

Lab sheet 02

Java Servlet

Task 1: Simple Servlet - Display Static Message

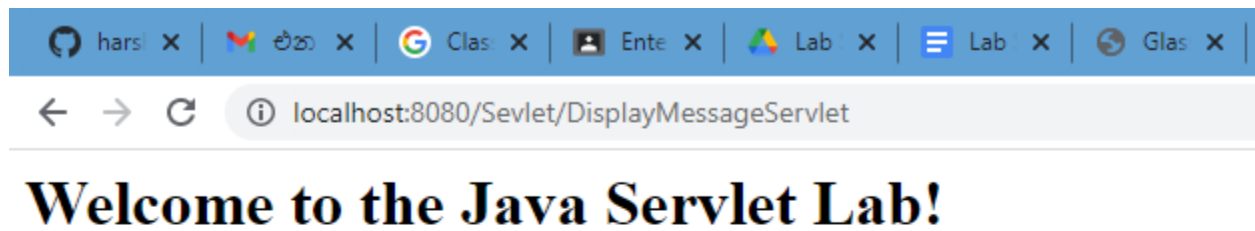
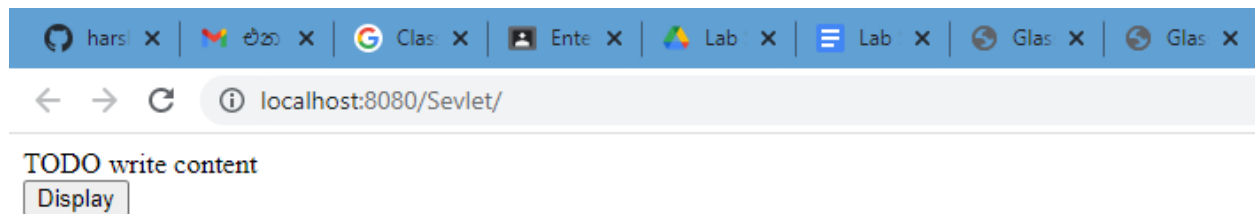
1. **Create a Java Servlet (DisplayMessageServlet)** that outputs a static message.

```
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>
```

- **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>");

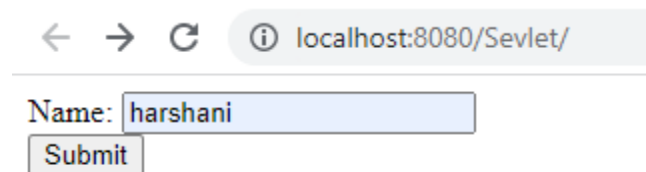
```

```
out.println("<h1>Hello, " + username + "!</h1>");  
out.println("</body></html>");  
    processRequest(request, response);  
}
```

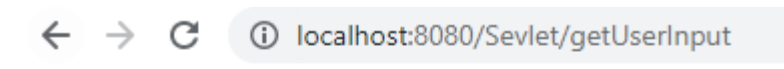
@Override

```
public String getServletInfo() {  
    return "Short description";  
} // </editor-fold>
```

```
}
```



A screenshot of a web browser window. The address bar shows "localhost:8080/Sevlet/". Below the address bar, there is a form with a label "Name:" followed by a text input field containing the text "harshani". Below the input field is a "Submit" button.



A screenshot of a web browser window. The address bar shows "localhost:8080/Sevlet/getUserInput". The page content displays "Hello, harshani!" in a large, bold, black serif font.

Hello, harshani!

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

-method1-

```
<!DOCTYPE html>
```

```
<html>
```

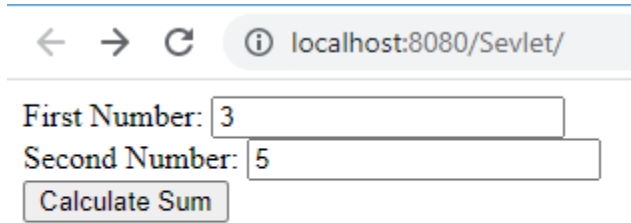
```
<head><title>Sum Calculator</title></head>
```

```
<body>
```

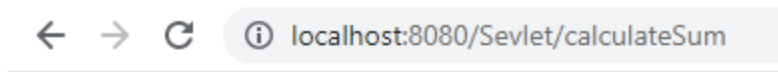
```
<form action="calculateSum" method="POST">
First Number: <input type="number" name="num1" required><br>
Second Number: <input type="number" name="num2" required><br>
<input type="submit" value="Calculate Sum">
</form>
</body>
</html>
```

```
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>");  
}  
}
```



A screenshot of a web browser window. The address bar shows 'localhost:8080/Sevlet/'. The page content includes a form with two input fields. The first field is labeled 'First Number:' and contains the value '3'. The second field is labeled 'Second Number:' and contains the value '5'. Below the input fields is a button labeled 'Calculate Sum'.



A screenshot of a web browser window. The address bar shows 'localhost:8080/Sevlet/calculateSum'. The page content displays the result of the calculation: 'The sum of 3 and 5 is: 8'.

The sum of 3 and 5 is: 8

-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>Servlet calculateSumServlet</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>");
}
}
```

← → ↻ ⓘ localhost:8080/Servlet/

First Number:

Second Number:

← → ↻ ⓘ localhost:8080/Servlet/calculateSum

Calculate Sum

First User Input :3

Second User Input :4

Answer :7

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>
```



Manage Stock

Product Name:

Quantity:

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);  
}  
}
```

