



CSM3023 WEB BASED APPLICATION DEVELOPMENT (K1)

**BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH
HONORS**

SEMESTER 2 2023/2024

**LAB 1 – Introduction to Servlet, JSP and
MySQL Database**

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Task 1

Reflection

What have you learnt from this exercise?

I learnt how to install and configure xampp to use tomcat and mysql.

Task 2

Reflection

What have you learnt from this exercise?

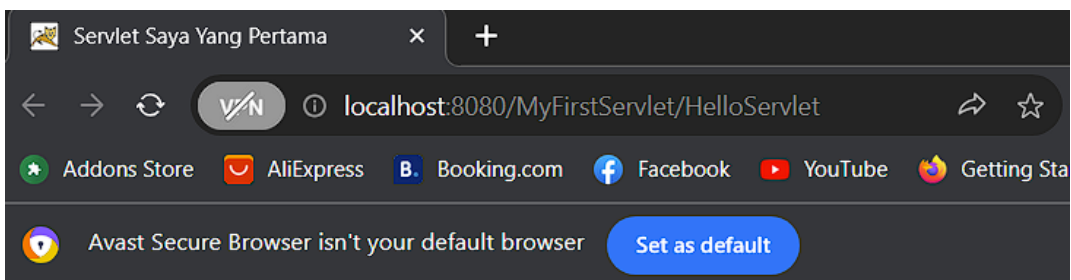
I have learn how to change mysql password by using command prompt.

Task 5

1st modification:

```
25      * @param response servlet response
26      * @throws ServletException if a servlet-specific error occurs
27      * @throws IOException if an I/O error occurs
28      */
29      protected void processRequest(HttpServletRequest request, HttpServletResponse response)
30          throws ServletException, IOException {
31          response.setContentType("text/html;charset=UTF-8");
32          try (PrintWriter out = response.getWriter()) {
33              /* TODO output your page here. You may use following sample code. */
34              out.println("<!DOCTYPE html>");
35              out.println("<html>");
36              out.println("<head>");
37              out.println("<title>Servlet Saya Yang Pertama</title>");
38              out.println("</head>");
39              out.println("<body>");
40              out.println("<h1>Hello, Servlet!</h1>");
41              out.println("<h2>Servlet HelloServlet at " + request.getContextPath() + "</h2>");
42              out.println("</body>");
43              out.println("</html>");
44          }
45      }
46  }
```

Output:



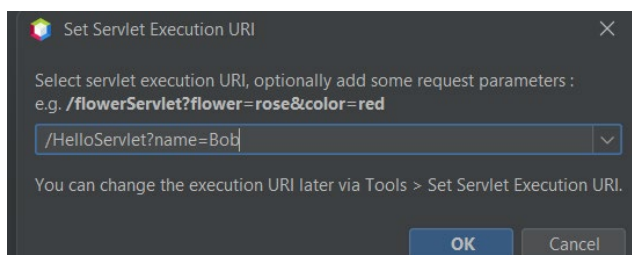
Hello, Servlet!

Servlet HelloServlet at /MyFirstServlet

2nd modification:

```
55      * @throws IOException if an I/O error occurs
56      */
57      @Override
58      protected void doGet(HttpServletRequest request, HttpServletResponse response)
59          throws ServletException, IOException {
60
61          /* Step 1: Set the content type (tell the browser what is the type of
62             the response data; e.g. text/html, text/plain. In our case, we will
63             respond with html data.
64             */
65          response.setContentType("text/html");
66
67          /* Step 2: Create the PrintWriter object. We name it as 'out'
68             */
69          PrintWriter out = response.getWriter();
70
71          /* Step 3: Read GET parameter sent by the user through the web browser
72             */
73          String name = request.getParameter("name");
74
75          /*
76             Additional: if no value for parameter "name", call processRequest method.
77             */
78          if (name == null)
79              processRequest(request, response);
80
81          /* Step 4: Generate content for our HTML response. print the name
82             */
83          out.println("<html><body>");
84
85          out.println("Hello, " + name + "! "<br>");
86          out.println("Apa khabar?" + "<hr>");
87          out.println("Waktu dan tarikh di Server ialah " + new java.util.Date());
88          out.println("</html></body>");
89      }
```

Run:



Output:

Hello, Bob!
Apa khabar?

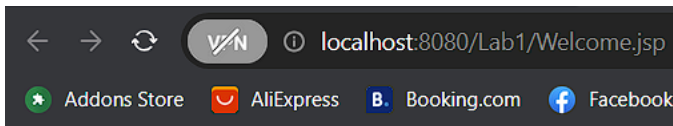
Waktu dan tarikh di Server ialah Fri Mar 29 15:33:40 MYT 2024

The output when no name parameter is supplied is the same as 1st modification because both call processRequest method.

Task 6

```
1 <%--
2     Document    : Welcome
3     Created on  : 28 Mar 2024, 8:17:43 am
4     Author     : Lenovo
5 --%>
6
7 <%@page contentType="text/html" pageEncoding="UTF-8"%>
8 <!DOCTYPE html>
9 <html>
10     <head>
11         <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
12         <title>S67978 - Web Programming 2</title>
13     </head>
14     <body>
15         <h1>Welcome to S67978...!</h1>
16     </body>
17 </html>
```

Output:



Welcome to S67978...!

Reflection:

1. What have you learned from this exercise?

I have learned how to make JSP page by using html syntax.

2. Explain the general concept of how the JSP's file work?

JSP is dynamic web page that is returned when client make http request to the web server.

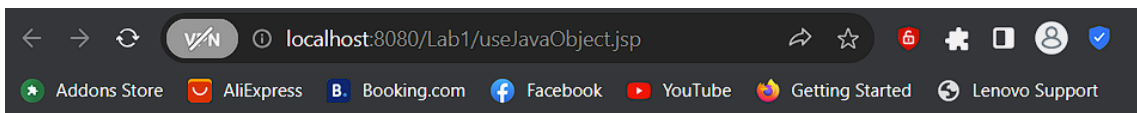
3. Based on your observation of the previous tasks (Task 3 and Task 4), what are the differences you can find between servlet and JSP?

Servlet is mediator to create dynamic web content while JSP is dynamic web page returned when client request resources from the web server, it also allow for embedding java code inside html code.

Task 7

```
1 <%--
2     Document    : useJavaObject
3     Created on  : 29 Mar 2024, 3:54:13 pm
4     Author     : Lenovo
5 --%>
6
7 <%@page contentType="text/html" pageEncoding="UTF-8"%>
8 <%@page import="java.util.Date"%>
9 <!DOCTYPE html>
10 <html>
11 <head>
12     <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
13     <title>Using Java's object in JSP Page</title>
14 </head>
15 <body>
16     <h1>Display Current Date and perform auto refresh header.</h1>
17
18     <%
19         Date todayDate = new Date();
20         out.print("<p>Current date and time is " + todayDate.toString() + "</p>");
21     %>
22
23     <%
24         // Set reforest, autoloading time as 5 seconds
25         response.setHeader("Refresh",5);
26     %>
27 </body>
28 </html>
```

Output:



Display Current Date and perform auto refresh header.

Current date and time is Fri Mar 29 16:19:17 MYT 2024

Reflection

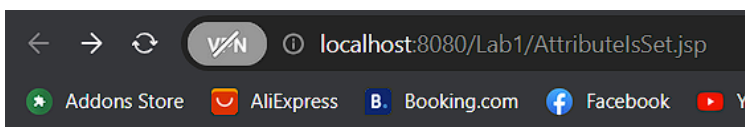
1. What have you learnt from this exercise?
I have learned how to create a JSP page that can refresh automatically within a specific duration.
2. What is the Java Scriptlet
Java Scriptlet is java code that we write inside the JSP page source code.
3. How to use Java code in your JSP's page?
By surrounding the java code within the <% and %> tag.

Task 8

```
<%--
Document    : AttributeIsSet
Created on  : 29 Mar 2024, 4:27:04 pm
Author      : Lenovo
--%>

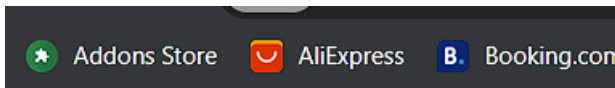
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Implicit JSP</title>
</head>
<body>
<% session.setAttribute("user", "Fouad Abdulameer");%>
<a href="GetAttribute.jsp">Click here to get user name </a>
</body>
</html>
```

Output:



[Click here to get user name](#)

After GetAttribute JSP page is created.Link is clicked:



User Name is: Fouad Abdulameer

MathematicsOperation.jsp page:

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="java.math.*"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Implicit JSP</title>
</head>
<body>
<%
    int num1 = 25;
    int num2 = 10;
    int addition_output;
    int multiply_output;
    double squareroot = 0.00;

    java.util.Formatter myFormat = new java.util.Formatter();

    //perform basic arithmetics operations,,,
    addition_output = num1 + num2;
    multiply_output = num1 * num2;

    //Find square root for variable num1,,,
    squareroot = (double) (Math.sqrt(num1));

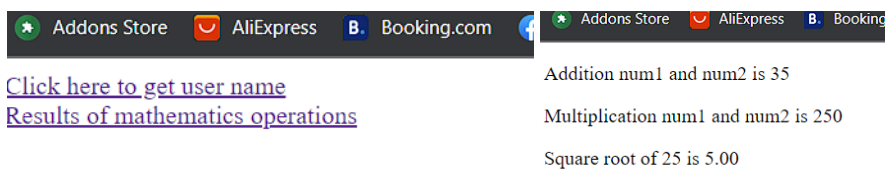
    out.print("<p>Addition num1 and num2 is " + addition_output + "</p>");
    out.print("<p>Multiplication num1 and num2 is " + multiply_output + "</p>");

    out.print("<p></p>");
    out.print("<p>Square root of " + num1 + " is " + myFormat.format("%.2f", squareroot) + "</p>");
%>
</body>
</html>
```

```
<%--
Document : AttributeIsSet
Created on : 29 Mar 2024, 4:27:04 pm
Author : Lenovo
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Implicit JSP</title>
</head>
<body>
<% session.setAttribute("user", "Fouad Abdulameer");%>
<a href="GetAttribute.jsp">Click here to get user name </a><br>
<a href="MathematicsOperation.jsp">Results of mathematics operations </a>
</body>
</html>
```

Output:



Reflection

1.How do you want to submit specific information from one form to next form?

By calling set and get method.

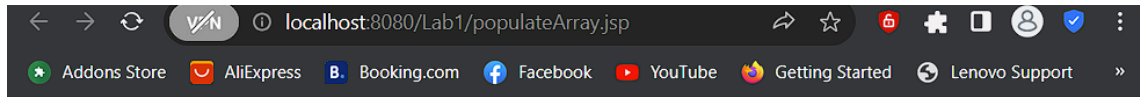
2.What happened if the field name you specify in request.getParameter ("field_name") in the second page is different from the field name you defined in the first page?

Error encountered because the requested parameter does not existed.

Task 9

```
7  <%@page contentType="text/html" pageEncoding="UTF-8"%>
8  <!DOCTYPE html>
9  <html>
10 <head>
11     <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
12     <title>Sales Kerepek 2023</title>
13     <style>
14         td{
15             border: 0px solid black;
16             text-align: center;
17             padding: 8px;
18             background-color: palegoldenrod;
19         }
20         #thead{
21             border: 0px solid black;
22             background-color: orange;
23         }
24     </style>
25 </head>
26 <body>
27     <%
28         int[][] sales = {
29             {2500, 2100, 2200},
30             {2000, 1900, 2400},
31             {1800, 2200, 2450}
32         };
33     %>
34     <h1>Read Java array and populate it into HTML's table</h1>
35     <table style='width:100%'>
36         <tr id='thead'>
37             <th>Salesman</th>
38             <th>Jan</th>
39             <th>Feb</th>
40             <th>Mac</th>
41         </tr>
42
43         <tr>
44             <td>Salesman 1</td>
45             <td><% out.println(sales[0][0]); %></td>
46             <td><% out.println(sales[0][1]); %></td>
47             <td><% out.println(sales[0][2]); %></td>
48         </tr>
49         <tr>
50             <td>Salesman 2</td>
51             <td><% out.println(sales[1][0]); %></td>
52             <td><% out.println(sales[1][1]); %></td>
53             <td><% out.println(sales[1][2]); %></td>
54         </tr>
55         <tr>
56             <td>Salesman 3</td>
57             <td><% out.println(sales[2][0]); %></td>
58             <td><% out.println(sales[2][1]); %></td>
59             <td><% out.println(sales[2][2]); %></td>
60         </tr>
61     </table>
62 </body>
63 </html>
```


Output:



Read Java array and populate it into HTML's table

Salesman	Jan	Feb	Mac
Salesman 1	2500	2100	2200
Salesman 2	2000	1900	2400
Salesman 3	1800	2200	2450

Reflection

1. Write a sample syntax to declare 2D Java array.

```
int[][] sales;
```

2. Define a sequence of steps on how you accomplish Task 7.

Create the table in html then fill each cell with element from the 2d array declared before.

3. What is the difference between HTML's page and JSP's page?

HTML page is static page while JSP page is dynamic page that returned when client request resources from the web server.

Exercise

1.

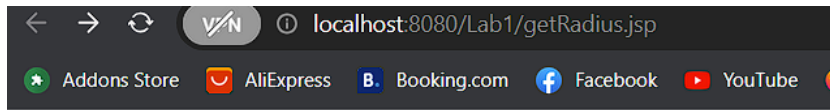
calcArea.jsp

```
5  <!-->
6
7  <%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>
8  <%@ page import="java.util.Scanner" %>
9  <%@ page import="java.text.DecimalFormat" %>
10 <!DOCTYPE html>
11 <html>
12 <head>
13 <meta charset="UTF-8">
14 <title>Area Result</title>
15 </head>
16 <body>
17 <h1>Area Result</h1>
18 <!-- Retrieve the radius value from the form -->
19 <% String radiusStr = request.getParameter("radius"); %>
20
21 <!-- Check if the radius value is provided and is a valid number -->
22 <% if (radiusStr != null && radiusStr.matches("\\d+")) { %>
23 <!-- Convert the radius string to an integer -->
24 <% int radius = Integer.parseInt(radiusStr); %>
25
26 <!-- Calculate the area -->
27 <% double area = Math.PI * radius * radius; %>
28
29 <!-- Format the area value -->
30 <% DecimalFormat df = new DecimalFormat("#.##"); %>
31
32 <!-- Display the result -->
33 <p>The area of the circle with radius <%= radius %> is <%= df.format(area) %>.</p>
34 <% } else { %>
35 <!-- Display an error message if the radius value is missing or not a valid number -->
36 <p>Please enter a valid number for the radius.</p>
37 <% } %>
38 </body>
39 </html>
```

getRadius.jsp

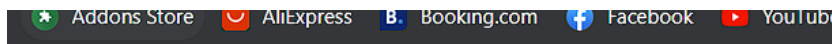
```
5  <!-->
6
7  <%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>
8  <%@ page import="java.util.Scanner" %>
9  <%@ page import="java.text.DecimalFormat" %>
10 <!DOCTYPE html>
11 <html>
12 <head>
13 <meta charset="UTF-8">
14 <title>Area Result</title>
15 </head>
16 <body>
17 <h1>Area Result</h1>
18 <!-- Retrieve the radius value from the form -->
19 <% String radiusStr = request.getParameter("radius"); %>
20
21 <!-- Check if the radius value is provided and is a valid number -->
22 <% if (radiusStr != null && radiusStr.matches("\\d+")) { %>
23 <!-- Convert the radius string to an integer -->
24 <% int radius = Integer.parseInt(radiusStr); %>
25
26 <!-- Calculate the area -->
27 <% double area = Math.PI * radius * radius; %>
28
29 <!-- Format the area value -->
30 <% DecimalFormat df = new DecimalFormat("#.##"); %>
31
32 <!-- Display the result -->
33 <p>The area of the circle with radius <%= radius %> is <%= df.format(area) %>.</p>
34 <% } else { %>
35 <!-- Display an error message if the radius value is missing or not a valid number -->
36 <p>Please enter a valid number for the radius.</p>
37 <% } %>
38 </body>
39 </html>
```

Output:



Calculate Circle Area

Enter the radius:




Area Result

The area of the circle with radius 13 is 530.93.

If other than number input:

Calculate Circle Area

Enter the radius:

 Please match the requested format.
Please enter a number

```

7  <%@page contentType="text/html" pageEncoding="UTF-8"%>
8  <%@ page import="java.io.*, java.util.*" %>
9  <!DOCTYPE html>
10 <html>
11 <head>
12 <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
13 <title>Read CSV File</title>
14 <style>
15     table, th, td {
16         border: 1px solid black;
17         border-collapse: collapse;
18         padding: 8px 30px;
19         text-align: center;
20     }
21
22     th {
23         background-color: lightgray;
24     }
25 </style>
26 </head>
27 <body>
28
29     <h1>Read CSV files and populate it into HTML's table</h1>
30
31     <%
32         // Path to the CSV file
33         String filePath = "C:/CSM3023/Lab1/Sales.csv";
34
35         // List to hold the data from the CSV file
36         List<String[]> csvData = new ArrayList<>();
37

```

```

38         // Read the CSV file and populate the list
39         try {
40             BufferedReader br = new BufferedReader(new FileReader(filePath));
41             String line;
42             while ((line = br.readLine()) != null) {
43                 String[] parts = line.split(",");
44                 csvData.add(parts);
45             }
46             br.close();
47         } catch (IOException e) {
48             out.println("Error reading CSV file: " + e.getMessage());
49         }
50     %>
51
52     <table>
53     <thead>
54     <tr>
55         <th>Customer</th>
56         <th>Cust Type</th>
57         <th>Purchase</th>
58         <th>Discount</th>
59     </tr>
60     </thead>
61     <tbody>
62     <% for (int i = 0; i < csvData.size(); i++) { %>
63     <tr>
64         <%
65             String[] rowData = csvData.get(i);
66             String customer = rowData[0];
67             String custType = rowData[1];
68             int purchase = Integer.parseInt(rowData[2]);
69             double discount = 0.0;
70             if (custType.equalsIgnoreCase("Cash")) {
71                 discount = purchase * 0.1; // 10% discount for cash customers
72             }
73         %>

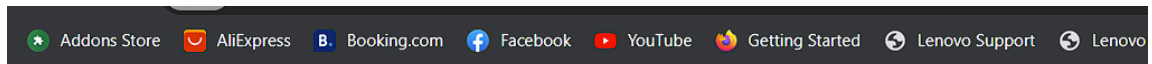
```

```

74         <td><%= customer %></td>
75         <td><%= custType %></td>
76         <td><%= purchase %></td>
77         <td><%= String.format("%.2f", discount) %></td>
78     </tr>
79     <% } %>
80 </tbody>
81 </table>
82
83 </body>
84 </html>
85

```

Output:



Read CSV files and populate it into HTML's table

Customer	Cust Type	Purchase	Discount
10001	Credit	5000	0.00
10002	Cash	2500	250.00
10003	Credit	3000	0.00
10004	Cash	3200	320.00
10005	Credit	1200	0.00
10006	Cash	6000	600.00
10007	Credit	7400	0.00
10008	Cash	800	80.00