentType(string: "text/html");
    PrintWriter out = response.getWriter();
    out.println(x: "<html><body>");
    out.println("<h1>The sum of " + num1 + " and " + num2 + " is: " + sum + "</h1>");
    out.println(x: "</body></html>");


    }


    }

```

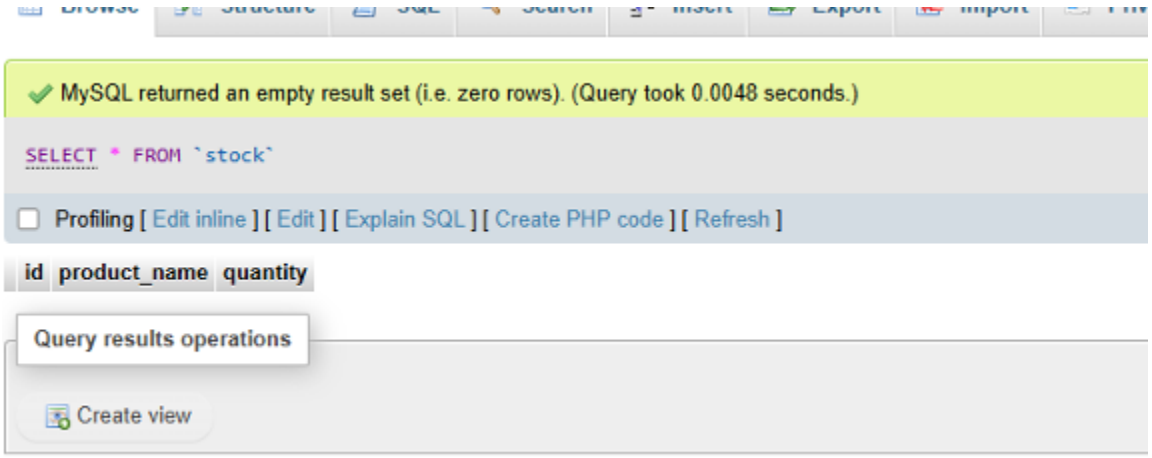
4. **Set up a database** with a table named stock (fields: id, product_name, quantity).

Create a simple web form to interact with the database (add, update, delete products).

Create a Servlet (StockManagementServlet) that handles database operations.

Database Setup (MySQL example):

```
CREATE DATABASE stock_management;

USE stock_management;

CREATE TABLE stock (
 id INT AUTO_INCREMENT PRIMARY KEY,
 product_name VARCHAR(255),
 quantity INT
);
```



HTML Form (stockForm.html):

<!DOCTYPE html>

<html>

<head><title>Stock Management</title></head>

<body>

<h2>Manage Stock</h2>

<form action="stockAction" method="POST">

Product Name: <input type="text" name="product_name" required>
 Quantity: <input type="number" name="quantity" required>
 <input type="submit" name="action" value="Add Product"> <input type="submit" name="action" value="Update Product"> <input type="submit" name="action" value="Delete Product"> </form>

</body>

</html>

```
<!DOCTYPE html>
<html>
<head><title>Stock Management</title></head>
<body>
<h2>Manage Stock</h2>
<form action="stockAction" method="POST">
Product Name: <input type="text" name="product_name" required><br>
Quantity: <input type="number" name="quantity" required><br>
<input type="submit" name="action" value="Add Product">
<input type="submit" name="action" value="Update Product">
<input type="submit" name="action" value="Delete Product">
</form>
</body>
</html>
```

Servlet Code (StockManagementServlet.java):

package com.example;

import java.io.IOException;

import java.io.PrintWriter;

import java.sql.*;

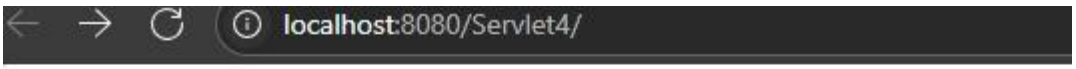
import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

```
import javax.servlet.http.HttpServlet;


import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

@WebServlet("/stockAction")

public class StockManagementServlet extends HttpServlet {

 private Connection getConnection() throws SQLException {  String url =
"jdbc:mysql://localhost:3306/stock_management";  String username = "root";

 String password = "root"; // replace with your database password  return
DriverManager.getConnection(url, username, password);  }

 protected void doPost(HttpServletRequest request, HttpServletResponse  response)

 throws ServletException, IOException {

 String action = request.getParameter("action");

 String productName = request.getParameter("product_name");  int quantity =
Integer.parseInt(request.getParameter("quantity"));

 try (Connection conn = getConnection()) {

 switch(action) {

 case "Add Product":

 try (PreparedStatement stmt = conn.prepareStatement(  "INSERT INTO stock (product_name,
quantity)  VALUES (?, ?)")) {

 stmt.setString(1, productName);

 stmt.setInt(2, quantity);

 stmt.executeUpdate();

response.getWriter().write("<h1>Product Added

Successfully</h1>");

 }

break;

 case "Update Product":
```

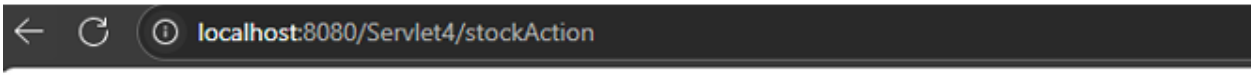
```
 try (PreparedStatement stmt = conn.prepareStatement(  "UPDATE stock SET quantity = ?
WHERE product_name  = ?")) {

 stmt.setInt(1, quantity);

stmt.setString(2, productName);

 stmt.executeUpdate();

response.getWriter().write("<h1>Product Updated

Successfully</h1>");

 }

break;

 case "Delete Product":

 try (PreparedStatement stmt = conn.prepareStatement(  "DELETE FROM stock WHERE
product_name = ?")) {  stmt.setString(1, productName);

stmt.executeUpdate();

 response.getWriter().write("<h1>Product Deleted  Successfully</h1>");

 }

break;

 default:

 response.getWriter().write("<h1>Invalid Action</h1>");  }

 } catch (SQLException e) {

 e.printStackTrace();

 response.getWriter().write("<h1>Database Error: " +  e.getMessage() + "</h1>");

 }

 }

}
```

```
Source  History
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;
import java.sql.*;

@WebServlet(urlPatterns = {"/stockAction"})
public class StockManagementServlet extends HttpServlet {


    private Connection getConnection() throws SQLException {
        try {
            Class.forName(className: "com.mysql.cj.jdbc.Driver"); // Load MySQL driver
        } catch (ClassNotFoundException e) {
            throw new SQLException(reason: "MySQL JDBC Driver not found.", cause: e);
        }

        String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC";
        String username = "root";
        String password = ""; // Update if you have a MySQL password

        return DriverManager.getConnection(url, user: username, password);
    }

    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {

        String action = request.getParameter(string: "action");
        String productName = request.getParameter(string: "product_name");
        int quantity = Integer.parseInt(s: request.getParameter(string: "quantity"));

        response.setContentType(string: "text/html");
        PrintWriter out = response.getWriter();

        try (Connection conn = getConnection()) {
            switch (action) {
                case "Add Product":
                    try (PreparedStatement stmt = conn.prepareStatement(
                            sql: "INSERT INTO stock (product_name, quantity) VALUES (?, ?)")) {
                        stmt.setString(i: 1, string: productName);
                        stmt.setInt(i: 2, i1: quantity);
                        stmt.executeUpdate();
                        out.write(s: "<h1>Product Added Successfully</h1>");
                    }
                    break;

                case "Update Product":
                    try (PreparedStatement stmt = conn.prepareStatement(
                            string: "UPDATE stock SET quantity = ? WHERE product_name = ?")) {
                        stmt.setInt(i: 1, i1: quantity);
                        stmt.setString(i: 2, string: productName);
                        stmt.executeUpdate();
                        out.write(s: "<h1>Product Updated Successfully</h1>");
                    }
                    break;

                case "Delete Product":
                    try (PreparedStatement stmt = conn.prepareStatement(
                            string: "DELETE FROM stock WHERE product_name = ?")) {
                        stmt.setString(i: 1, string: productName);
                        stmt.executeUpdate();
                        out.write(s: "<h1>Product Deleted Successfully</h1>");
                    }
                    break;

                default:
                    out.write(s: "<h1> Invalid Action</h1>");
            }
        } catch (SQLException e) {
            e.printStackTrace();
            out.write("<h1>Database Error: " + e.getMessage() + "</h1>");
        }
    }
}
```



Manage Stock

Product Name: Keyboards
Quantity: 8
Add Product | Update Product | Delete Product



Product Added Successfully

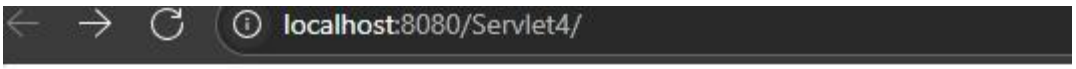
```
SELECT * FROM `stock`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 Filter rows: Search this table

Extra options

	id	product_name	quantity
Edit Copy Delete	1	keyboards	8



Manage Stock

Product Name: Keyboards
Quantity: 8
Add Product | Update Product | Delete Product

Product Updated Successfully

Stock List

- keyboards: 8

5. Create a Servlet to fetch and display all products from the database.

Create a new HTML page to show the product list.

Servlet Code (DisplayProductsServlet.java):

```
@WebServlet("/displayProducts")

public class DisplayProductsServlet extends HttpServlet {  protected void
doGet(HttpServletRequest request, HttpServletResponse  response)

 throws ServletException, IOException {

 response.setContentType("text/html");

 PrintWriter out = response.getWriter();


 try (Connection conn = getConnection()) {

 Statement stmt = conn.createStatement();

 ResultSet rs = stmt.executeQuery("SELECT * FROM
stock");  out.println("<html><body><h1>Stock List</h1>");  while (rs.next()) {

 out.println("<p>" + rs.getString("product_name") + ": " +  rs.getInt("quantity") + "</p>");

 }

 out.println("</body></html>");

 } catch (SQLException e) {

 e.printStackTrace();

 out.println("<h1>Database Error</h1>");

 } } }
```

...va | index.html | CalculateSumServlet.java | index.html | StockManagementServlet.java | index.html | DisplayProductsServlet.java

Source | History

```java
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;
import java.sql.*;

@WebServlet(urlPatterns = {"/DisplayProducts"})
public class DisplayProductsServlet extends HttpServlet {
 private Connection getConnection() throws SQLException {
        try {
            Class.forName(className: "com.mysql.cj.jdbc.Driver"); // Load MySQL JDBC driver
        } catch (ClassNotFoundException e) {
            throw new SQLException(reason: "MySQL JDBC Driver not found.", cause: e);
        }

        String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC";
        String username = "root";
        String password = ""; // Use your MySQL password if set
        return DriverManager.getConnection(url, user: username, password);
    }
@Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {

        response.setContentType(string: "text/html");
        PrintWriter out = response.getWriter();

        try (Connection conn = getConnection()) {
            Statement stmt = conn.createStatement();
            ResultSet rs = stmt.executeQuery(string: "SELECT * FROM stock");

            out.println(x: "<html><head><title>Stock List</title></head><body>");
            out.println(x: "<h1>Stock List</h1>");
            out.println(x: "<ul>");

            while (rs.next()) {
                out.println("<li>" + rs.getString(string: "product_name") + ": " + rs.getInt(string: "quantity") + "</li>");
            }
            out.println(x: "</ul>");
            out.println(x: "</body></html>");
        } catch (SQLException e) {
            e.printStackTrace();
            out.println("<h1>Database Error: " + e.getMessage() + "</h1>");
        }
    }
```

Stock List

- keyboards: 8