**Lab sheet 02**

**Java Servlet**

**Task 1: Simple Servlet - Display Static Message**

1. **Create a Java Servlet (DisplayMessageServlet)** that outputs a static message.

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(urlPatterns = {"/DisplayMessageServlet"})

public class DisplayMessageServlet extends HttpServlet {

protected void processRequest(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

response.setContentType("text/html;charset=UTF-8");

try (PrintWriter out = response.getWriter()) {

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

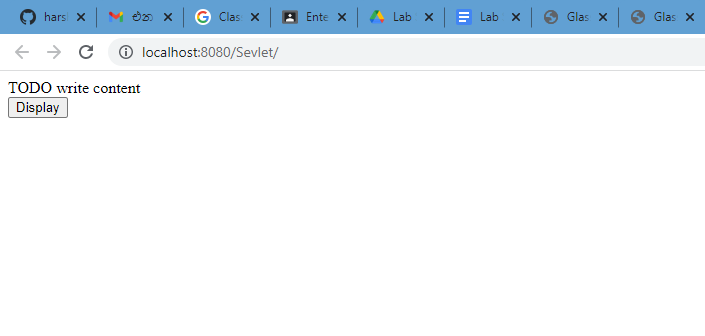
out.println("<h1>Welcome to the Java Servlet Lab!</h1>");

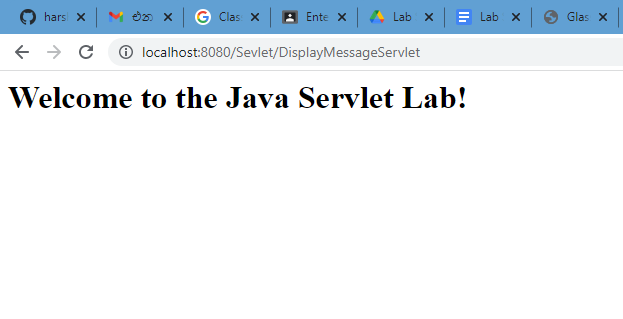
out.println("</body></html>");

}

}

}





**2. Create a servlet that receives user input from an HTML form and displays it back to the user**.

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

<html>

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

<body>

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

Name: <input type="text" name="username" required><br>

<input type="submit" value="Submit">

</form>

</body>

</html>Top of Form

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

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(urlPatterns = {"/getUserInput"})

public class GetUserInputServlet extends HttpServlet {

protected void processRequest(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

response.setContentType("text/html;charset=UTF-8");

try (PrintWriter out = response.getWriter()) {

/\* TODO output your page here. You may use following sample code. \*/

out.println("<!DOCTYPE html>");

out.println("<html>");

out.println("<head>");

out.println("<title>Servlet GetUserInputServlet</title>");

out.println("</head>");

out.println("<body>");

out.println("<h1>Servlet GetUserInputServlet at " + request.getContextPath() + "</h1>");

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

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

}

}

@Override

protected void doGet(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

processRequest(request, response);

}

@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>");

processRequest(request, response);

}

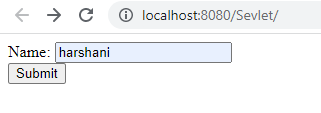
@Override

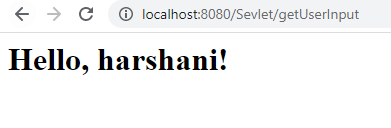
public String getServletInfo() {

return "Short description";

}// </editor-fold>

}





**3. Create a servlet that receives multiple user inputs from a form, performs a calculation, and displays the result.**

**-method1-**

<!DOCTYPE html>

<html>

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

<body>

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

First Number: <input type="number" name="num1" required><br>

Second Number: <input type="number" name="num2" required><br>

<input type="submit" value="Calculate Sum">

</form>

</body>

</html>

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>");

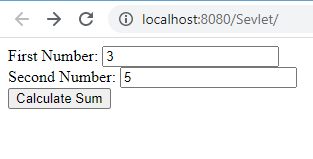
out.println("<h1>The sum of " + num1 + " and " + num2 + " is: " + sum

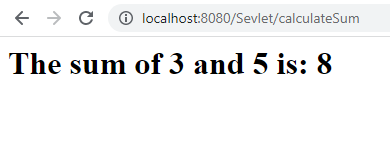
+ "</h1>");

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

}

}





**-Method 2-**

<html>

<head>

<title>TODO supply a title</title>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

</head>

<!DOCTYPE html>

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

<body>

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

First Number: <input type="number" name="num1" required><br>

Second Number: <input type="number" name="num2" required><br>

<input type="submit" value="Calculate Sum">

</form>

</body>

</html>

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("<!DOCTYPE html>");

out.println("<html>");

out.println("<head>");

out.println("<title>Servelet calculateSumServelet</title>");

out.println("</head>");

out.println("<body>");

out.println("<h1> Calculate Sum </h1>");

out.println("<h3> First User Input :" + num1 +"</h3>");

out.println("<h3> Second User Input :" + num2 +"</h3>");

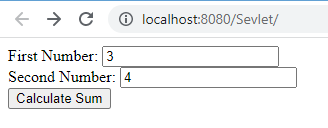
out.println("<h1> Answer :" + sum +"</h1>");

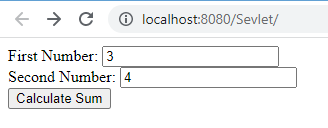
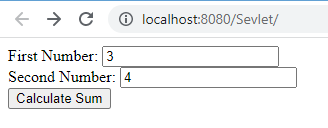
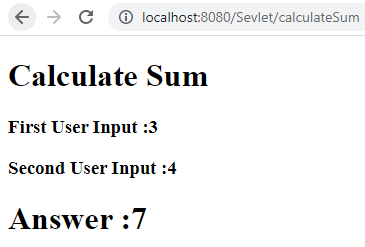
out.println("</body>");

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

}

}



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# Lab Task 4: Java Servlet with Database CRUD Operations

1. **Set up a database** with a table named stock (fields: id, product\_name, quantity).
2. **Create a simple web form** to interact with the database (add, update, delete products).
3. **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><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>

A screenshot of a web application

AI-generated content may be incorrect.

**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>");

}

} }

**Lab Task 5: Display Data from Database on Another Web Page**

**Steps:**

1. Create a Servlet to fetch and display all products from the database.
2. Create a new HTML page to show the product list.

**Showproduct.html**

<!DOCTYPE html>

<html>

<head>

<title>View Products</title>

</head>

<body>

<h1>Welcome to Product Inventory</h1>

<p>Click the button below to view all products in stock.</p>

<form action="displayProducts" method="get">

<button type="submit">Display Products</button>

</form>

</body>

</html>

**Servlet Code (DisplayProductsServlet.java):**

package com.example;

import java.io.IOException; import java.io.PrintWriter; import java.sql.Connection; import java.sql.DriverManager; import java.sql.ResultSet; import java.sql.SQLException; import java.sql.Statement;

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("/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>");

}

} private Connection getConnection() throws SQLException {

// Update with your DB details

String url = "jdbc:mysql://localhost:3306/stock\_management";

String user = "your\_username"; String password = "your\_password"; return DriverManager.getConnection(url, user, password);

}

}

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

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