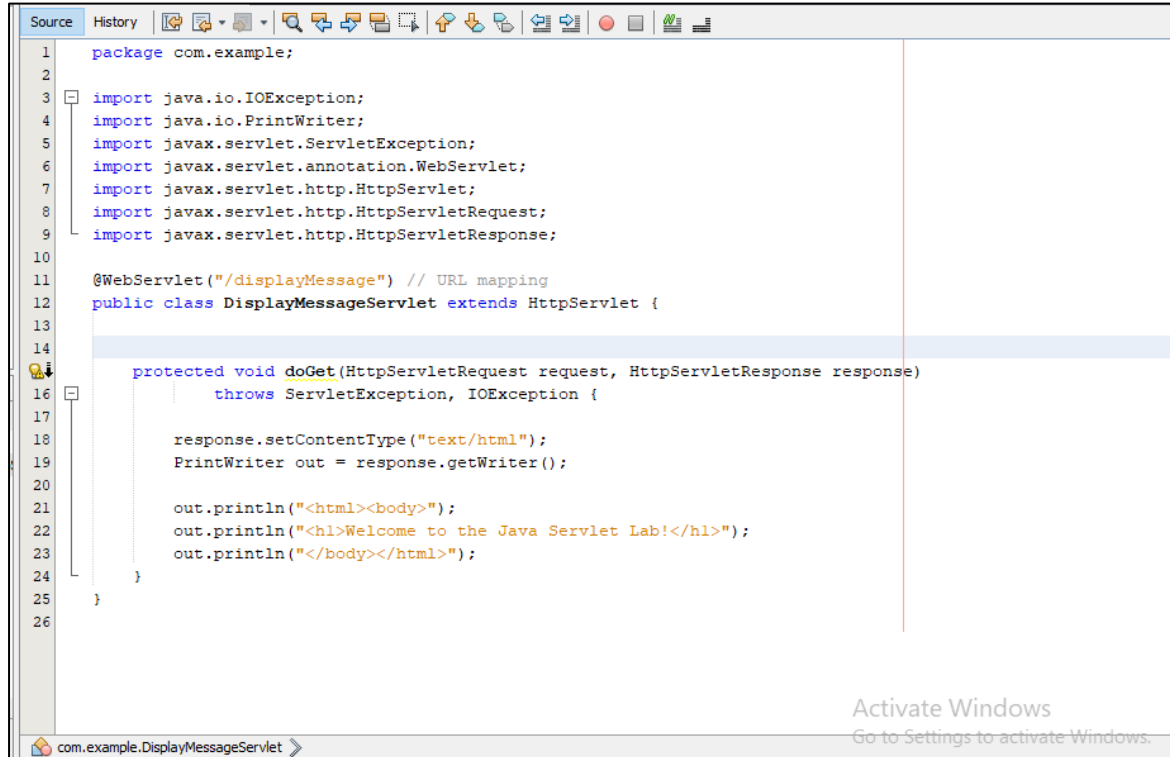


Java Servlet Practical Lab Sheet

Lab Task 1: Simple Servlet - Display Static Message

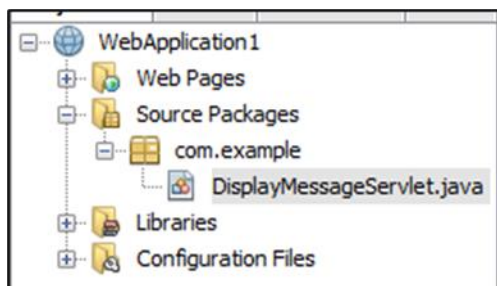
Create a Display Message Servlet that outputs a static message.



```
1 package com.example;
2
3 import java.io.IOException;
4 import java.io.PrintWriter;
5 import javax.servlet.ServletException;
6 import javax.servlet.annotation.WebServlet;
7 import javax.servlet.http.HttpServlet;
8 import javax.servlet.http.HttpServletRequest;
9 import javax.servlet.http.HttpServletResponse;
10
11 @WebServlet("/displayMessage") // URL mapping
12 public class DisplayMessageServlet extends HttpServlet {
13
14     protected void doGet(HttpServletRequest request, HttpServletResponse response)
15         throws ServletException, IOException {
16
17         response.setContentType("text/html");
18         PrintWriter out = response.getWriter();
19
20         out.println("<html><body>");
21         out.println("<h1>Welcome to the Java Servlet Lab!</h1>");
22         out.println("</body></html>");
23     }
24 }
25
26
```

com.example.DisplayMessageServlet

Activate Windows
Go to Settings to activate Windows.

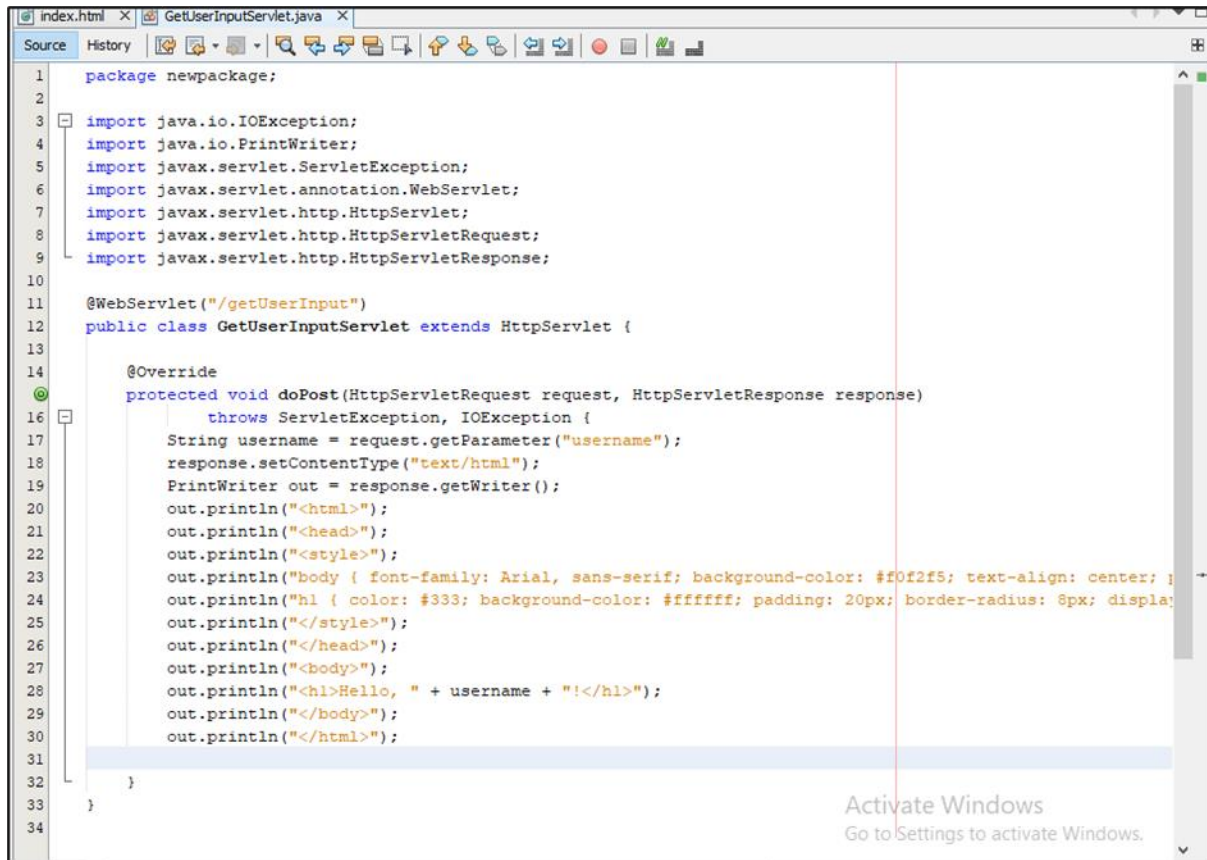


Output



Lab Task 2: Get User Input from Form and Display

Servlet Code (GetUserInputServlet.java):



```
1 package newpackage;
2
3 import java.io.IOException;
4 import java.io.PrintWriter;
5 import javax.servlet.ServletException;
6 import javax.servlet.annotation.WebServlet;
7 import javax.servlet.http.HttpServlet;
8 import javax.servlet.http.HttpServletRequest;
9 import javax.servlet.http.HttpServletResponse;
10
11 @WebServlet("/getUserInput")
12 public class GetUserInputServlet extends HttpServlet {
13
14     @Override
15     protected void doPost(HttpServletRequest request, HttpServletResponse response)
16         throws ServletException, IOException {
17         String username = request.getParameter("username");
18         response.setContentType("text/html");
19         PrintWriter out = response.getWriter();
20         out.println("<html>");
21         out.println("<head>");
22         out.println("<style>");
23         out.println("body { font-family: Arial, sans-serif; background-color: #f0f2f5; text-align: center;");
24         out.println("h1 { color: #333; background-color: #ffffff; padding: 20px; border-radius: 8px; display: inline-block;");
25         out.println("</style>");
26         out.println("</head>");
27         out.println("<body>");
28         out.println("<h1>Hello, " + username + "!</h1>");
29         out.println("</body>");
30         out.println("</html>");
31     }
32 }
33
34
```

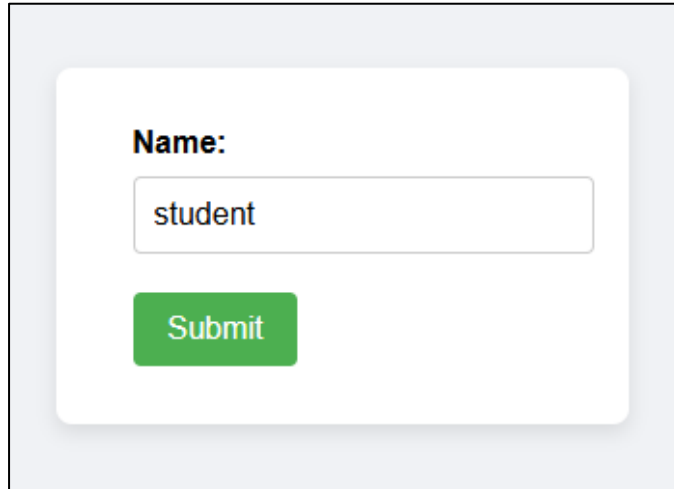
Activate Windows
Go to Settings to activate Windows.

Index.html



```
51 </style>
52 </head>
53 <body>
54     <form action="getUserInput" method="POST">
55         <label for="username">Name:</label><br>
56         <input type="text" name="username" id="username" required><br>
57         <input type="submit" value="Submit">
58     </form>
59 </body>
60 </html>
61
```

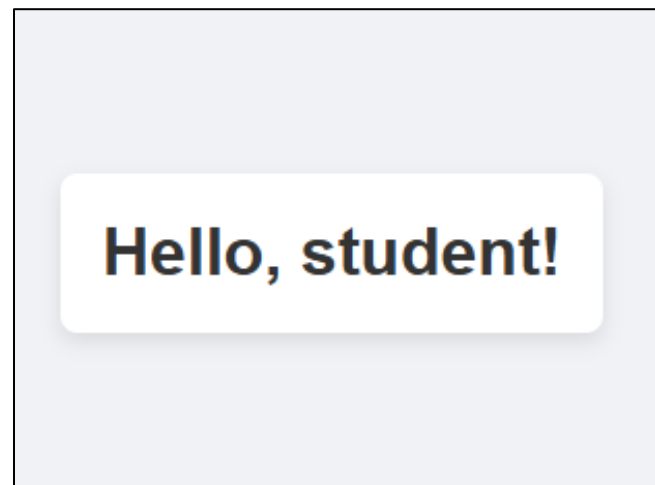
Output



A screenshot of a web form. It features a light gray background with a white rounded rectangle in the center. Inside the rectangle, the text "Name:" is displayed in bold. Below it is a text input field containing the word "student". At the bottom of the rectangle is a green button with the text "Submit" in white.

Name:

Submit

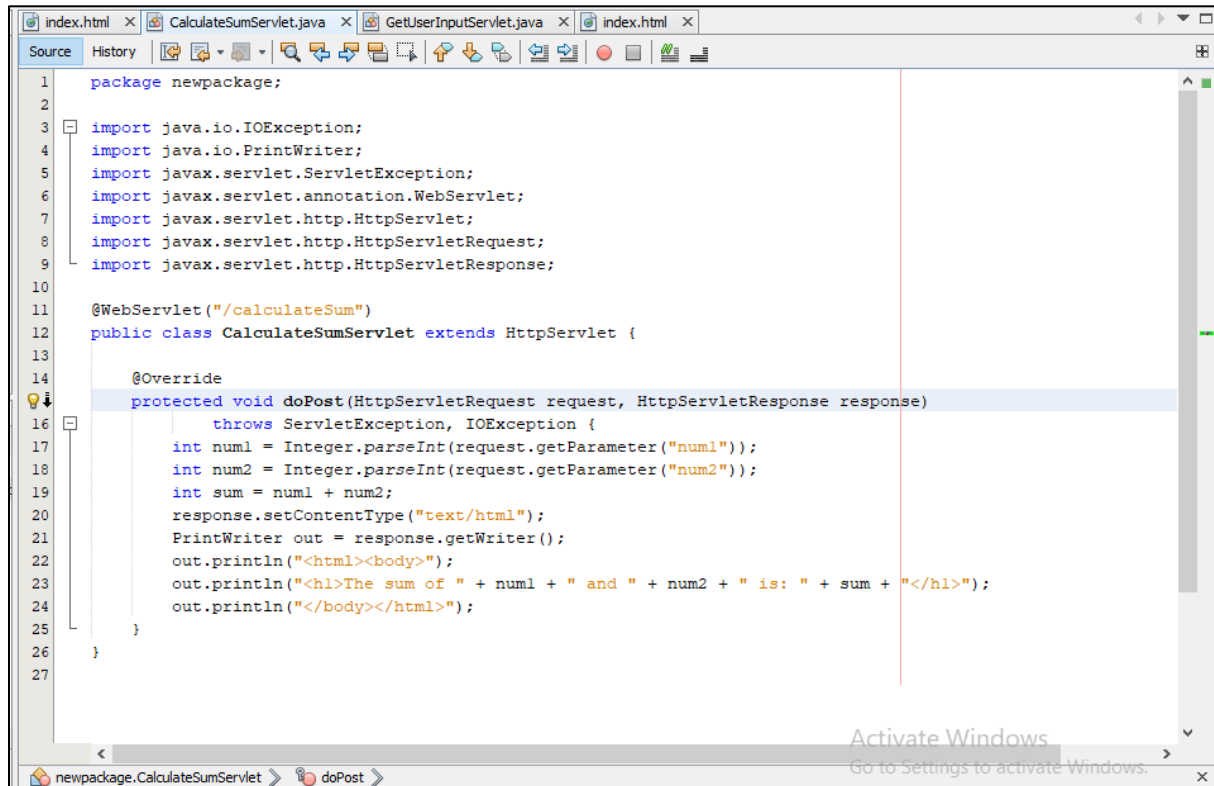


A screenshot of a message box. It features a light gray background with a white rounded rectangle in the center. Inside the rectangle, the text "Hello, student!" is displayed in bold.

Hello, student!

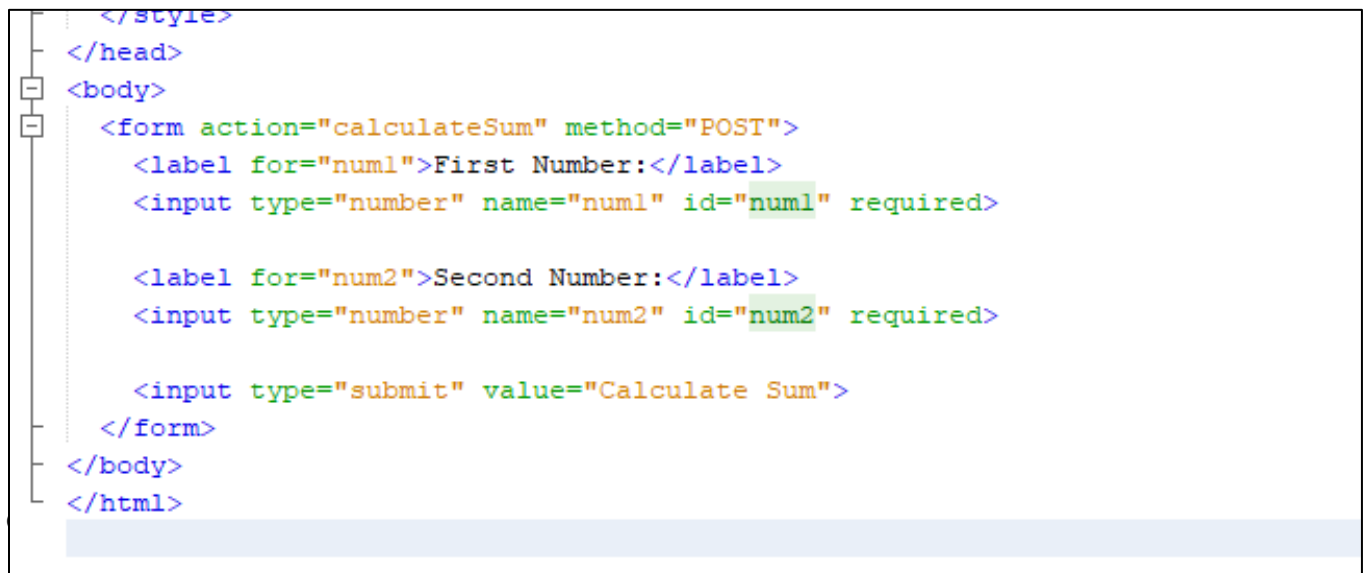
Lab Task 3: Get Multiple Inputs, Perform Calculation, and Display Result

Servlet Code (CalculateSumServlet.java):



```
1 package newpackage;
2
3 import java.io.IOException;
4 import java.io.PrintWriter;
5 import javax.servlet.ServletException;
6 import javax.servlet.annotation.WebServlet;
7 import javax.servlet.http.HttpServlet;
8 import javax.servlet.http.HttpServletRequest;
9 import javax.servlet.http.HttpServletResponse;
10
11 @WebServlet("/calculateSum")
12 public class CalculateSumServlet extends HttpServlet {
13
14     @Override
15     protected void doPost(HttpServletRequest request, HttpServletResponse response)
16         throws ServletException, IOException {
17         int num1 = Integer.parseInt(request.getParameter("num1"));
18         int num2 = Integer.parseInt(request.getParameter("num2"));
19         int sum = num1 + num2;
20         response.setContentType("text/html");
21         PrintWriter out = response.getWriter();
22         out.println("<html><body>");
23         out.println("<h1>The sum of " + num1 + " and " + num2 + " is: " + sum + "</h1>");
24         out.println("</body></html>");
25     }
26 }
27
```

HTML Form (calculate.html):



```
</style>
</head>
<body>
    <form action="calculateSum" method="POST">
        <label for="num1">First Number:</label>
        <input type="number" name="num1" id="num1" required>

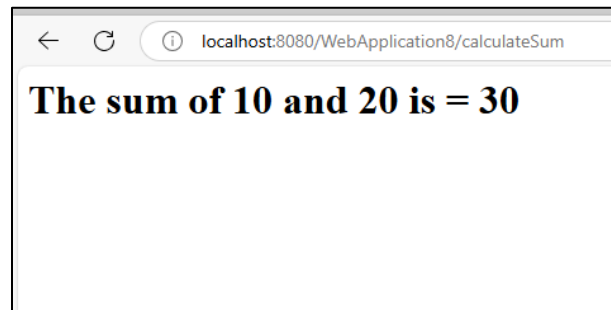
        <label for="num2">Second Number:</label>
        <input type="number" name="num2" id="num2" required>

        <input type="submit" value="Calculate Sum">
    </form>
</body>
</html>
```

First Number:

Second Number:

Calculate Sum



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	InnoDB	utf8mb4_general_ci	16.0 KiB	-
1 table	Sum	0	InnoDB	utf8mb4_general_ci	16.0 KiB	0 B
<input type="checkbox"/> Check all	With selected: <input type="text"/>					

HTML Form (stockForm.html):

```
Source History               
1 <!DOCTYPE html>
2 <html>
3 <head>
4     <meta charset="UTF-8">
5     <title>Stock Management</title>
6 </head>
7 <body>
8     <h2>Manage Stock</h2>
9     <form action="stockAction" method="POST">
10         <label for="product_name">Product Name:</label>
11         <input type="text" id="product_name" name="product_name" required><br><br>
12         <label for="quantity">Quantity:</label>
13         <input type="number" id="quantity" name="quantity" required><br><br>
14         <input type="submit" name="action" value="Add Product">
15         <input type="submit" name="action" value="Update Product">
16         <input type="submit" name="action" value="Delete Product">
17     </form>
18 </body>
19 </html>
20
```

```
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>");
    }
}
}

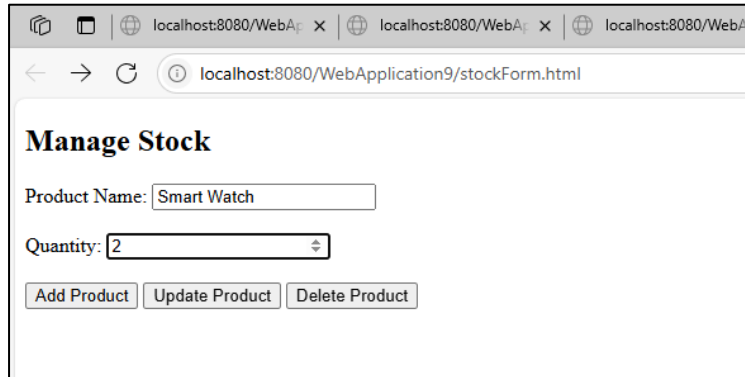
```

```

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



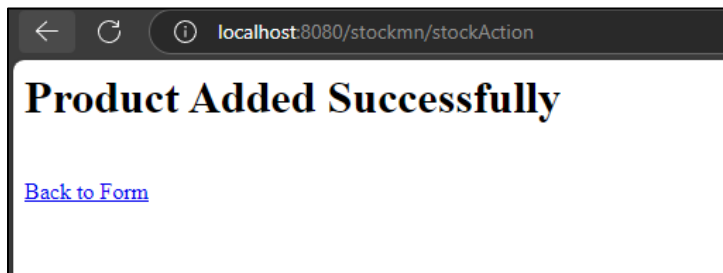
localhost:8080/WebApp x localhost:8080/WebApp x localhost:8080/WebApp







localhost:8080/WebApplication9/stockForm.html

Manage Stock

Product Name:

Quantity:



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

```

1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title>Stock Management</title>
5          <style>
6              body { font-family: Arial, sans-serif; margin: 20px; }
7              form { max-width: 500px; margin: 0 auto; padding: 20px; border: 1px solid #ddd; border-radius: 5px; }
8              input[type="text"], input[type="number"] { width: 100%; padding: 8px; margin: 5px 0 15px; }
9              input[type="submit"] { padding: 8px 15px; margin-right: 10px; }
10             .view-link { display: block; text-align: center; margin-top: 20px; }
11         </style>
12     </head>
13     <body>
14         <h2 style="text-align: center;"> Manage Stock </h2>
15         <form action="stockAction" method="POST">
16             Product Name: <input type="text" name="product_name" required><br>
17             Quantity: <input type="number" name="quantity" required><br>
18             <input type="submit" name="action" value="Add Product">
19             <input type="submit" name="action" value="Update Product">
20             <input type="submit" name="action" value="Delete Product">
21         </form>
22
23         <div class="view-link">
24             <a href="displayProducts"> View All Products </a>
25         </div>
26     </body>
27 </html>
28







```

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