CSM3023 – WEB-BASED APPLICATION DEVELOPMENT (K1)
BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING)
WITH HONOURS
LAB 1 – INTRODUCTION TO SERVLET, JSP AND MySQL
DATABASE
SEMESTER 2 2023/2024

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Task 1: Apache Tomcat and MySQL Installation Using XAMPP

- Reflection: *(What have you learned from this exercise?)*
  - o I learned how to install and configure XAMPP to use MySQL and Apache Tomcat.

Task 2: Change the Default Root Password of MySQL Database

- Reflection: *(What have you learned from this exercise?)*
  - o I learned how to change MySQL password by using command prompt.
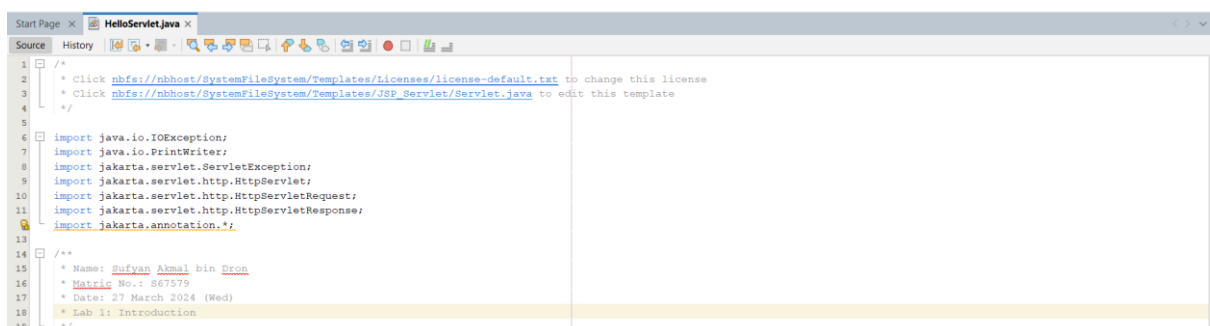
Task 3: Managing Apache Tomcat

- Reflection: *(What have you learned from this exercise?)*
  - o I learned how to manage Apache Tomcat for the first time.

Task 4: Netbeans 12.3 IDE Installation

- Reflection: *(What have you learned from this exercise?)*
  - o I successfully install Netbeans 12.3 IDE.

Task 5: Linking Netbeans to Apache Tomcat and Writing a Simple Java Servlet

- Before modification:

```
20   public class HelloServlet extends HttpServlet {
21
22       /**
23        * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
24        * methods.
25        *
26        * @param request servlet request
27        * @param response servlet response
28        * @throws ServletException if a servlet-specific error occurs
29        * @throws IOException if an I/O error occurs
30        */
31       protected void processRequest(HttpServletRequest request, HttpServletResponse response)
32               throws ServletException, IOException {
33           response.setContentType("text/html;charset=UTF-8");
34           try (PrintWriter out = response.getWriter()) {
35               /* TODO output your page here. You may use following sample code. */
36               out.println("<!DOCTYPE html>");
37               out.println("<html>");
38               out.println("<head>");
39               out.println("<title>Servlet HelloServlet</title>");
40               out.println("</head>");
41               out.println("<body>");
42               out.println("<h1>Hello, Servlet!</h1>");
43               out.println("<h2>Servlet HelloServlet at " + request.getContextPath() + "</h2>");
44               out.println("</body>");
45               out.println("</html>");
46           }
47       }
48
```

- Output:

Hello, Servlet!

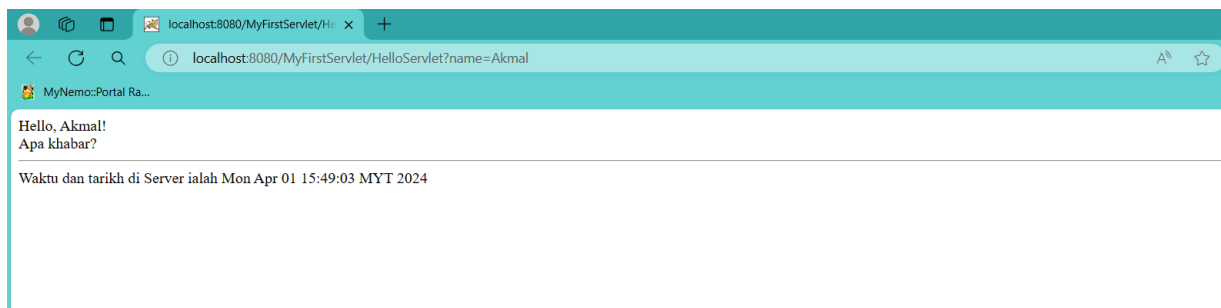**Servlet HelloServlet at /MyFirstServlet**

- After modification:

```
49   // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the + sign on the left to edit the code.">
50   /**
51    * Handles the HTTP <code>GET</code> method.
52    *
53    * @param request servlet request
54    * @param response servlet response
55    * @throws ServletException if a servlet-specific error occurs
56    * @throws IOException if an I/O error occurs
57    */
58   @Override
     protected void doGet(HttpServletRequest request, HttpServletResponse response)
60           throws ServletException, IOException {
61
62       response.setContentType("text/html");
63
64       PrintWriter out = response.getWriter();
65
66       String name = request.getParameter("name");
67
68       out.println("<html><body>");
69
70       out.println("Hello, "+name+"!"+"<br>");
71       out.println("Apa khabar?"+"<hr>");
72       out.println("Waktu dan tarikh di Server ialah "+new java.util.Date());
73       out.println("</html></body>");
74   }
75   }
```
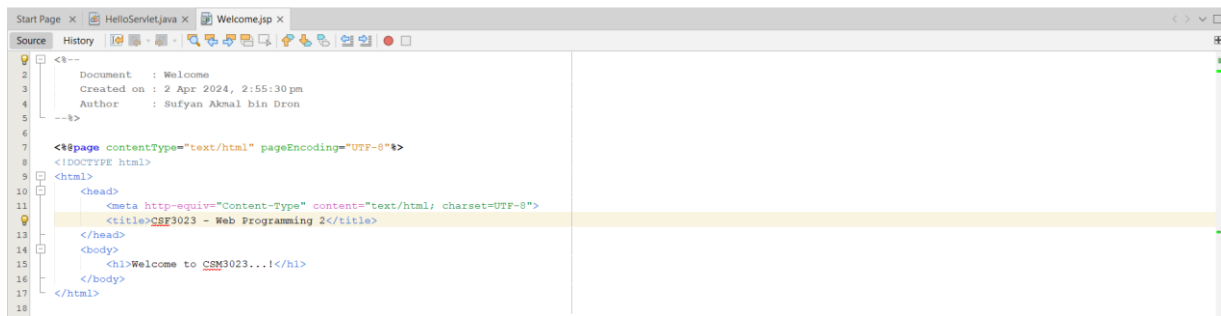
- Output:

Hello, Akmal!
Apa khabar?

Waktu dan tarikh di Server ialah Mon Apr 01 15:49:03 MYT 2024

- The output show same as before modification when there is no parameter because both call processRequest method.
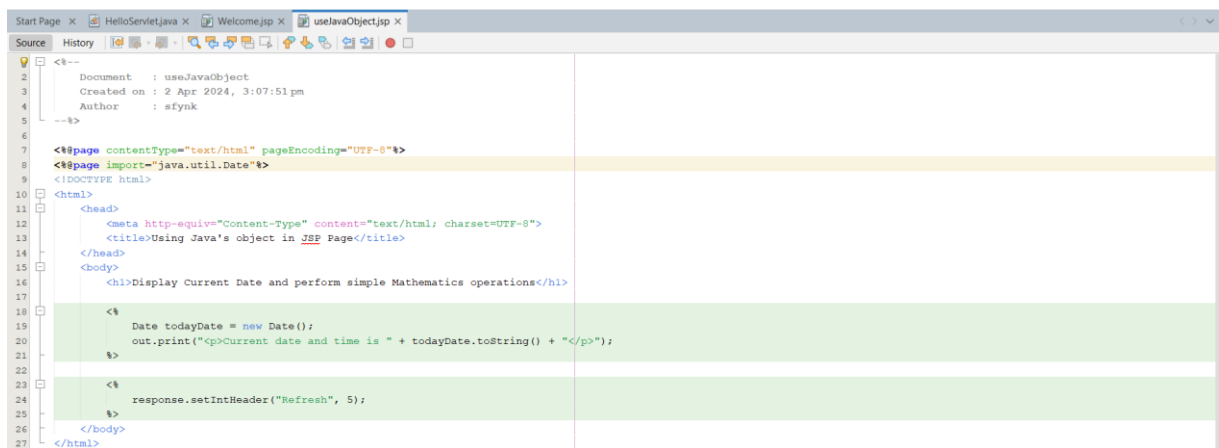
Task 6: Writing a Simple JSP Program

- Output:

Welcome to CSM3023...!

- 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, 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 allows for embedding Java code inside HTML code.

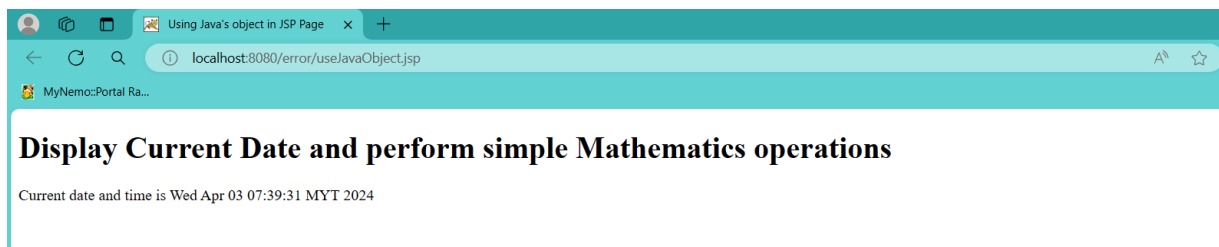## Task 7: Use Java Reference Datatype/Class Wrapper in JSP

- Output:

Display Current Date and perform simple Mathematics operations

Current date and time is Wed Apr 03 07:39:31 MYT 2024

- Reflection:

  1. **What have you learned from this exercise?**

     - I have learned how to create a JSP page that can refresh automatically within a specific time.

  2. **What is Java Scriplet?**

     - Java code that written inside the JSP page source code.

  3. **How to use Java code in your JSP's page?**

     - By surrounding the Java code within <% and %> tag.

Task 8: Using JSP Implicit object in JSP page

- Output:

Username is: Fouad Abdulameer

- MathematicsOperations JSP page:


```
<%--
    Document    : GetAttribute
    Created on  : 3 Apr 2024, 10:15:33 am
    Author      : Sufyan Akmal bin Dron
--%>

<%@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>
        <%
            String name = (String) session.getAttribute("user");
            out.println("Username is: " + name);
        %>
    </body>
</html>
```
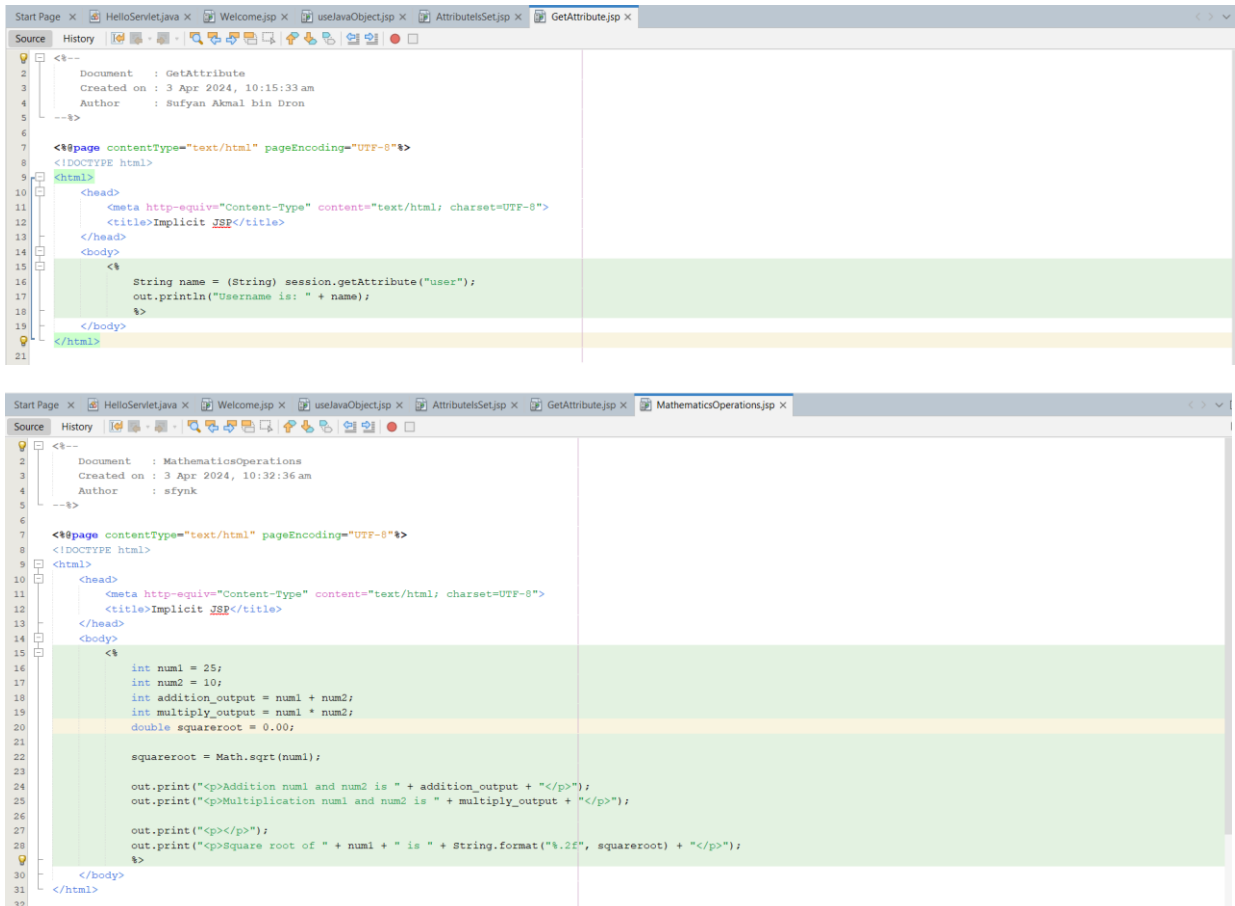


```
<%--
    Document    : MathematicsOperations
    Created on  : 3 Apr 2024, 10:32:36 am
    Author      : sfynk
--%>

<%@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>
        <%
            int num1 = 25;
            int num2 = 10;
            int addition_output = num1 + num2;
            int multiply_output = num1 * num2;
            double squareroot = 0.00;

            squareroot = 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 " + String.format("%.2f", squareroot) + "</p>");
        %>
    </body>
</html>
```

- Output:

Click here to get username.

Result of mathematics operations

Addition num1 and num2 is 35

Multiplication num1 and num2 is 250

Square root of 25 is 5.00

- Reflection:

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

   o 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?**

   o Error encountered because the requested paremeter does not existed.

Task 9: Populate Array Values into HTML's Table

- Output:

Read Java array and populate it into HTML's table

Salesman	Jan	Feb	Mar
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.

- o int[][] sales;

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

- o 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?

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