

Lab Sheet 04

Task 01 - Simple Servlet - Display Static Message

DisplayMessageServlet.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("/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>");
    }
}
```

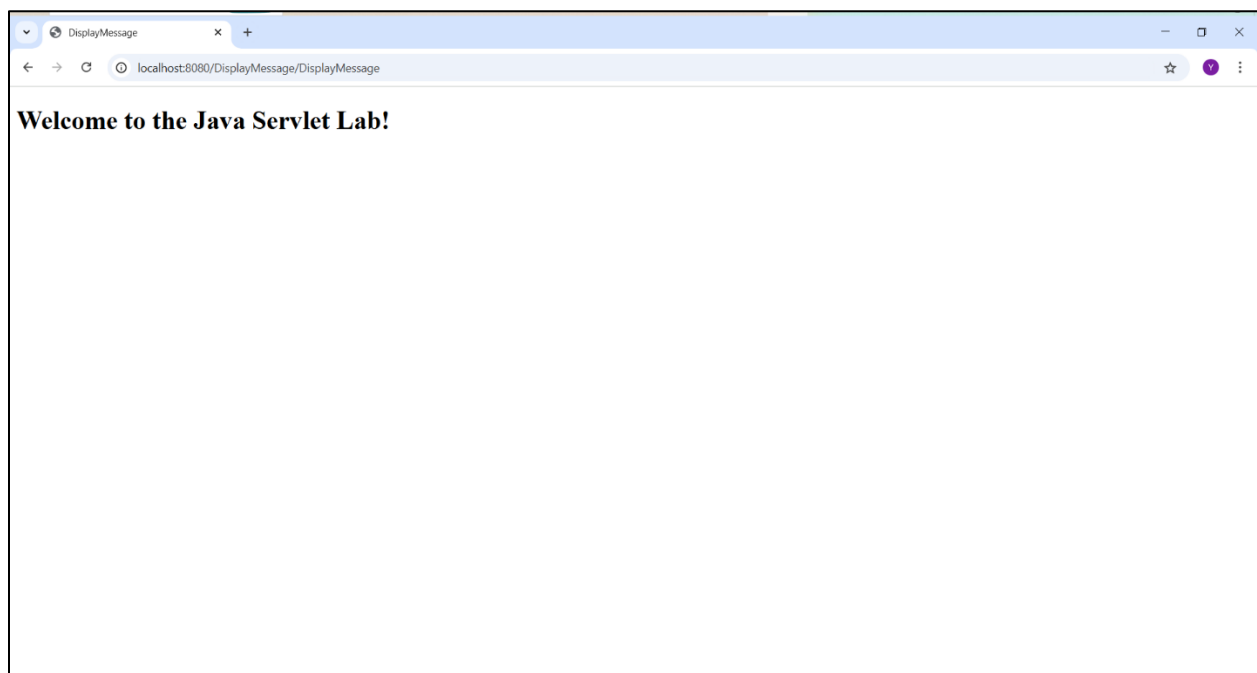
Deployment Descriptor (**web.xml**) (if not using annotations):

```
<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>
```



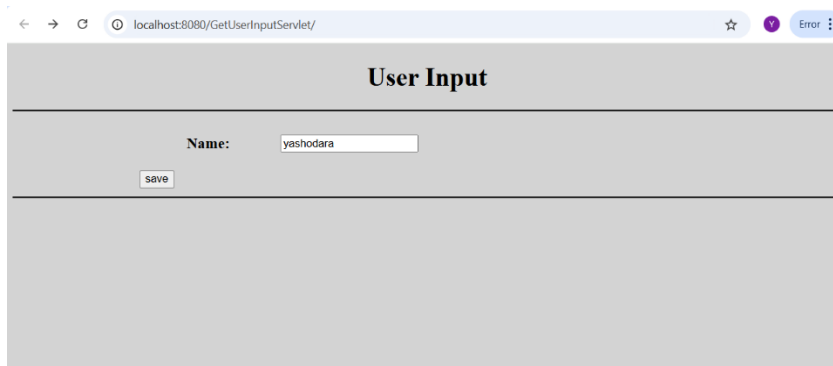
Task 02 - Simple Servlet - Get User Input from Form and Display

HTML Form (index.html)

```
<!DOCTYPE html>
<html>
  <head>
    <title>User Input</title>
  </head>
  <body bgcolor="LightGray">
    <h1 align="center">User Input</h1>
    <hr color="black">
    <form action="GetUserInputServlet" method="POST">
      <center><table style="width: 70%">
        <tr>
          <th><h3>Name:</h3></th>
          <td><input type="text" name="un"
required></td>
        </tr>
        <tr>
          <td colspan="2"><input type="submit"
value="save"></td>
        </tr>
      </table></center>
    </form>

    <hr color="black">

  </body>
</html>
```



The screenshot shows a web browser window with the address bar displaying 'localhost:8080/GetUserInputServlet/'. The page has a light gray background. At the top, there is a header section with the title 'User Input'. Below the header, there is a form with a text input field labeled 'Name:' containing the text 'yashodara'. To the left of the input field is a small 'save' button. The form is enclosed in a table structure as defined in the HTML code.

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;

@WebServlet("/GetUserInputServlet")

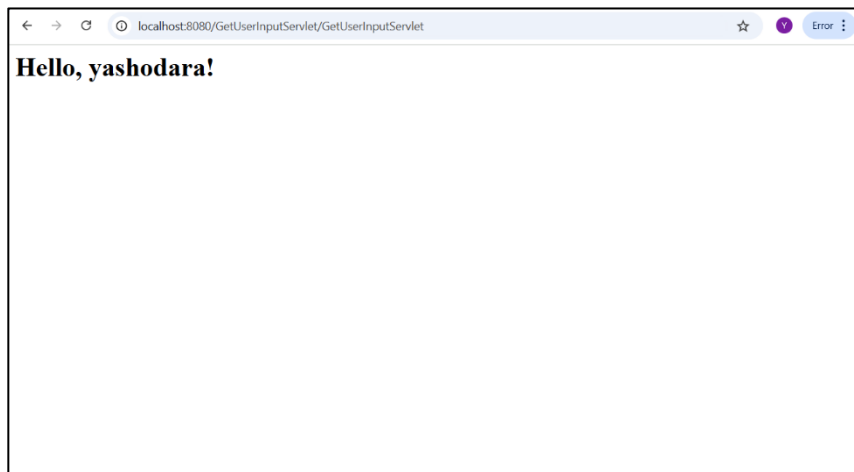
public class GetUserInputServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request,
        HttpServletResponse response)

        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>");
    }
}
```



Task 03 - Get Multiple Inputs, Perform Calculation, and Display Result

HTML Form (index.html)

```
<!DOCTYPE html>
<html>
  <head>
    <title>User Input</title>
  </head>
  <body bgcolor="LightGray">
    <h1 align="center">User Input</h1>
    <hr color="black">
    <form action="GetUserInputServlet" method="POST">
      <center><table style="width: 70%">
        <tr>
          <th><h3>Name:</h3></th>
          <td><input type="text" name="un"
required></td>
        </tr>
        <tr>
          <td colspan="2"><input type="submit"
value="save"></td>
        </tr>
      </table></center>
    </form>
    <hr color="black">
    <hr color="black">
    <h1>Sum Calculator</h1>
    <form action="CalculateSumServlet" 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>
```

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 = {"/CalculateSumServlet"})
public class CalculateSumServlet 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>Calculate Sum</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Calculate Sum</h1>");
            out.println("<h2>First number: " + num1 + "</h2>");
            out.println("<h2>Second number: " + num2 + "</h2>");
            out.println("<h1>Answer: " + sum + "</h1>");
            out.println("</body>");
            out.println("</html>");
        }
    }

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

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

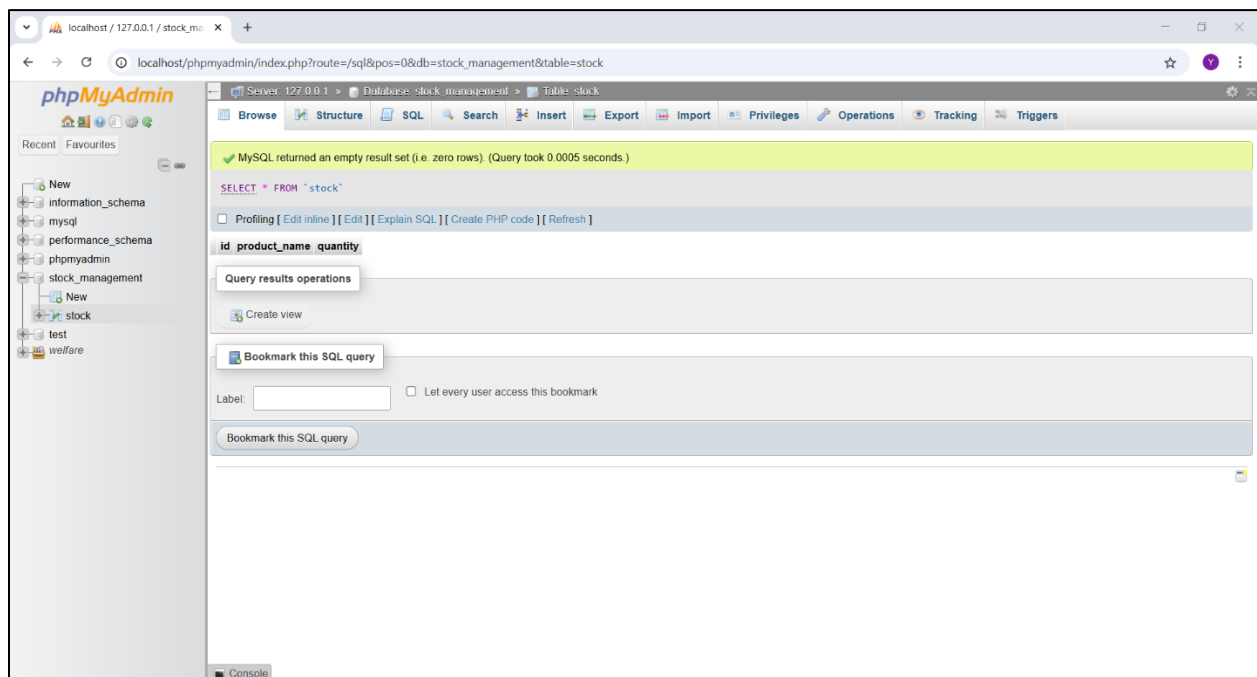
The screenshot shows a web browser window with the address bar displaying 'localhost:8080/GetInput/'. The page has a light gray background. At the top, there is a header section titled 'User Input' in bold black text. Below this header, there is a form with a label 'Name:' followed by a text input field. Below the input field is a 'save' button. Below the 'save' button, there is a horizontal line. Below the line, there is a section titled 'Sum Calculator' in bold black text. Below this title, there are two labels: 'First Number:' followed by a text input field, and 'Second Number:' followed by a text input field. Below the input fields is a 'Calculate Sum' button.

The screenshot shows a web browser window with the address bar displaying 'localhost:8080/GetInput/CalculateSumServlet'. The page has a light gray background. At the top, there is a header section titled 'Calculate Sum' in bold black text. Below this header, there are three lines of text: 'First number: 45', 'Second number: 15', and 'Answer: 60'.

Task 04 - Java Servlet with Database CRUD Operations

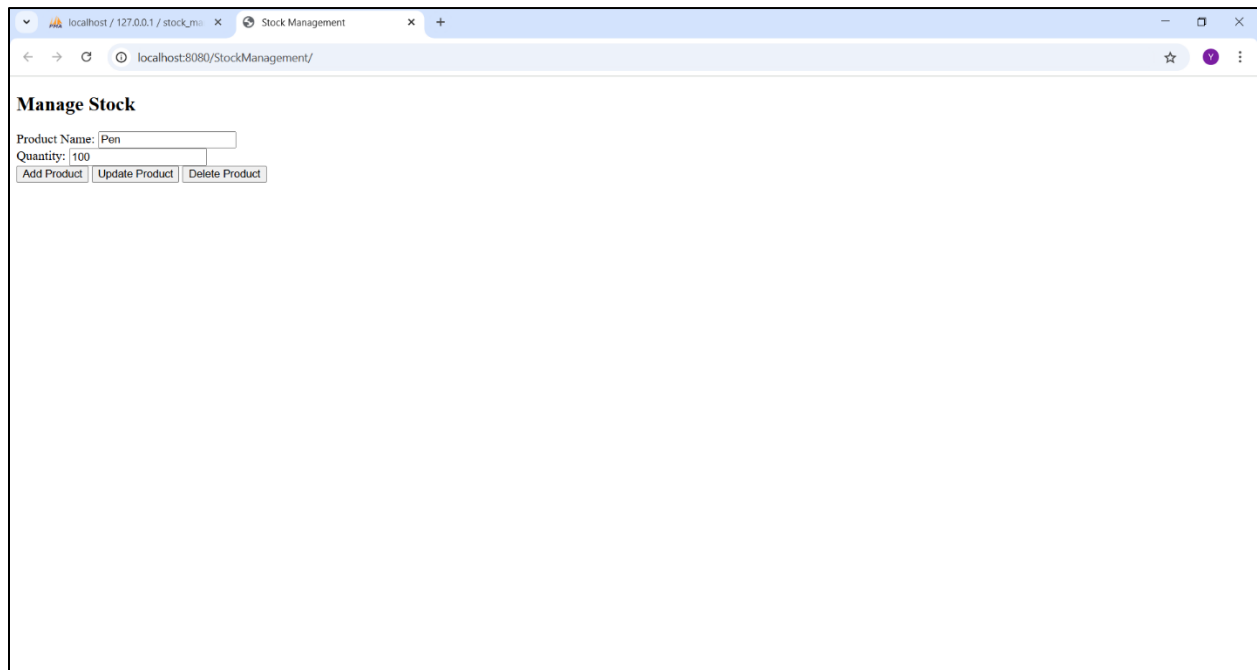
Database Setup:

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



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>
```



The screenshot shows a web browser window with the title 'Stock Management'. The address bar shows 'localhost:8080/StockManagement/'. The page content is titled 'Manage Stock'. Below the title, there is a form with two input fields: 'Product Name: Pen' and 'Quantity: 100'. Below these fields are three buttons: 'Add Product', 'Update Product', and 'Delete Product'.

StockManagementServlet.java

```
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 = "";
        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>I
        valid Action</h1>");
    }
} catch (SQLException e) {
    e.printStackTrace();
    response.getWriter().write("<h1>Databas
    e Error: " + e.getMessage() + "</h1>");
}
}
}

```

Manage Stock




Product Name:

Quantity:

← ↻ ⓘ localhost:8080/WebApplication2/stockAction

Product Added Successfully

[Back to Form](#)

← T →				id	product_name	quantity
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	Phone	10

Task 05 - Display Data from Database on Another Web Page

DisplayProductsServlet.java

```
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("/displayProducts")
public class DisplayProductsServlet extends HttpServlet {
    private Connection getConnection() throws SQLException {

        String url =
            "jdbc:mysql://localhost:3306/stock_management";
        String username = "root";
        String password = "";
        return DriverManager.getConnection(url, username,
            password);
    }

    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();
            ut.println("<h1>Database Error</h1>");
        }
    }
}
```