

GAM/IT/2022/F/0079 – J.S.Senarath

## Simple Servlet - Display Static Message

1. **Create a Java Servlet (DisplayMessageServlet)** that outputs a static message.
2. **Configure the servlet** using the `@WebServlet` annotation or the `web.xml` deployment descriptor.

**Code:**

```
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>");

    }

}
```

```

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

@WebServlet("/displayMessage")

public class DisplayMessageServlet extends HttpServlet {
    @Override
    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>

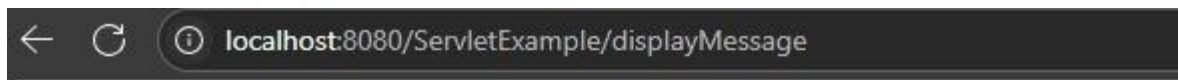
</servlet-mapping>

</web-app>

```



```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <web-app xmlns="http://java.sun.com/xml/ns/javaee" version="3.0">
3   <servlet>
4     <servlet-name>DisplayMessageServlet</servlet-name>
5     <servlet-class>com.example.DisplayMessageServlet</servlet-class>
6   </servlet>
7   <servlet-mapping>
8     <servlet-name>DisplayMessageServlet</servlet-name>
9     <url-pattern>/displayMessage</url-pattern>
10  </servlet-mapping>
11 </web-app>
12
```



# Welcome to the Java Servlet Lab!

2. Create an HTML form to collect the user's name.

**Create a Servlet** (GetUserInputServlet) to handle the form submission and display the user's name.

**HTML Form (index.html):**

```
<!DOCTYPE html>
```

```
<html>
```

```
<head><title>Input Form</title></head>
```

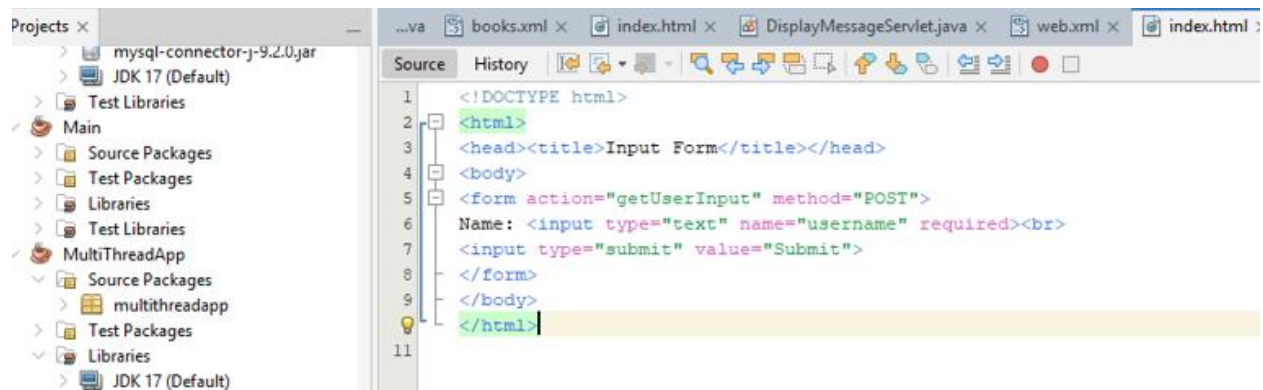
```
<body>
```

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

```
Name: <input type="text" name="username" required><br> <input type="submit"
value="Submit">
```

```
</form>
```

</body> </html>



### Servlet Code (GetUserInputServlet.java):

```
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;

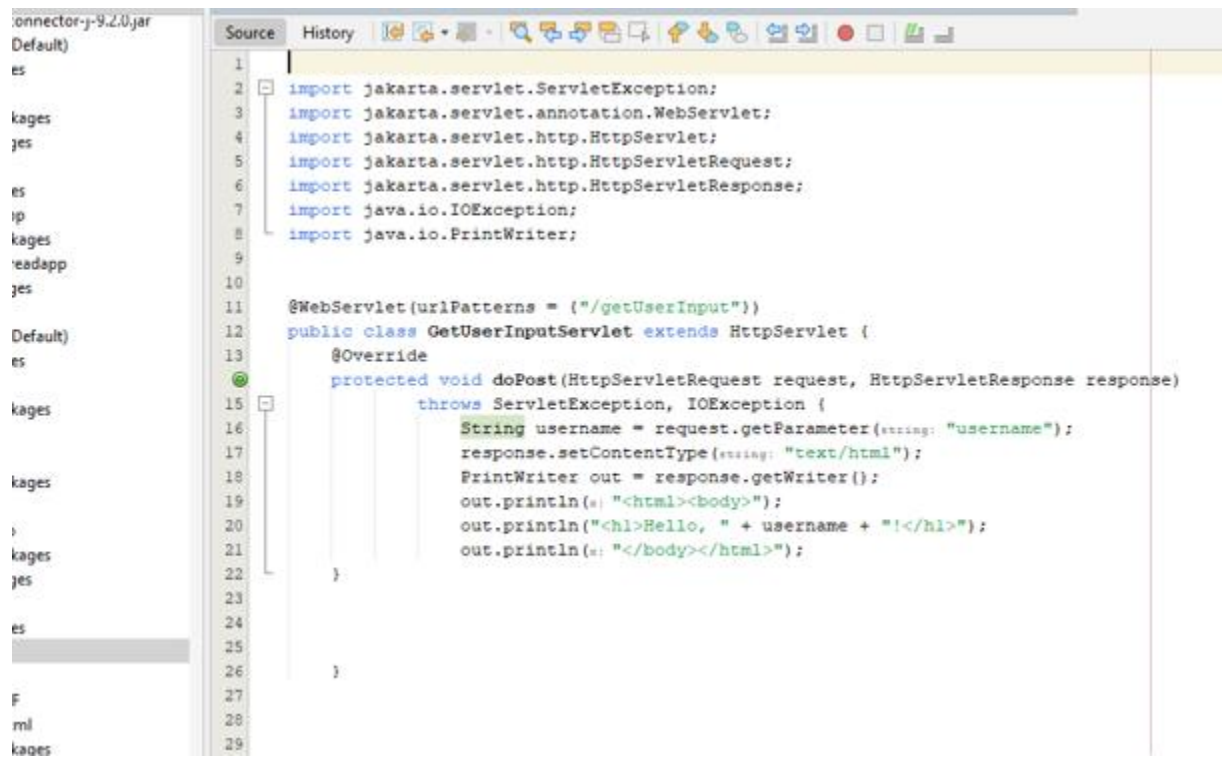
@WebServlet("/getUserInput")

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>");
    }
}
```

}}}



The screenshot shows an IDE window with a project explorer on the left and a source code editor on the right. The project explorer lists files like 'connector-j-9.2.0.jar', 'Default', 'es', 'kages', 'jes', 'readapp', and 'jes'. The source code editor displays the following Java code:

```
1  
2 import jakarta.servlet.ServletException;  
3 import jakarta.servlet.annotation.WebServlet;  
4 import jakarta.servlet.http.HttpServlet;  
5 import jakarta.servlet.http.HttpServletRequest;  
6 import jakarta.servlet.http.HttpServletResponse;  
7 import java.io.IOException;  
8 import java.io.PrintWriter;  
9  
10  
11 @WebServlet(urlPatterns = {"/getUserInput"})  
12 public class GetUserInputServlet extends HttpServlet {  
13     @Override  
14     protected void doPost(HttpServletRequest request, HttpServletResponse response)  
15         throws ServletException, IOException {  
16         String username = request.getParameter("username");  
17         response.setContentType("text/html");  
18         PrintWriter out = response.getWriter();  
19         out.println("<html><body>");  
20         out.println("<h1>Hello, " + username + "!</h1>");  
21         out.println("</body></html>");  
22     }  
23  
24  
25  
26 }  
27  
28  
29
```

Output:



The screenshot shows a web browser window with the address bar displaying 'localhost:8080/Servlet2/'. The page content includes a form with the label 'Name:' followed by a text input field containing the value 'janani'. Below the input field is a 'Submit' button.



3. Create an HTML form to take inputs for two numbers.

**Create a Servlet** (CalculateSumServlet) to calculate the sum of the numbers and display the result.

**HTML Form (calculate.html):**

```
<!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>
```

Source History

```
1 <!DOCTYPE html>
2 <html>
3 <head><title>Sum Calculator</title></head>
4 <body>
5 <form action="calculateSum" method="POST">
6 First Number: <input type="number" name="num1" required><br>
7 Second Number: <input type="number" name="num2" required><br>
8 <input type="submit" value="Calculate Sum">
9 </form>
10 </body>
11 </html>
12
```

Output x

GlassFish Server x Servlet\_3 (run) x

```
compile:
compile-jsp:
In-place deployment at D:\practicals\Servlet_3\build\web
run-deploy:
Browsing: http://localhost:8080/Servlet_3
run-display-browser:
run:
BUILD SUCCESSFUL (total time: 0 seconds)
```

java

**Servlet Code (CalculateSumServlet.java):**

```
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("/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>");

    } }
```



```
Source History
1
2 import jakarta.servlet.ServletException;
3 import jakarta.servlet.annotation.WebServlet;
4 import jakarta.servlet.http.HttpServlet;
5 import jakarta.servlet.http.HttpServletRequest;
6 import jakarta.servlet.http.HttpServletResponse;
7 import java.io.IOException;
8 import java.io.PrintWriter;
9
10 @WebServlet(urlPatterns = {"/calculateSum"})
11 public class CalculateSumServlet extends HttpServlet {
12
13     @Override
14     protected void doPost(HttpServletRequest request, HttpServletResponse response)
15         throws ServletException, IOException {
16         int num1 = Integer.parseInt(request.getParameter("num1"));
17         int num2 = Integer.parseInt(request.getParameter("num2"));
18         int sum = num1 + num2;
19         response.setContentType("text/html");
20         PrintWriter out = response.getWriter();
21         out.println("<html><body>");
22         out.println("<h1>The sum of " + num1 + " and " + num2 + " is: " + sum + "</h1>");
23         out.println("</body></html>");
24
25     }
26
27 }
28
29
30
```

←

→

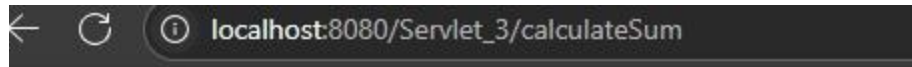
↺

ⓘ localhost:8080/Servlet\_3/

First Number:

Second Number:

Calculate Sum



**The sum of 10 and 20 is: 30**

4. **Set up a database** with a table named stock (fields: id, product\_name, quantity).

**Create a simple web form** to interact with the database (add, update, delete products).

**Create a Servlet** (StockManagementServlet) that handles database operations.

**Database Setup (MySQL example):**

```
CREATE DATABASE stock_management;
```

```
USE stock_management;
```

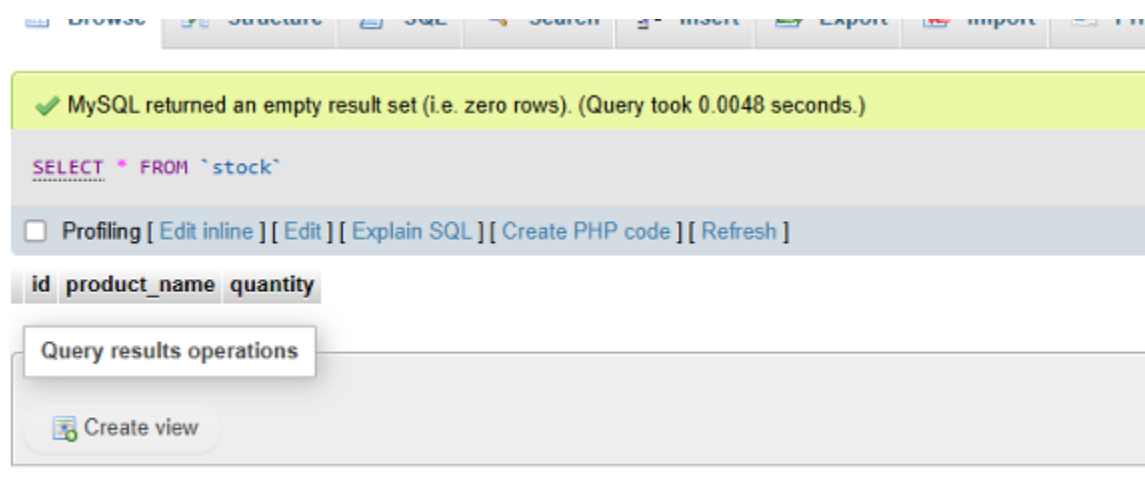
```
CREATE TABLE stock (
```

```
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>
```

```
<!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.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>");

}

}

}

```

```

1 import jakarta.servlet.ServletException;
2 import jakarta.servlet.annotation.WebServlet;
3 import jakarta.servlet.http.HttpServlet;
4 import jakarta.servlet.http.HttpServletRequest;
5 import jakarta.servlet.http.HttpServletResponse;
6 import java.io.IOException;
7 import java.io.PrintWriter;
8 import java.sql.*;
9
10 @WebServlet(urlPatterns = {"/stockAction"})
11 public class StockManagementServlet extends HttpServlet {
12
13     private Connection getConnection() throws SQLException {
14         try {
15             Class.forName("com.mysql.cj.jdbc.Driver"); // Load MySQL driver
16         } catch (ClassNotFoundException e) {
17             throw new SQLException("MySQL JDBC Driver not found.", e);
18         }
19
20         String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC";
21         String username = "root";
22         String password = ""; // Update if you have a MySQL password
23
24         return DriverManager.getConnection(url, username, password);
25     }
26
27     @Override
28     protected void doPost(HttpServletRequest request, HttpServletResponse response)
29         throws ServletException, IOException {
30
31         String action = request.getParameter("action");
32         String productName = request.getParameter("product_name");
33         int quantity = Integer.parseInt(request.getParameter("quantity"));
34
35         response.setContentType("text/html");
36         PrintWriter out = response.getWriter();
37
38         try (Connection conn = getConnection()) {
39             switch (action) {
40                 case "Add Product":
41                     try (PreparedStatement stmt = conn.prepareStatement(
42                         "INSERT INTO stock (product_name, quantity) VALUES (?, ?)")) {
43                         stmt.setString(1, productName);
44                         stmt.setInt(2, quantity);
45                         stmt.executeUpdate();
46                         out.write("<html>Product Added Successfully</html>");
47                     }
48                     break;
49
50                 case "Update Product":
51                     try (PreparedStatement stmt = conn.prepareStatement(
52                         "UPDATE stock SET quantity = ? WHERE product_name = ?")) {
53                         stmt.setInt(1, quantity);
54                         stmt.setString(2, productName);
55                         stmt.executeUpdate();
56                         out.write("<html>Product Updated Successfully</html>");
57                     }
58                     break;
59
60                 case "Delete Product":
61                     try (PreparedStatement stmt = conn.prepareStatement(
62                         "DELETE FROM stock WHERE product_name = ?")) {
63                         stmt.setString(1, productName);
64                         stmt.executeUpdate();
65                         out.write("<html>Product Deleted Successfully</html>");
66                     }
67                     break;
68
69                 default:
70                     out.write("<html>Invalid Action</html>");
71             }
72         } catch (SQLException e) {
73             e.printStackTrace();
74             out.write("<html>Database Error: " + e.getMessage() + "</html>");
75         }
76     }
77 }

```

## Manage Stock

Product Name:

Quantity:

## Product Added Successfully

`SELECT * FROM `stock``

☐ Profiling [ [Edit inline](#) ] [ [Edit](#) ] [ [Explain SQL](#) ] [ [Create PHP code](#) ] [ [Refresh](#) ]

☐ Show all | Number of rows:  | Filter rows:

Extra options

	id	product_name	quantity
<input type="checkbox"/> Edit  Copy  Delete	1	keyboards	8

## Manage Stock

Product Name:

Quantity:

# Product Updated Successfully

```
SELECT * FROM `stock`
```

☐ Profiling [ [Edit inline](#) ] [ [Edit](#) ] [ [Explain SQL](#) ] [ [Create PHP code](#) ] [ [Refresh](#) ]

☐ Show all | Number of rows: 25 ▼ | Filter rows:

Extra options

← T →	▼ id	product_name	quantity
<input type="checkbox"/> Edit  Copy  Delete	1	keyboards	8

## Stock List

- keyboards: 8

5. Create a Servlet to fetch and display all products from the database.

Create a new **HTML page** to show the product list.



### **Servlet Code (DisplayProductsServlet.java):**

```
@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>");

} } }
```

```
...va index.html x CalculateSumServlet.java x index.html x StockManagementServlet.java x index.html x DisplayProductsServlet.java x
Source History
1 import jakarta.servlet.ServletException;
2 import jakarta.servlet.annotation.WebServlet;
3 import jakarta.servlet.http.HttpServlet;
4 import jakarta.servlet.http.HttpServletRequest;
5 import jakarta.servlet.http.HttpServletResponse;
6 import java.io.IOException;
7 import java.io.PrintWriter;
8 import java.sql.*;
9
10 @WebServlet(urlPatterns = {"/DisplayProducts"})
11 public class DisplayProductsServlet extends HttpServlet {
12     private Connection getConnection() throws SQLException {
13         try {
14             Class.forName(className: "com.mysql.cj.jdbc.Driver"); // Load MySQL JDBC driver
15         } catch (ClassNotFoundException e) {
16             throw new SQLException(reason: "MySQL JDBC Driver not found.", cause: e);
17         }
18
19         String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC";
20         String username = "root";
21         String password = ""; // Use your MySQL password if set
22         return DriverManager.getConnection(url, user: username, password);
23     }
24
25     @Override
26     protected void doGet(HttpServletRequest request, HttpServletResponse response)
27         throws ServletException, IOException {
28
29         response.setContentType(string: "text/html");
30         PrintWriter out = response.getWriter();
31
32         try (Connection conn = getConnection()) {
33             Statement stmt = conn.createStatement();
34             ResultSet rs = stmt.executeQuery(string: "SELECT * FROM stock");
35
36             out.println(s: "<html><head><title>Stock List</title></head><body>");
37             out.println(s: "<h1>Stock List</h1>");
38             out.println(s: "<ul>");
39
40             while (rs.next()) {
41                 out.println("<li>" + rs.getString(string: "product_name") + ": " + rs.getInt(string: "quantity") + "</li>");
42             }
43             out.println(s: "</ul>");
44             out.println(s: "</body></html>");
45         } catch (SQLException e) {
46             e.printStackTrace();
47             out.println("<h1>Database Error: " + e.getMessage() + "</h1>");
48         }
49     }
50 }
```

localhost:8080/Servlet5/DisplayProducts

# Stock List

- keyboards: 8