

Java Servlet Practical Lab Sheet

Lab Task 1: Simple Servlet - Display Static Message

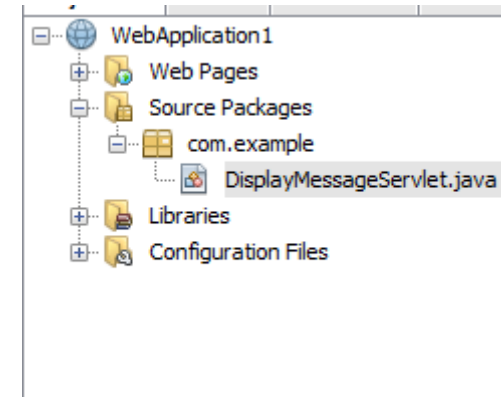
Create a Java Servlet (DisplayMessageServlet) that outputs a static message.

```
package com.example;

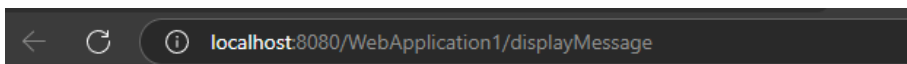
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@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>");
    }
}
```



Output



Welcome to the Java Servlet Lab!

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

Lab Task 2: Get User Input from Form and Display

Servlet Code (GetUserInputServlet.java):

```
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;

/**
 *
 * @author student
 */
@WebServlet(urlPatterns = {"/getUserInput"})
public class getUserInput extends HttpServlet {

    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {

        String name=request.getParameter("uname");

        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 getUserInput</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1> input name:" + name + " </h1>");
            out.println("</body>");
            out.println("</html>");
        }
    }
}
```

HttpServlet methods. Click on the + sign on the left to edit the code.

```
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 getUserInput extends HttpServlet {
```

```
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
```

```
        String name = request.getParameter("uname");
        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 getUserInput</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1> input name: " + name + "</h1>");
            out.println("</body>");
            out.println("</html>");
        }
    } }
```

index.html

```
<html>
<head>
<title>User Input</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body bgcolor="#ffb000">
<div> <h1> <center> User Input </center> </h1> </div>
<hr>
<form action="getUserInput" method="post">
<center> <table>
<tr>
<th> <h3> name </h3> </th> <th> <input type="text" name="uname"> </th>
</tr>
<tr>
<td colspan="2" align="center"> <input type="submit" value="Save"> </td>
</tr>
</table>
</center>
</form>
<hr>
</body>
</html>
```

```
<html>
<head>
  <title>User Input</title>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body bgcolor="#ffb000">

  <div> <h1> <center> User Input </center> </h1> </div>
  <hr>
  <form action="getUserInput" method="post" >
    <center> <table>
      <tr> <th> <h3> name </h3> </th> <th> <input type="text" name="uname"> </th></tr>
      <tr> <td colspan="2" align="center"> <input type="submit" value="Save"> </td> </tr>
    </table></center> </form>
  <hr>
```

Output

User Input

Name:

← ↻ ⓘ localhost:8080/UserInputApp/getUserInput

input name: student

Lab Task 3: Get Multiple Inputs, Perform Calculation, and Display Result

Servlet Code (CalculateSumServlet.java):

```
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 = {"/CalculateSum"})
 */
public class CalculateSum extends HttpServlet {

    protected void processRequest(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;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 CalculateSum</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1> calculate answer: " + sum + "</h1>");
            out.println("</body>");
            out.println("</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(urlPatterns = {"/CalculateSum"})
public class CalculateSum extends HttpServlet {
```

```
    protected void processRequest(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;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 CalculateSum</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h3> calculate answer: " + sum + "</h3>");
            out.println("</body>");
            out.println("</html>");
        }
    }
}
```


HTML Form (calculate.html):

```
<hr>
<h1> Calcualte </h1>

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

Output

Calculate

First Number:

Second Number:

Calculation Result

The Answer 25

Lab Task 4: Java Servlet with Database CRUD Operations

Database Setup :

```
1 CREATE DATABASE stock_management;
2 USE stock_management;
3
4 CREATE TABLE stock (
5     id INT AUTO_INCREMENT PRIMARY KEY,
6     product_name VARCHAR(255) NOT NULL,
7     quantity INT NOT NULL
8 );
```

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> stock	Browse Structure Search Insert Empty Drop	0	MyISAM	utf8mb4_0900_ai_ci	1.0 KiB	-
1 table	Sum	0	MyISAM	utf8mb4_0900_ai_ci	1.0 KiB	0 B

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>
```

Servlet Code (StockManagementServlet.java):

```
package com.example;

import java.io.*;
import java.sql.*;
import javax.servlet.*;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;

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

    // Initialize driver when servlet loads
    @Override
    public void init() throws ServletException {
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
        } catch (ClassNotFoundException e) {
            throw new ServletException("MySQL JDBC Driver not found", e);
        }
    }

    private Connection getConnection() throws SQLException {
        String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&serverTimezone=UTC";
        String username = "root";
        String password = "316830059";
        return DriverManager.getConnection(url, username, password);
    }

    protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
    }
}
```

```

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":
            addProduct(conn, productName, quantity, out);
            break;
        case "Update Product":
            updateProduct(conn, productName, quantity, out);
            break;
        case "Delete Product":
            deleteProduct(conn, productName, out);
            break;
        default:
            out.println("<h1>Invalid Action</h1>");
    }
} catch (SQLException e) {
    out.println("<h1>Database Error: " + e.getMessage() + "</h1>");
    e.printStackTrace();
}

out.println("<br><a href='stockForm.html'>Back to Form</a>");
}

private void addProduct(Connection conn, String name, int quantity, PrintWriter out)
    throws SQLException {
    String sql = "INSERT INTO stock (product_name, quantity) VALUES (?, ?)";
    try (PreparedStatement stmt = conn.prepareStatement(sql)) {
        stmt.setString(1, name);
        stmt.setInt(2, quantity);
        stmt.executeUpdate();
        out.println("<h1>Product Added Successfully</h1>");
    }
}

```

```

}

private void updateProduct(Connection conn, String name, int quantity, PrintWriter out)
    throws SQLException {
    String sql = "UPDATE stock SET quantity = ? WHERE product_name = ?";
    try (PreparedStatement stmt = conn.prepareStatement(sql)) {
        stmt.setInt(1, quantity);
        stmt.setString(2, name);
        int rows = stmt.executeUpdate();
        if (rows > 0) {
            out.println("<h1>Product Updated Successfully</h1>");
        } else {
            out.println("<h1>Product Not Found</h1>");
        }
    }
}

private void deleteProduct(Connection conn, String name, PrintWriter out)
    throws SQLException {
    String sql = "DELETE FROM stock WHERE product_name = ?";
    try (PreparedStatement stmt = conn.prepareStatement(sql)) {
        stmt.setString(1, name);
        int rows = stmt.executeUpdate();
        if (rows > 0) {
            out.println("<h1>Product Deleted Successfully</h1>");
        } else {
            out.println("<h1>Product Not Found</h1>");
        }
    }
}
}

```

Output

Manage Stock

Product Name:

Quantity:

Add Product

Update Product







Delete Product

[←](#) [↻](#) [📄](#) localhost:8080/stockmn/stockAction

Product Added Successfully

[Back to Form](#)

Extra options

							id	product_name	quantity
<input type="checkbox"/>		Edit		Copy		Delete	1	watch	12
<input type="checkbox"/>		Edit		Copy		Delete	2	Smart Watch	2

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

Servlet Code (DisplayProductsServlet.java):

```
package com.example;

import java.io.*;
import java.sql.*;
import javax.servlet.*;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;

@WebServlet("/displayProducts")
public class DisplayProductsServlet extends HttpServlet {
    // Reuse your existing connection method
    private Connection getConnection() throws SQLException {
        String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&serverTimezone=UTC";
        String username = "root";
        String password = "316830059";
        return DriverManager.getConnection(url, username, password);
    }
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<title>Stock List</title>");
        out.println("<style>");
        out.println("table { border-collapse: collapse; width: 50%; margin: 20px auto; }");
        out.println("th, td { border: 1px solid #ddd; padding: 8px; text-align: left; }");
        out.println("th { background-color: #f2f2f2; }");
    }
}
```



```

out.println("</style>");
out.println("</head>");
out.println("<body>");
out.println("<h1 style='text-align: center;'>Current Stock List</h1>");

try (Connection conn = getConnection();
    Statement stmt = conn.createStatement();
    ResultSet rs = stmt.executeQuery("SELECT * FROM stock")) {
    out.println("<table>");
    out.println("<tr><th>ID</th><th>Product Name</th><th>Quantity</th></tr>");

    while (rs.next()) {
        out.println("<tr>");
        out.println("<td>" + rs.getInt("id") + "</td>");
        out.println("<td>" + rs.getString("product_name") + "</td>");
        out.println("<td>" + rs.getInt("quantity") + "</td>");
        out.println("</tr>");
    }

    out.println("</table>");
} catch (SQLException e) {
    out.println("<h2 style='color: red; text-align: center;'>Error retrieving stock: "
        + e.getMessage() + "</h2>");
    e.printStackTrace();
}

out.println("<div style='text-align: center; margin-top: 20px;'>");
out.println("<a href='stockForm.html'>Back to Stock Management</a>");
out.println("</div>");
out.println("</body>");
out.println("</html>");
}
}

```

Updated stockForm.html

```
<!DOCTYPE html>
<html>
<head> <title>Stock Management</title>
<style>  body { font-family: Arial, sans-serif; margin: 20px; }
          form { max-width: 500px; margin: 0 auto; padding: 20px; border: 1px solid #ddd; border-radius: 5px; }
          input[type="text"], input[type="number"] { width: 100%; padding: 8px; margin: 5px 0 15px; }
          input[type="submit"] { padding: 8px 15px; margin-right: 10px; }
          .view-link { display: block; text-align: center; margin-top: 20px; }
</style>
</head>
<body> <h2 style="text-align: center;"> 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>
<div class="view-link">
<a href="displayProducts"> View All Products </a>
</div>
</body>
</html>
```

Output







Current Stock List

ID	Product Name	Quantity
1	watch	12
2	Smart Watch	2

[Back to Stock Management](#)

Database

Extra options

				id	product_name	quantity
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	watch	12
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	Smart Watch	2

