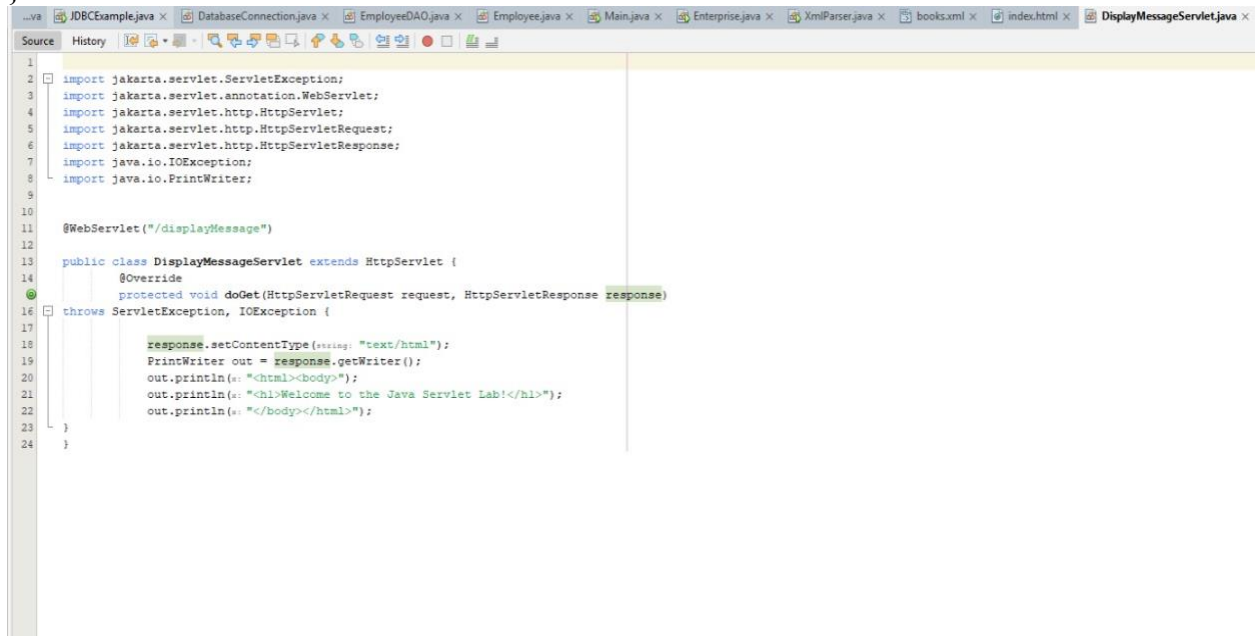


GAM/IT/2022/F/0084 – R.D.S. NISANSALA

ASSIGNMENT – JAVA SERVELET

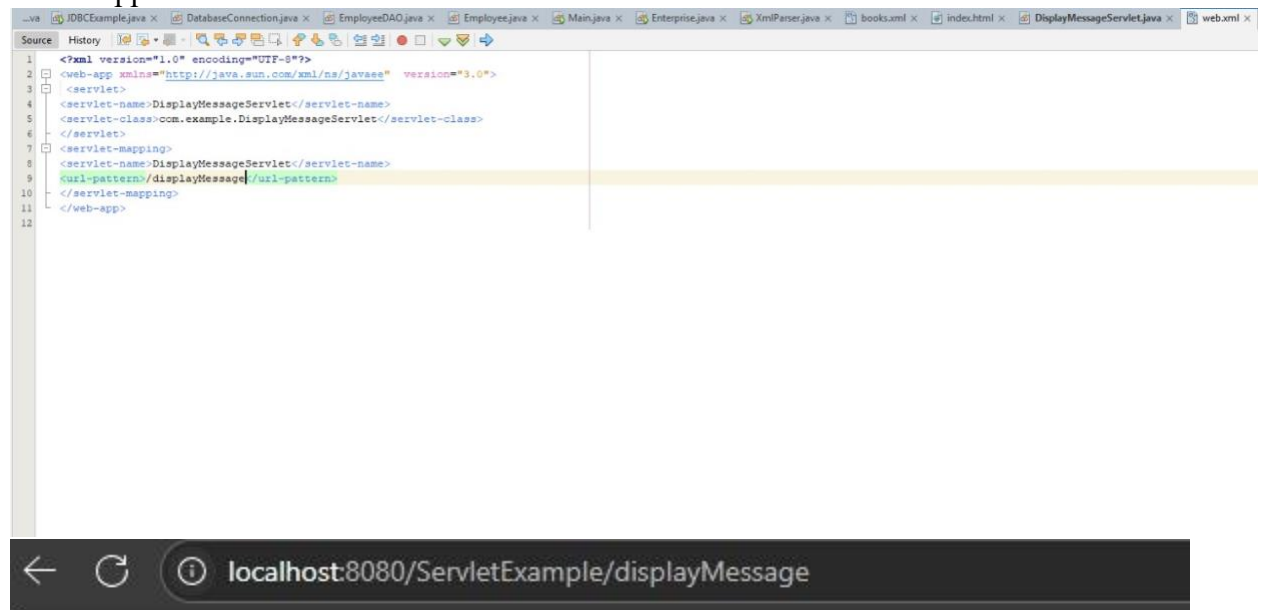
1. Simple Servlet - Display Static Message

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

A screenshot of an IDE window showing the code for DisplayMessageServlet.java. The code is identical to the one in the previous block, but the IDE has syntax-highlighted it. The package is 'com.example'. Imports include 'java.io.IOException', 'java.io.PrintWriter', 'javax.servlet.ServletException', 'javax.servlet.annotation.WebServlet', 'javax.servlet.http.HttpServlet', 'javax.servlet.http.HttpServletRequest', and 'javax.servlet.http.HttpServletResponse'. The class 'DisplayMessageServlet' extends 'HttpServlet' and is annotated with '@WebServlet("/displayMessage")'. The 'doGet' method is protected and throws 'ServletException' and 'IOException'. It sets the content type to 'text/html', gets a 'PrintWriter' from the response, and prints the HTML content: '<html><body>', '<h1>Welcome to the Java Servlet Lab!</h1>', and '</body></html>'. The IDE interface shows a 'Source' tab and a 'History' tab, with the 'Source' tab selected. The code is displayed in a light blue background with a white border. The file name 'DisplayMessageServlet.java' is visible in the top right corner of the IDE window.

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>
```

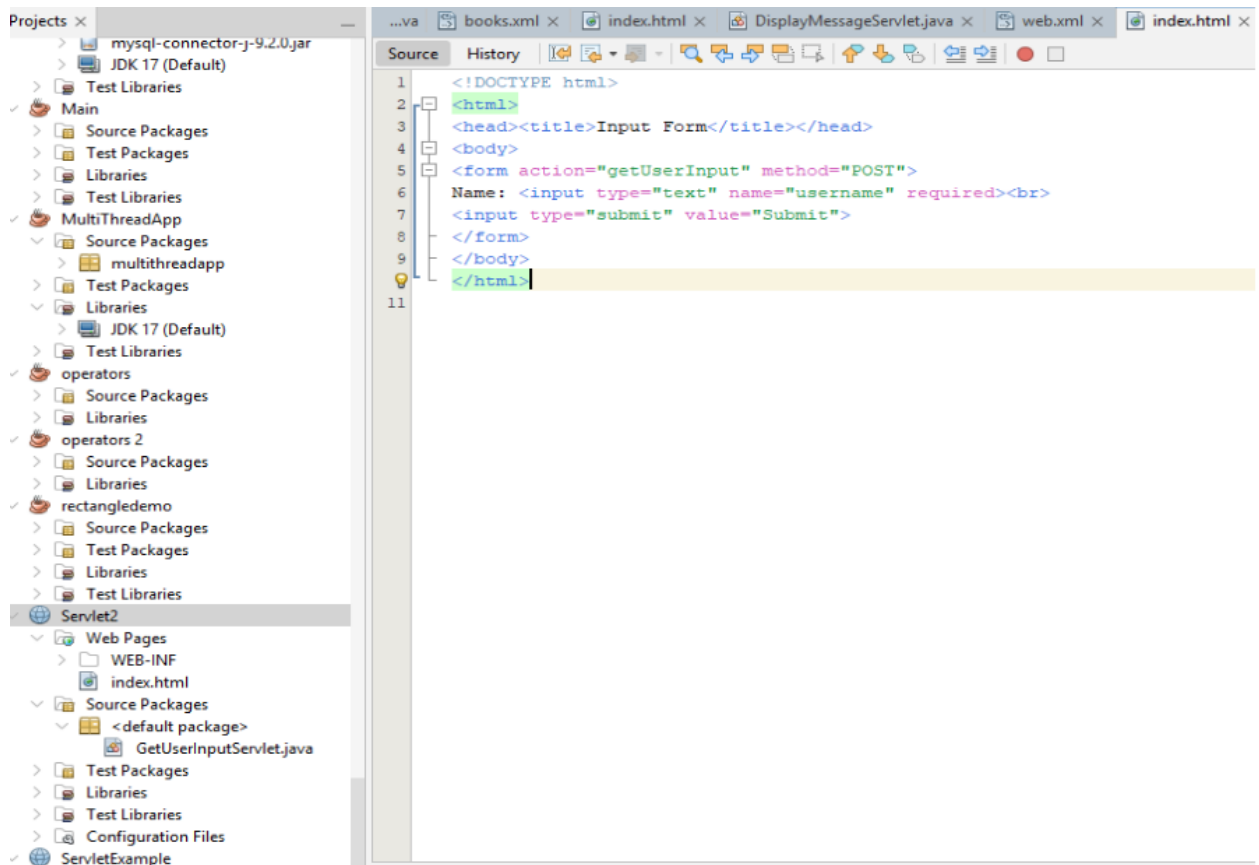


Welcome to the Java Servlet Lab!

2. Get User Input from Form and Display

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>");
    }
}
```

Projects x

- mysql-connector-j-9.2.0.jar
- JDK 17 (Default)
- Test Libraries
- Main
 - Source Packages
 - Test Packages
 - Libraries
- MultiThreadApp
 - Source Packages
 - multithreadapp
 - Test Packages
- Libraries
 - JDK 17 (Default)
- Test Libraries
- operators
 - Source Packages
 - Libraries
- operators 2
 - Source Packages
 - Libraries
- rectangledemo
 - Source Packages
 - Test Packages
 - Libraries
- Test Libraries
- Servlet2
 - Web Pages
 - WEB-INF
 - index.html
 - Source Packages
 - <default package>
 - GetUserInputServlet.java
 - Test Packages
 - Libraries
 - Test Libraries
 - Configuration Files
- ServletExample
 - Web Pages
 - WEB-INF
 - index.html
 - Source Packages
 - <default package>
 - DisplayMessageServlet.java
 - web.xml
 - Test Packages
 - Libraries
 - Test Libraries
 - Configuration Files

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
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 x

GlassFish Server x Servlet2 (run) x

```
compile:
compile-jsp:
In-place deployment at D:\practicals\Servlet2\build\web
run-deploy:
Browsing: http://localhost:8080/Servlet2
run-display-browser:
run:
BUILD SUCCESSFUL (total time: 0 seconds)
```

localhost:8080/Servlet2/

Name:

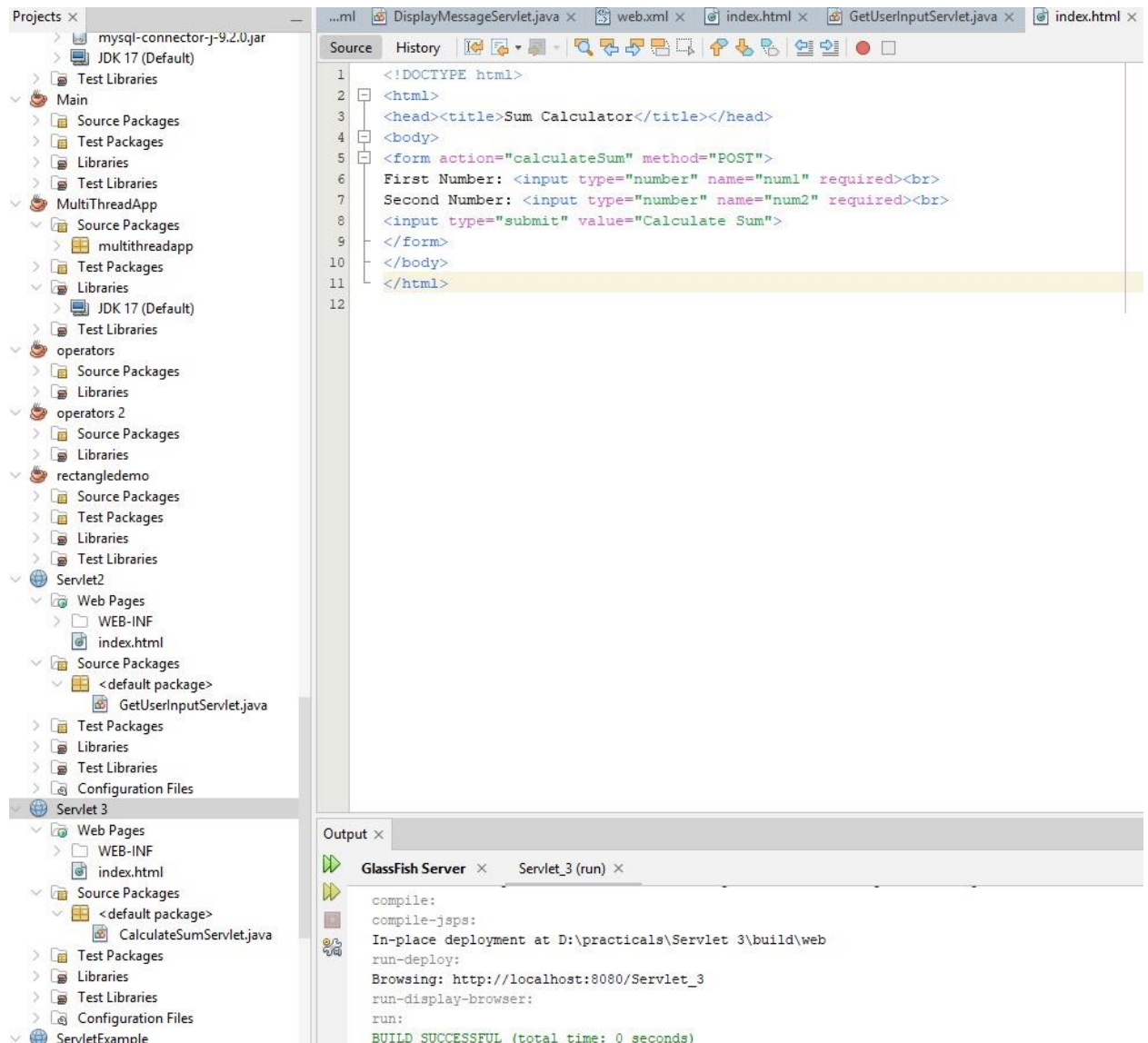
localhost:8080/Servlet2/getUserInput

Hello, sakuni!

3. Get Multiple Inputs, Perform Calculation, and Display 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>
```



Servlet Code (CalculateSumServlet.java)

```

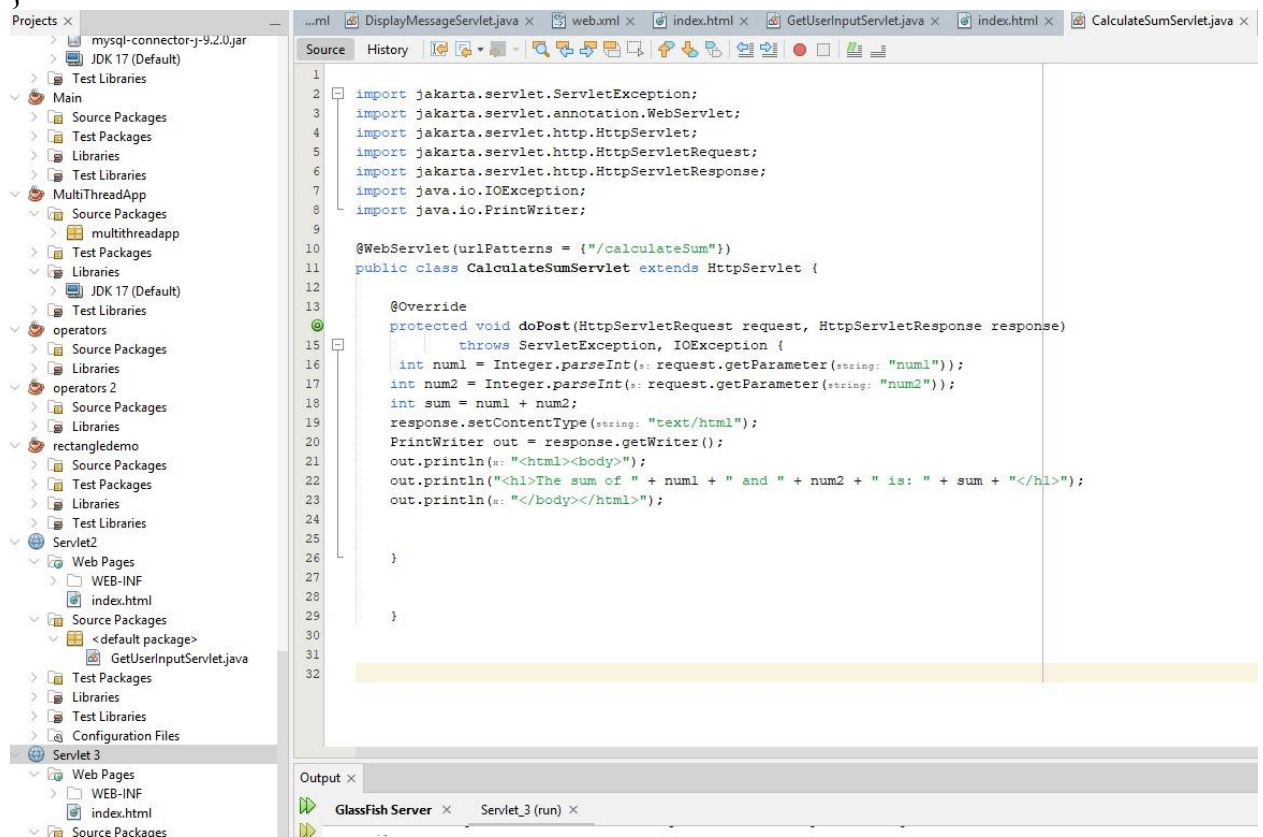
package com.example;
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
@WebServlet("/calculateSum")
public class CalculateSumServlet extends HttpServlet {
protected void doPost(HttpServletRequest request, HttpServletResponse

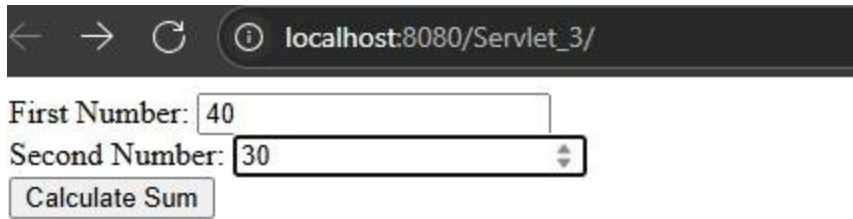
```

```

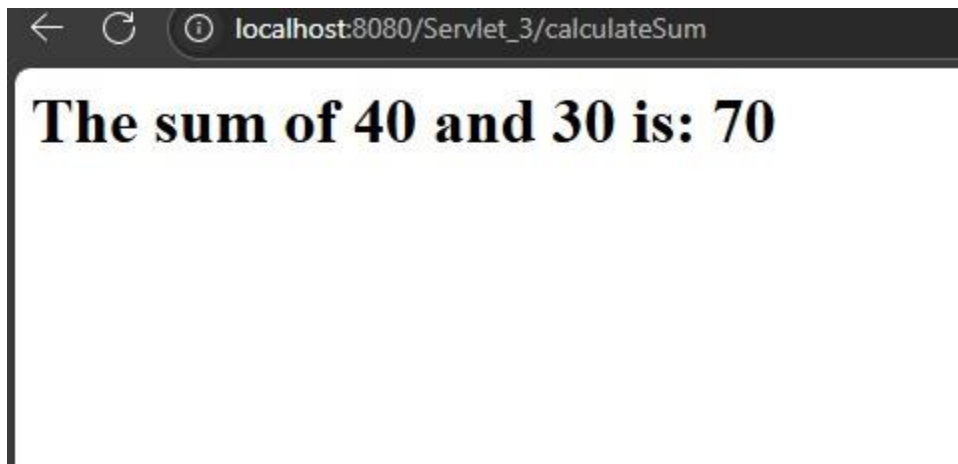
response)
throws ServletException, IOException {
int num1 = Integer.parseInt(request.getParameter("num1"));
int num2 = Integer.parseInt(request.getParameter("num2"));
int sum = num1 + num2;
response.setContentType("text/html");
PrintWriter out = response.getWriter();
out.println("<html><body>");
out.println("<h1>The sum of " + num1 + " and " + num2 + " is: " + sum
+ "</h1>");
out.println("</body></html>");
}
}

```





A screenshot of a web browser window. The address bar shows 'localhost:8080/Servlet_3/'. Below the address bar, there is a form with two input fields. The first field is labeled 'First Number:' and contains the value '40'. The second field is labeled 'Second Number:' and contains the value '30'. Below these fields is a button labeled 'Calculate Sum'.

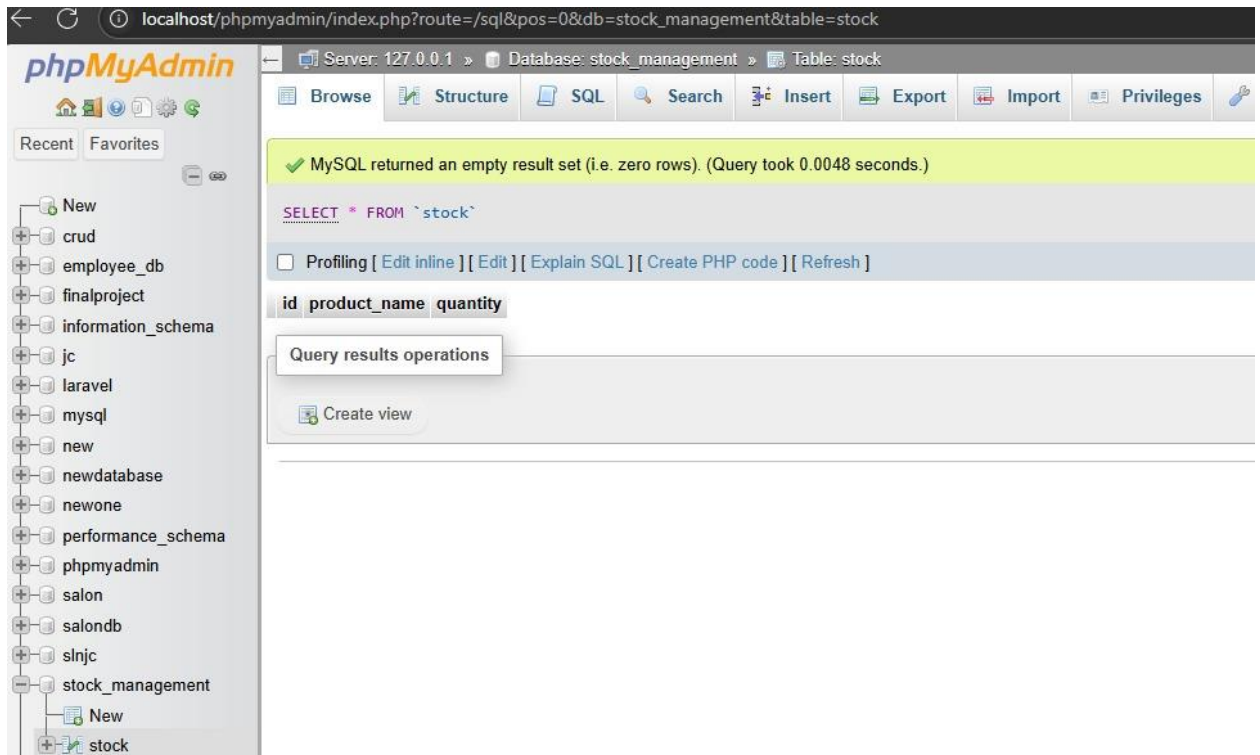


A screenshot of a web browser window. The address bar shows 'localhost:8080/Servlet_3/calculateSum'. The main content area displays the text 'The sum of 40 and 30 is: 70' in a large, bold, black font.

4. Java Servlet with Database CRUD 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>
```



```

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>");
}
}
}

```

```

Source History XmlParser.java books.xml x index.html x DisplayMessageServlet.java x web.xml x index.html x GetInputServlet.java x index.html x CalculateSumServlet.java x index.html x StockManagementServlet.java x
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
14     private Connection getConnection() throws SQLException {
15         try {
16             Class.forName("com.mysql.cj.jdbc.Driver"); // Load MySQL driver
17         } catch (ClassNotFoundException e) {
18             throw new SQLException("MySQL JDBC Driver not found.", e);
19         }
20
21         String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC";
22         String username = "root";
23         String password = ""; // Update if you have a MySQL password
24
25         return DriverManager.getConnection(url, username, password);
26     }
27
28     @Override
29     protected void doPost(HttpServletRequest request, HttpServletResponse response)
30         throws ServletException, IOException {
31
32         String action = request.getParameter("action");
33         String productName = request.getParameter("product_name");
34         int quantity = Integer.parseInt(request.getParameter("quantity"));
35
36         response.setContentType("text/html");
37         PrintWriter out = response.getWriter();
38
39         try (Connection conn = getConnection()) {
40             switch (action) {
41                 case "Add Product":
42                     try (PreparedStatement stmt = conn.prepareStatement(
43                         "INSERT INTO stock (product_name, quantity) VALUES (?, ?)")) {
44                         stmt.setString(1, productName);
45                         stmt.setInt(2, quantity);
46                         stmt.executeUpdate();
47                         out.write("<html>Product Added Successfully</html>");
48                     }
49                     break;
50             }
51         }
52     }
53 }

```

```

Source History XmlParser.java books.xml x index.html x DisplayMessageServlet.java x web.xml x index.html x GetInputServlet.java x index.html x CalculateSumServlet.java x index.html x StockManagementServlet.java x
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
14     private Connection getConnection() throws SQLException {
15         try {
16             Class.forName("com.mysql.cj.jdbc.Driver"); // Load MySQL driver
17         } catch (ClassNotFoundException e) {
18             throw new SQLException("MySQL JDBC Driver not found.", e);
19         }
20
21         String url = "jdbc:mysql://localhost:3306/stock_management?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC";
22         String username = "root";
23         String password = ""; // Update if you have a MySQL password
24
25         return DriverManager.getConnection(url, username, password);
26     }
27
28     @Override
29     protected void doPost(HttpServletRequest request, HttpServletResponse response)
30         throws ServletException, IOException {
31
32         String action = request.getParameter("action");
33         String productName = request.getParameter("product_name");
34         int quantity = Integer.parseInt(request.getParameter("quantity"));
35
36         response.setContentType("text/html");
37         PrintWriter out = response.getWriter();
38
39         try (Connection conn = getConnection()) {
40             switch (action) {
41                 case "Add Product":
42                     try (PreparedStatement stmt = conn.prepareStatement(
43                         "INSERT INTO stock (product_name, quantity) VALUES (?, ?)")) {
44                         stmt.setString(1, productName);
45                         stmt.setInt(2, quantity);
46                         stmt.executeUpdate();
47                         out.write("<html>Product Added Successfully</html>");
48                     }
49                     break;
50             }
51         }
52     }
53 }

```

Manage Stock

Product Name:

Quantity:

Add Product

Update Product

Delete Product

Product Added Successfully













☐ Show all

Number of rows:

25

Filter rows:

Extra options

				id	product_name	quantity
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	Pencil	2
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	Pencil	2
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	Pen	5
<input type="checkbox"/>	 Edit	 Copy	 Delete	4	Book	5

Manage Stock













Product Name:

Quantity:

Product Updated Successfully

☐ Show all | Number of rows: Filter rows:

Extra options

				id	product_name	quantity
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	Pencil	2
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	Pencil	2
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	Pen	5
<input type="checkbox"/>	 Edit	 Copy	 Delete	4	Book	20

Product Deleted Successfully

☐ Show all

Number of rows: 25

Filter rows:

Extra options

				id	product_name	quantity
<input type="checkbox"/>	Edit	Copy	Delete	1	Pencil	2
<input type="checkbox"/>	Edit	Copy	Delete	2	Pencil	2
<input type="checkbox"/>	Edit	Copy	Delete	3	Pen	5

5. Display Data from Database on Another Web Page

Servlet Code (DisplayProductsServlet.java)

```
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;
import java.sql.*;

@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 = ""; // 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>"); }}

```

```
Source History XmlParser.java books.xml index.html DisplayMessageServlet.java web.xml index.html GetUserInputServlet.java index.html CalculateSumServlet.java index.html StockManagementServlet.java
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         }
51     }
52 }
```

Stock List

- Pencil: 2
- Pencil: 2
- Pen: 5