CSM3023 WEB BASED APPLICATION DEVELOPMENT (K1)

BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH HONORS

SEMESTER II 2023/2024

LAB 3 – JSP: Scriplet, Page Directive & Include Directive

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Link Github : https://github.com/Izzulwafiy03/LAB3WEB.git

Task 1

memberRegister.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Lab 3 - Task 1</title>
    </head>
    <body>
        <h1>Passing data from main JSP's page to other JSP's page </h1>
        <form id="memberFrm" action="memberProcessing.jsp" method="post" onsubmit="return checkICNo()">
            <fieldset>
                <legend>Member Registration</legend>
                <label for="invoiceno">Ic No *</label>
                <input type="text" id="icno" name="my_icno" size="15" placeholder="E.g. 921012101245"><br/>

                <label for="name">Name</label>
                <input type="text" id="name" name="my_name" size="45" placeholder="Key-in your name"><br/>

                <p><input type="submit" id="btnSubmit" value="Submit"/>
                    <input type="reset" id="btnCancel" value="Cancel"/>
                </p>
            </fieldset>
        </form>
    </body>
</html>
```

memberProcessing.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Lab 3 - Task 1</title>
    </head>
    <body>
        <h1>Passing data from main JSP's page to other JSP's page</h1>
        <fieldset>
            <%
                //Define variables...
                String myIC = null;
                String myName = null;

                //Use request.getParameter() method to retrieve data from main's form...
                myIC = request.getParameter("my_icno");
                myName = request.getParameter("my_name");
            %>

            <!-- Display the output... -->
            <p>Thank you for registering in this event..!</p>
            <p>This is your details;</p>
            <p>IC No : <%=myIC%></p>
            <p>Name : <%=myName%></p>
        </fieldset>
    </body>
</html>
```

Output:

Passing data from main JSP's page to other JSP's page

Member Registration
Ic No * 030617140423
Name Haris

Submit Cancel

Passing data from main JSP's page to other JSP's page

Thank you for registering in this event..!

This is your details;

IC No : 030617140423

Name : Haris

Reflection

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

To submit specific information from one form to the next form in JSP, you can use the "action" attribute of the <form> tag in the first JSP page to specify the URL of the second JSP page where you want to submit the form data.

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

The value returned by request.getParameter("field_name") will be null because it won't find a parameter with the specified name.

Task 2

Calculator.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>JSP Page</title>
    </head>
    <body bgcolor="#a00FFF" text="gold">

        <%
            String num1 = "0", num2 = "0";
            int result = 0;
            String op = "+";

            char opchar = op.charAt(0);
            if (request.getParameter("op") !=null){
            op = request.getParameter("op");
            opchar = op.charAt(0);

            num1 = request.getParameter("operand1");
            num2 = request.getParameter("operand2");

            switch(opchar){
            case '0': result = Integer.parseInt(num1) + Integer.parseInt(num2);
            break;
            case '1': result = Integer.parseInt(num1) - Integer.parseInt(num2);
            break;
            case '2': result = Integer.parseInt(num1) * Integer.parseInt(num2);
            break;
            case '3': result = Integer.parseInt(num1) / Integer.parseInt(num2);
            break;
            case '4': result = Integer.parseInt(num1) % Integer.parseInt(num2);
            break;
            }
            }
        %>

    <center>

        <h2>Basic calculator program in jsp</h2>
        <form method="get" name="f1">
            <input type="text" size="20" name="operand1" value= <%= num1 %> />

            <select name = op size = 1>
                <option value ="0" >+</option>
                <option value ="1" >-</option>
                <option value ="2" >*</option>
                <option value ="3" >/</option>
                <option value ="4" >%</option>
            </select>

            <input type="text" size="20" name="operand2" value= <%= num2 %> />
            <p>
                <input type = submit value = Calculate />

            Result = <%= result + "" %>
        </form>
    </body>
</html>
```
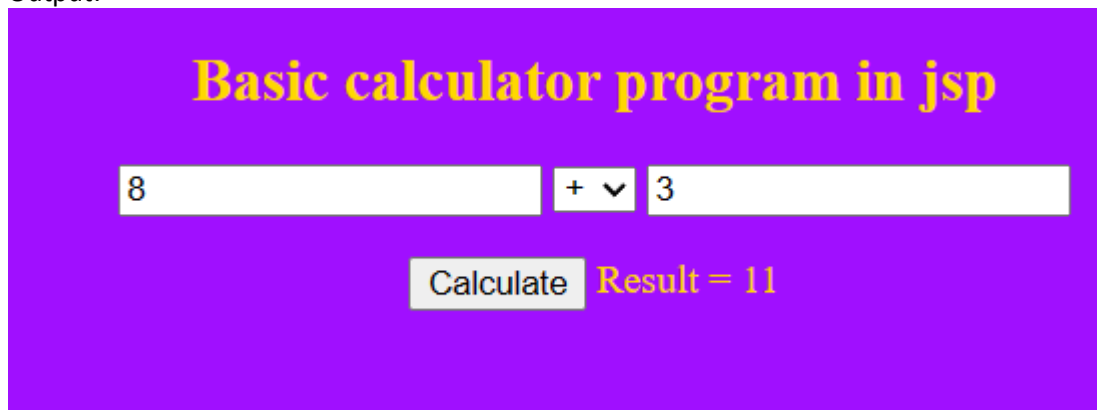
Output:

Reflection:
1. How do you want to submit specific information from one form to next form?
Use the "method" attribute set to "get" in the <form> tag.

2. What happened if the field name you specify in request.getParameter("field_name") in second page is different from the field name you defined in first page?
The value returned by request.getParameter("field_name") will be null because it won't find a parameter with the specified name.

Task 4

calculateCarLoan.html

```html
<!DOCTYPE html>
<!--
Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Html.html to edit this template
-->
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Car Loan Calculator</title>
</head>
<body>
    <h1>Car Loan Calculator</h1>
    <form action="processCalculateCarLoan.jsp" method="post">
        <label for="loanAmount">Loan Amount:</label>
        <input type="number" id="loanAmount" name="loanAmount" placeholder="Enter loan amount" required><br><br>

        <label for="loanPeriod">Loan Period:</label>
        <select id="loanPeriod" name="loanPeriod" required>
            <option value="3">3 year</option>
            <option value="4">4 years</option>
            <option value="5">5 years</option>
            <option value="6">6 years</option>
            <option value="7">7 years</option>
            <option value="8">8 years</option>
            <option value="9">9 years</option>
        </select><br><br>

        <button type="submit">Calculate</button>
    </form>
</body>
</html>
```

processCalculateCarLoan.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Car Loan Result</title>
</head>
<body>
    <h1>Car Loan Result</h1>
    <%
        // Retrieve parameters from the request
        String loanAmountStr = request.getParameter("loanAmount");
        String loanPeriodStr = request.getParameter("loanPeriod");

        // Parse parameters to integers
        int loanAmount = Integer.parseInt(loanAmountStr);
        int loanPeriod = Integer.parseInt(loanPeriodStr);

        // Calculate annual interest rate based on loan period
        double annualInterestRate;
        if (loanPeriod < 5) {
            annualInterestRate = 0.028; // 2.8% annual interest rate for loan period less than 5 years
        } else {
            annualInterestRate = 0.045; // 4.5% annual interest rate for loan period 5 years or more
        }

        double monthlyInterestRate = annualInterestRate / 12;
        int totalMonths = loanPeriod * 12;

        // Calculate monthly payment
        double monthlyPayment = (loanAmount * monthlyInterestRate) / (1 - Math.pow(1 + monthlyInterestRate, -totalMonths));

        // Calculate total loan with interest
        double totalLoan = monthlyPayment * totalMonths;

        // Display result
    %>
    <p>Loan Amount: RM <%= loanAmount %></p>
    <p>Loan Period: <%= loanPeriod %> years</p>
    <p>Annual Interest Rate: <%= annualInterestRate * 100 %>%</p>
    <p>Monthly Payment: RM <%= String.format("%.2f", monthlyPayment) %></p>
    <p>Total Loan (+interest): RM <%= String.format("%.2f", totalLoan) %></p>
</body>
</html>
```

Output:

Car Loan Calculator

Loan Amount: 50000

Loan Period: 7 years ▼

Calculate

Car Loan Result

Loan Amount: RM 50000

Loan Period: 7 years

Annual Interest Rate: 4.5%

Monthly Payment: RM 695.01

Total Loan (+interest): RM 58380.68

Reflection:
1. How you want to retrieve data from previous page?
Retrieved using the request.getParameter() method.

2. Where the construction of logic occur for calculating Total Loan (+ interest) ?
After retrieving the loan amount and loan period, the page calculates the annual interest rate based on the loan period. Then, it calculates the monthly interest rate, total number of months, and finally, the monthly payment using the formula for loan amortization.

Task 5
ArrayList.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="java.util.ArrayList"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Use Java ArrayList</title>
    </head>
    <body>
        <h1>Use JSP Page Directive</h1>
        <%
            //Create ArrayList object...
            ArrayList<String> studentList = new ArrayList<String>();

            //Store student name..
            studentList.add(0, "Mohamad Azam");
            studentList.add(1, "Peter Chong");
            studentList.add(2, "Rahimah Mansor");
            studentList.add(3, "Sri Devi");
            studentList.add(4, "Ng Hue Ween");
            studentList.add(5, "S. Nagarajan");

            //Display the number of records..
            out.println("<p>The number of records in ArrayList are " + studentList.size() + "</P>");

            //Populate a list of students...
            for (int i=0; i < studentList.size(); i++)
                out.println("<p>Record " + (i+1) + " is " + studentList.get(i) + "</p>");
        %>
    </body>
    <br/>
</html>
```

Output:

Use JSP Page Directive

The number of records in ArrayList are 6

Record 1 is Mohamad Azam

Record 2 is Peter Chong

Record 3 is Rahimah Mansor

Record 4 is Sri Devi

Record 5 is Ng Hue Ween

Record 6 is S. Nagarajan

Reflection:
1. What you have learnt from this exercise?
I learned how to utilize Java ArrayList in JSP to store and manipulate data dynamically.

2. Write a sample syntax how you want to use java Math object in JSP?
<%@page import="java.lang.Math"%>

3. List and write a sample syntax for THREE (3) of JSP page directive.
<%@page import="java.util.ArrayList"%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>

<%@page language="java" %>

Task 6
mainPage.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@ include file="headerPage.jsp" %>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Main Page</title>
        <style>
            p {
                color: red;
            }
        </style>
    </head>
    <body>
        <p>Java Server Page (JSP) is a technology for controlling the content<br/>
        or appearance of Web pages through the use of servlets, small<br/>
        programs that are specified in the Web page and run on the Web server<br/>
        to modify the Web page before it is sent to the user who requested it</p>
    </body>
<%@ include file="footerPage.jsp" %>
</html>
```

headerPage.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Header Page</title>
        <style>
            header {
                background-color: yellow;
                text-align: right;
            }
        </style>
    </head>
    <body>
        <header>
            <h1>ABC Sdn Bhd</h1>
        </header>
    </body>
</html>
```

footerPage.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Footer Page</title>
        <style>
            footer {
                background-color: yellow;
                text-align: right;
            }
        </style>
    </head>
    <body>
        <footer>
            <h1>&copy; 2024-IZZUL WAFIY</h1>
        </footer>
    </body>
</html>
```

Output:

ABC Sdn Bhd

Java Server Page (JSP) is a technology for controlling the content
or appearance of Web pages through the use of servlets, small
programs that are specified in the Web page and run on the Web server
to modify the Web page before it is sent to the user who requested it

Reflection:
1. What you have learnt from this exercise?
This exercise demonstrates the usage of JSP include directive to modularize web pages by separating common elements such as header and footer into separate files.

2. Write a syntax how you want to include common.html file that located at a directory known as master.
<%@ include file="master/common.html" %>

Exercise
1. temperature.jsp

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Temperature Conversion</title>
</head>
<body>
    <h2>Temperature Conversion</h2>
    <form action="<%= request.getContextPath() %>/temperature.jsp" method="post">
        Enter temperature in Celsius: <input type="number" step="any" name="celsius" required><br>
        <input type="submit" value="Convert to Fahrenheit">
    </form>
    <%
        if (request.getMethod().equals("POST")) {
            double celsius = Double.parseDouble(request.getParameter("celsius"));
            double fahrenheit = (9.0/5.0) * celsius + 32;
    %>
    <p><%= String.format("Temperature in Fahrenheit: %.2f", fahrenheit) %></p>
    <%
        }
    %>
</body>
</html>
```

Output:

Temperature Conversion

Enter temperature in Celsius: [35]
[Convert to Fahrenheit]

Temperature Conversion

Enter temperature in Celsius: [   ]
[Convert to Fahrenheit]

Temperature in Fahrenheit: 95.00

2. rectangle.jsp

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Rectangle Area Comparison</title>
</head>
<body>
    <h2>Rectangle Area Comparison</h2>
    <form action="<%= request.getContextPath() %>/rectangle.jsp" method="post">
        Rectangle 1:<br>
        Length: <input type="number" step="any" name="length1" required><br>
        Width: <input type="number" step="any" name="width1" required><br>
        <br>
        Rectangle 2:<br>
        Length: <input type="number" step="any" name="length2" required><br>
        Width: <input type="number" step="any" name="width2" required><br>
        <br>
        <input type="submit" value="Compare Areas">
    </form>

    <%-- Processing form submission and displaying result --%>
    <% if (request.getMethod().equals("POST")) {
            double length1 = Double.parseDouble(request.getParameter("length1"));
            double width1 = Double.parseDouble(request.getParameter("width1"));
            double length2 = Double.parseDouble(request.getParameter("length2"));
            double width2 = Double.parseDouble(request.getParameter("width2"));

            double area1 = length1 * width1;
            double area2 = length2 * width2;

            String result;
            if (area1 > area2) {
                result = "Rectangle 1 has a greater area.";
            } else if (area1 < area2) {
                result = "Rectangle 2 has a greater area.";
            } else {
                result = "Both rectangles have the same area.";
            }
    %>
    <p><%= result %></p>
    <% } %>
</body>
</html>
```

Output:
Rectangle Area Comparison

Rectangle 1:
Length: 6
Width: 8

Rectangle 2:
Length: 4
Width: 9

Compare Areas

Rectangle Area Comparison

Rectangle 1:
Length:
Width:

Rectangle 2:
Length:
Width:

Compare Areas

Rectangle 1 has a greater area.