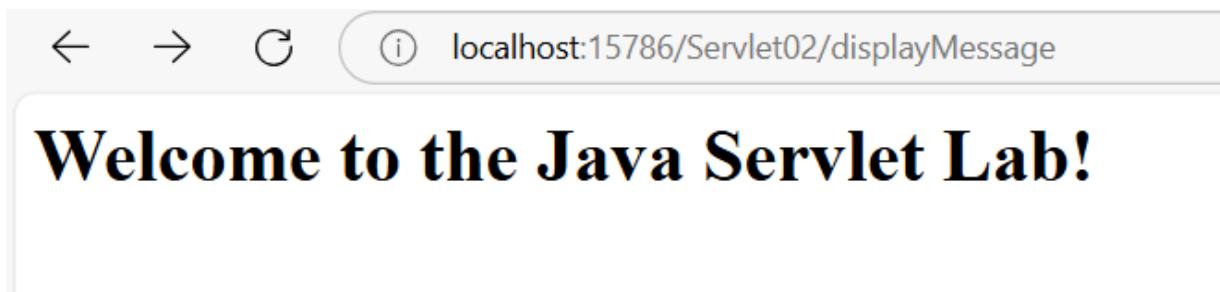


Lab Sheet : Java Servlet

Simple Servlet - Display Static Message

```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit this template
4   */
5
6  import java.io.IOException;
7  import java.io.PrintWriter;
8  import jakarta.servlet.ServletException;
9  import jakarta.servlet.annotation.WebServlet;
10 import jakarta.servlet.http.HttpServlet;
11 import jakarta.servlet.http.HttpServletRequest;
12 import jakarta.servlet.http.HttpServletResponse;
13
14 @WebServlet("/displayMessage")
15 public class DisplayMessageServlet extends HttpServlet {
16     protected void doGet(HttpServletRequest request, HttpServletResponse response)
17         throws ServletException, IOException {
18         response.setContentType(string:"text/html");
19         PrintWriter out = response.getWriter();
20         out.println(x: "<html><body>");
21         out.println(x: "<h1>Welcome to the Java Servlet Lab!</h1>");
22         out.println(x: "</body></html>");
23     }
24 }
25
```

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <!DOCTYPE glassfish-web-app PUBLIC "-//GlassFish.org//DTD GlassFish Application Server 3.1 Servlet 3.0//EN"
3   "http://glassfish.org/dtds/glassfish-web-app_3_0-1.dtd">
4  <glassfish-web-app error-url="">
5      <web-app xmlns="http://java.sun.com/xml/ns/javaee" version="3.0">
6          <servlet>
7              <servlet-name>DisplayMessageServlet</servlet-name>
8              <servlet-class>com.example.DisplayMessageServlet</servlet-class>
9          </servlet>
10         <servlet-mapping>
11             <servlet-name>DisplayMessageServlet</servlet-name>
12             <url-pattern>/displayMessage</url-pattern>
13         </servlet-mapping>
14     </web-app>
15 </glassfish-web-app>
16
17
```



Get User Input from Form and Display

- **Index.html**

```
<!DOCTYPE html>
<html>
<head>
    <title>Input Form</title>
    <style>
        body {
            font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
            background-color: #121212;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
            color: #e0e0e0;
        }
        form {
            background-color: #1e1e1e;
            padding: 25px 35px;
            border-radius: 12px;
            box-shadow: 0 6px 12px rgba(0,0,0,0.3);
            width: 300px;
            border: 1px solid #333;
        }
        input[type="text"] {
            padding: 12px;
            width: 100%;
        }
    </style>

```

```
margin: 8px 0 20px 0;
border: 1px solid #444;
border-radius: 6px;
font-size: 16px;
background-color: #2d2d2d;
color: #ffffff;
transition: border 0.3s;
}

input[type="text"]:focus {
    border-color: #9c27b0;
    outline: none;
}

input[type="submit"] {
    background-color: #7b1fa2;
    color: white;
    padding: 12px 24px;
    border: none;
    border-radius: 6px;
    font-size: 16px;
    cursor: pointer;
    width: 100%;
    transition: background-color 0.3s;
}

input[type="submit"]:hover {
    background-color: #9c27b0;
}

label {
    font-weight: 600;
    color: #bb86fc;
    font-size: 14px;
    text-transform: uppercase;
    letter-spacing: 0.5px;
}

h1 {
    color: #bb86fc;
```

```

        text-align: center;
        margin-bottom: 25px;
    }

```

</style>

</head>

<body>

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

<h1>User Login</h1>

<label for="username">Your Name:</label>

<input type="text" name="username" id="username" required placeholder="Enter your name">

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

</form>

</body>

</html>

Servlet Code (GetUserInputServlet.java):

```

1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   * Click nbfs://nbhost/SystemFileSystem/Templates/JSP\_Servlet/Servlet.java to edit this template
4   */
5
6  import java.io.IOException;
7  import java.io.PrintWriter;
8  import jakarta.servlet.ServletException;
9  import jakarta.servlet.annotation.WebServlet;
10 import jakarta.servlet.http.HttpServlet;
11 import jakarta.servlet.http.HttpServletRequest;
12 import jakarta.servlet.http.HttpServletResponse;
13
14 /**
15 *
16 * @author USER
17 */
18 @WebServlet(urlPatterns = {"/getUserInput"})
19 public class GetUserInputServlet extends HttpServlet {
20
21     protected void doPost(HttpServletRequest request, HttpServletResponse response)
22         throws ServletException, IOException {
23         String username = request.getParameter(string:"username");
24         response.setContentType(string:"text/html");
25         PrintWriter out = response.getWriter();
26         out.println(x: "<html><body>");
27         out.println("Hello, " + username + "!</h1>");
28         out.println(x: "</body></html>");
29     }
30 }

```

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

- **Calculate.html**

```
<!DOCTYPE html>
<html>
<head>
    <title>Sum Calculator</title>
    <style>
        body {
            font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
            background-color: #f5f7fa;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
        }
        form {
            background-color: white;
            padding: 30px 40px;
            border-radius: 12px;
            box-shadow: 0 5px 15px rgba(0, 0, 0, 0.08);
            width: 320px;
        }
        h2 {
            text-align: center;
            margin-bottom: 25px;
            color: #4a6cf7;
            font-size: 24px;
        }
        label {
            display: block;
            margin-bottom: 8px;
            color: #555;
            font-weight: 500;
        }
        input[type="number"] {
            width: 100%;
            padding: 12px 15px;
        }
    </style>
</head>
<body>
    <h2>Sum Calculator</h2>
    <form>
        <label>First Number</label>
        <input type="number" id="num1">
        <label>Second Number</label>
        <input type="number" id="num2">
        <button type="button" onclick="calculateSum()>Calculate</button>
        <div id="result"></div>
    </form>
</body>
</html>
```

```

margin-bottom: 20px;
border: 1px solid #e0e0e0;
border-radius: 8px;
font-size: 16px;
transition: border 0.3s;
}
input[type="number"]:focus {
    border-color: #4a6cf7;
    outline: none;
}
input[type="submit"] {
    width: 100%;
    padding: 12px;
    background-color: #4a6cf7;
    color: white;
    font-size: 16px;
    font-weight: 500;
    border: none;
    border-radius: 8px;
    cursor: pointer;
    transition: background-color 0.3s;
}
input[type="submit"]:hover {
    background-color: #3a5bd9;
}
</style>
</head>
<body>
<form action="calculateSum" method="POST">
    <h2>Sum Calculator</h2>

    <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>
```

Servlet Code (CalculateSumServlet.java):

```
18  @WebServlet(urlPatterns = {"/*calculateSum"})
19  public class CalculateSumServlet extends HttpServlet {
20
21      @Override
22      protected void doPost(HttpServletRequest request, HttpServletResponse response)
23          throws ServletException, IOException {
24
25          // Retrieve and parse the input numbers from the request
26          int num1 = Integer.parseInt(request.getParameter("num1"));
27          int num2 = Integer.parseInt(request.getParameter("num2"));
28
29          // Calculate the sum
30          int sum = num1 + num2;
31
32          // Set response content type
33          response.setContentType("text/html");
34
35          // Generate HTML response
36          PrintWriter out = response.getWriter();
37          out.println("<!DOCTYPE html>");
38          out.println("<html>");
39          out.println("<head>");
40          out.println("<title>Sum Result</title>");
41          out.println("<style>");
42          out.println("body { font-family: Arial, sans-serif; background-color: #f0f8ff; text-align: center; padding-top: 50px; }");
43          out.println("h1 { color: #333; }");
44          out.println("</style>");
45          out.println("</head>");
46          out.println("<body>");
47          out.println("<h1>The sum of " + num1 + " and " + num2 + " is: <strong>" + sum + "</strong></h1>");
48          out.println("</body>");
49          out.println("</html>");
50      }
51  }
```



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 lang="en">
<head>
    <meta charset="UTF-8">
    <title>Stock Management</title>
    <!-- Bootstrap CSS CDN -->
    <link
        href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css"
        rel="stylesheet">
    <style>
        .card-header {
            background-color: #6f42c1; /* Purple header */
        }
        .btn-add {
            background-color: #20c997; /* Teal add button */
            border-color: #20c997;
        }
        .btn-update {
            background-color: #fd7e14; /* Orange update button */
            border-color: #fd7e14;
        }
        .btn-delete {
            background-color: #dc3545; /* Red delete button */
            border-color: #dc3545;
        }
        body {
            background-color: #f8f9fa;
        }
        .card {
            border: none;
            border-radius: 10px;
        }
    </style>
</head>
<body>

    <div class="container mt-5">
        <div class="card shadow">
            <div class="card-header text-white">
                <h2 class="mb-0">Manage Stock</h2>
            </div>
```

```
<div class="card-body">
  <form action="stockAction" method="POST">
    <div class="mb-3">
      <label for="product_name" class="form-label">Product Name:</label>
      <input type="text" class="form-control" id="product_name"
name="product_name" required>
    </div>

    <div class="mb-3">
      <label for="quantity" class="form-label">Quantity:</label>
      <input type="number" class="form-control" id="quantity"
name="quantity" required>
    </div>

    <div class="d-flex gap-2">
      <button type="submit" name="action" value="Add Product" class="btn
btn-add text-white">Add Product</button>
      <button type="submit" name="action" value="Update Product"
class="btn btn-update text-white">Update Product</button>
      <button type="submit" name="action" value="Delete Product"
class="btn btn-delete text-white">Delete Product</button>
    </div>
  </form>
</div>
</div>

<!-- Bootstrap JS (Optional) -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"></
script>
</body>
</html>
```

Servlet Code (StockManagementServlet.java):

```
1  /*
2   * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
3   * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit this template
4   */
5
6  import java.io.IOException;
7  import java.io.PrintWriter;
8  import java.sql.Connection;
9  import java.sql.DriverManager;
10 import java.sql.PreparedStatement;
11 import java.sql.SQLException;
12 import jakarta.servlet.ServletException;
13 import jakarta.servlet.annotation.WebServlet;
14 import jakarta.servlet.http.HttpServlet;
15 import jakarta.servlet.http.HttpServletRequest;
16 import jakarta.servlet.http.HttpServletResponse;
17
18 @WebServlet(urlPatterns = {"/*stockAction"})
19 public class StockManagementServlet extends HttpServlet {
20
21     private Connection getConnection() throws SQLException {
22         try {
23             Class.forName(className:"com.mysql.cj.jdbc.Driver"); // Load MySQL driver
24         } catch (ClassNotFoundException e) {
25             throw new SQLException(reason:"MySQL JDBC Driver not found.", cause: e);
26         }
27
28         String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC";
29         String username = "root";
30         String password = "root"; // Update if you have a MySQL password
31
32         return DriverManager.getConnection(url, user: username, password);
33     }
34
35     @Override
36     protected void doPost(HttpServletRequest request, HttpServletResponse response)
37         throws ServletException, IOException {
38
39         String action = request.getParameter(string: "action");
40         String productName = request.getParameter(string: "product_name");
41         int quantity = Integer.parseInt(: request.getParameter(string: "quantity"));
42     }
}
```

```

43     response.setContentType(string:"text/html");
44     PrintWriter out = response.getWriter();
45
46     try (Connection conn = getConnection()) {
47         switch (action) {
48             case "Add Product":
49                 try (PreparedStatement stmt = conn.prepareStatement(
50                     string:"INSERT INTO stock (product_name, quantity) VALUES (?, ?)")) {
51                     stmt.setString(i: 1, string:productName);
52                     stmt.setInt(i: 2, int: quantity);
53                     stmt.executeUpdate();
54                     out.write(s: "<h1>✓ Product Added Successfully</h1>");
55                 }
56                 break;
57
58             case "Update Product":
59                 try (PreparedStatement stmt = conn.prepareStatement(
60                     string:"UPDATE stock SET quantity = ? WHERE product_name = ?")) {
61                     stmt.setInt(i: 1, int: quantity);
62                     stmt.setString(i: 2, string:productName);
63                     stmt.executeUpdate();
64                     out.write(s: "<h1>◊ Product Updated Successfully</h1>");
65                 }
66                 break;
67
68             case "Delete Product":
69                 try (PreparedStatement stmt = conn.prepareStatement(
70                     string:"DELETE FROM stock WHERE product_name = ?")) {
71                     stmt.setString(i: 1, string:productName);
72                     stmt.executeUpdate();
73                     out.write(s: "<h1>✗ Product Deleted Successfully</h1>");
74                 }
75                 break;
76
77             default:
78                 out.write(s: "<h1>⚠ Invalid Action</h1>");
79         }
80     } catch (SQLException e) {
81         e.printStackTrace();
82         out.write("<h1>✗ Database Error: " + e.getMessage() + "</h1>");
83     }
84 }

```

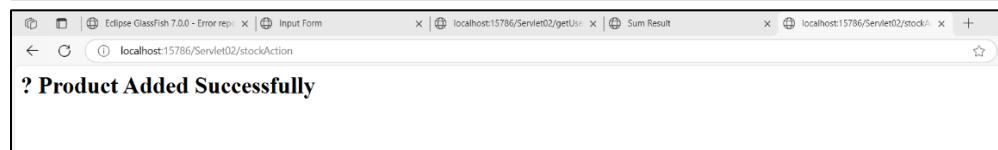
Add:

Manage Stock

Product Name:
Apple

Quantity:
10

Add Product Update Product Delete Product



Result Grid | Filter Rows: | Edit:

	id	product_name	quantity
▶	1	Apple	10
◀	2	Banana	10
*	NULL	NULL	NULL

Update:

Eclipse GlassFish 7.0.0 - Error repo | Input Form | × | localhost:15786/Servlet02/stockAction

? Product Updated Successfully

Result Grid | Filter Rows: | Edit:

	id	product_name	quantity
▶	1	Apple	20
◀	2	Banana	15
*	NULL	NULL	NULL

Delete:

Eclipse GlassFish 7.0.0 - Error repo | localhost:15786/Servlet02/stockA | + | localhost:15786/Servlet02/stockAction

? Product Deleted Successfully

The screenshot shows a MySQL Workbench interface with a 'Result Grid' window. The grid has three columns: 'id', 'product_name', and 'quantity'. There is one visible row with values 2, Banana, and 15 respectively. The 'Edit' toolbar at the top right includes icons for edit, delete, and insert.

	id	product_name	quantity
▶	2	Banana	15
✳	NULL	NULL	NULL

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

```

@WebServlet(urlPatterns = {"/DisplayProducts"})
public class DisplayProductsServlet extends HttpServlet {
    private Connection getConnection() throws SQLException {
        try {
            Class.forName("com.mysql.cj.jdbc.Driver"); // Load MySQL JDBC driver
        } catch (ClassNotFoundException e) {
            throw new SQLException("MySQL JDBC Driver not found.", e);
        }

        String url =
"jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true
&serverTimezone=UTC";
        String username = "root";
        String password = "root"; // Use your MySQL password if set
        return DriverManager.getConnection(url, username, password);
    }

    @Override
    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><head><title>Stock List</title></head><body>");

```

```
out.println("<h1>📦 Stock List</h1>");
out.println("<ul>");

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

out.println("</ul>");
out.println("</body></html>");
} catch (SQLException e) {
    e.printStackTrace();
    out.println("<h1>✖ Database Error: " + e.getMessage() + "</h1>");
}
}
```

