CSM3023 WEB BASED APPLICATION DEVELOPMENT (K1)

BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH HONORS

SEMESTER II 2023/2024

LAB 4 – JSP: Scriplet, Expression & Standard Actions

Prepared for:

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Task 1

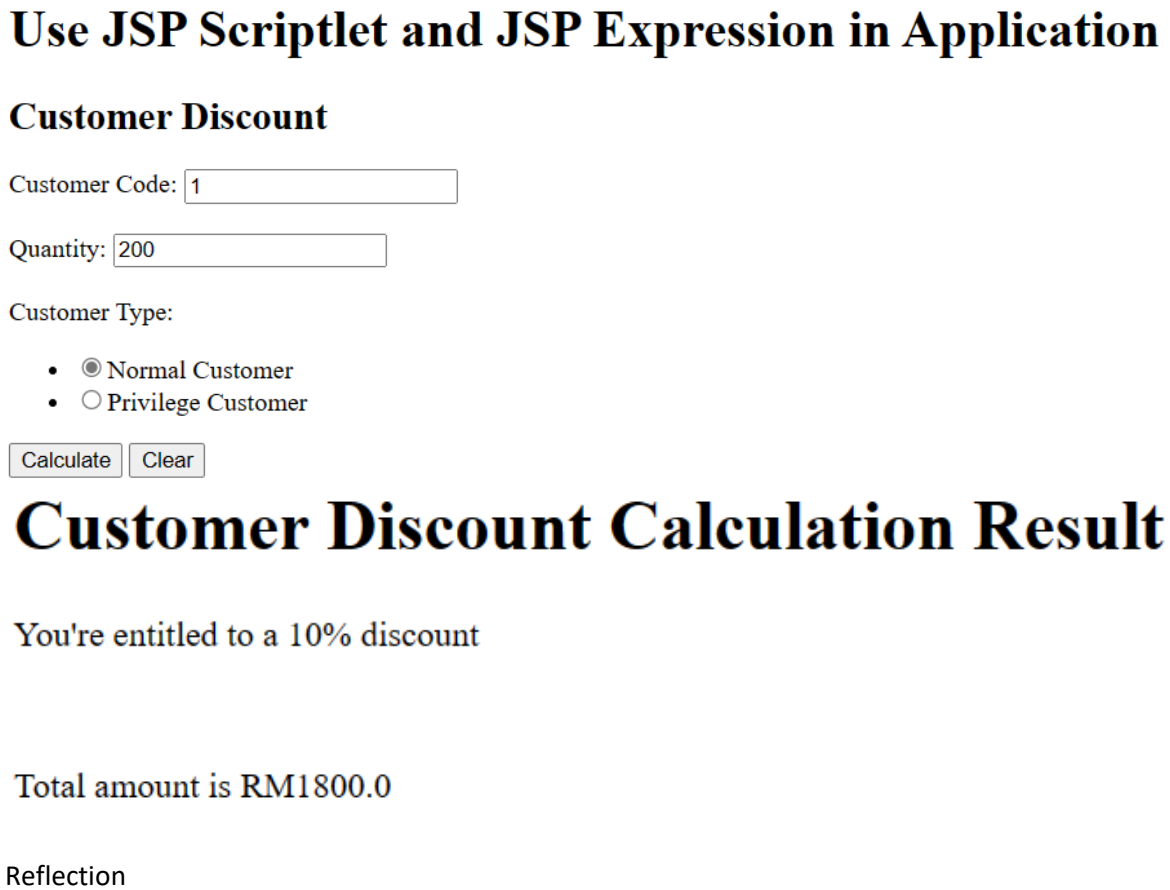
customer.html

```html
<!DOCTYPE html>
<html>
<head>
    <title>Using JSP Scriptlet</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
    <h1>Use JSP Scriptlet and JSP Expression in Application</h1>
    <h2>Customer Discount</h2>

    <form action="processCustomer.jsp" method="post">
        <label for="customercode">Customer Code:</label>
        <input type="number" id="customercode" name="customercode" placeholder="Key-in customer code" required><br><br>

        <label for="quantity">Quantity:</label>
        <input type="number" id="quantity" name="quantity" placeholder="Key-in quantity" required><br><br>

        <label>Customer Type:</label>
        <ul id="custtype" name="custtype" required>
            <li><input type="radio" id="1" name="custtype" value="1" required><label for="normal">Normal Customer</label></li>
            <li><input type="radio" id="2" name="custtype" value="2" required><label for="privilege">Privilege Customer</label></li>
        </ul>

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

processCustomer.jsp

```jsp
<%--
    Document   : processCustomer
    Created on : 27 Apr 2024, 10:23:30 am
    Author     : USER
--%>

<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
    <title>Customer Discount Calculation</title>
</head>
<body>
<%
    final int price = 10;

    String customerCode = request.getParameter("customercode");
    int quantity = Integer.parseInt(request.getParameter("quantity"));
    String customerType = request.getParameter("custtype");

    out.print("<h1>Customer Discount Calculation Result</h1>");

    if (customerType.equals("1") && quantity > 100){
        out.print("<p>You're entitled to a 10% discount</p><br>");
        out.print("<p>Total amount is RM" + quantity * price * 0.9 + "</p>");
    }
    else if (customerType.equals("2") && quantity > 100) {
        out.print("<p>You're entitled to a 25% discount</p><br>");
        out.print("<p>Total amount is RM" + quantity * price * 0.75 + "</p>");
    }
    else {
        out.print("<p>You're not entitled to a discount..!</p><br>");
        out.print("<p>Total amount is RM" + quantity * price + "</p>");
    }
%>
</body>
</html>
```

Output:



Reflection

1. What you have learnt from this exercise?

I learned how to use Java code in JSP to create dynamic web pages, handle form submissions, and display results based on user input.

2. Explain three (3) type of JSP scripting?

- Scriptlets: Used to embed Java code directly into the HTML page.
- Expressions: Used to insert the result of a Java expression into the HTML output.
- Declarations: Used to declare variables, methods, or classes accessible throughout the JSP page.

Task 2

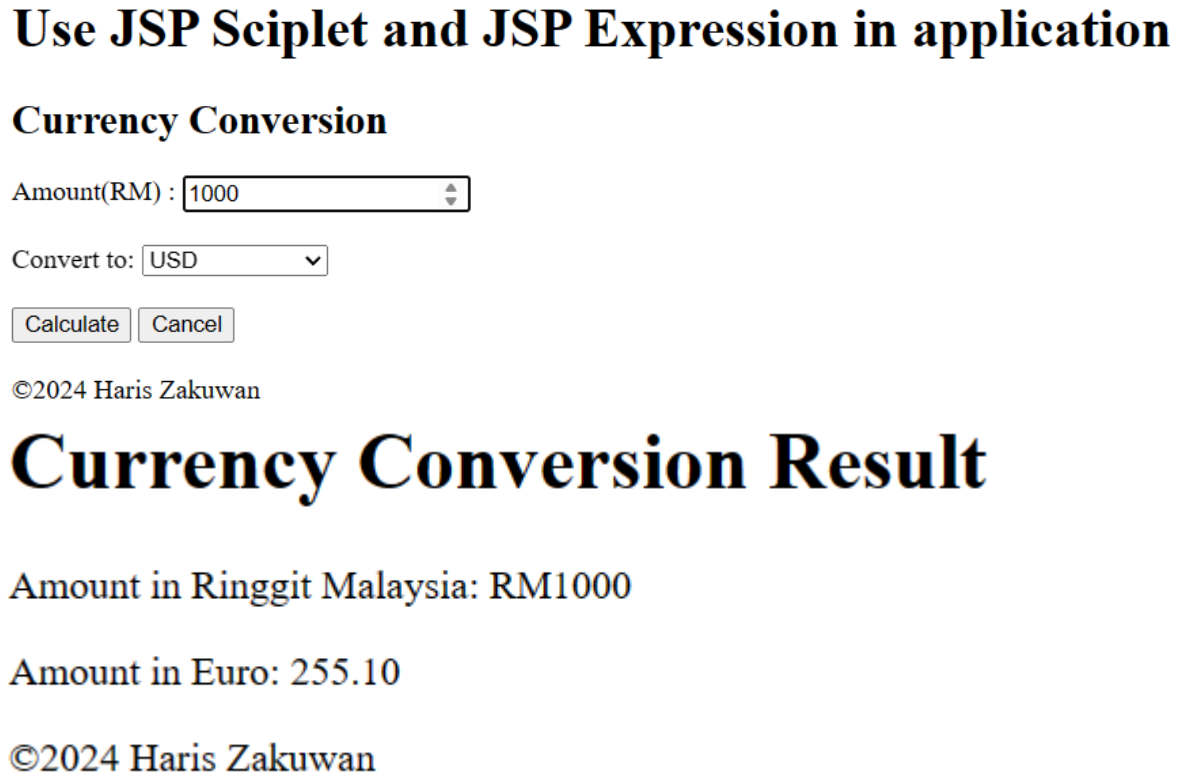
currencyConversion.html

```
<html>
    <head>
        <title>currency</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
    </head>
    <body>
        <h1>Use JSP Sciplet and JSP Expression in application</h1>
        <h2>Currency Conversion</h2>

        <form action="processCurrency.jsp" method="post">
            <label for="amount">Amount(RM) :</label>
            <input type="number" id="amount" name="amount" placeholder="RM"required><br><br>

           <label for="convert">Convert to:</label>
                <select id="convert" name="convert" required>
                 <option value="1">USD</option>
                 <option value="2">Pound Sterling</option>
                 <option value="3">Euro</option>

                 <button type="submit">Calculate</button>
                 <button ty[e="clear">Cancel</button>
                </select><br><br>

                 <button type="submit">Calculate</button>
                 <button ty[e="clear">Cancel</button>
                 <br><br>
        </form>
    </body>
    <footer>
        &copy;2024 Haris Zakuwan
    </footer>
</html>
```

processCurrency.jsp

```jsp
<%--
    Document   : processCurrency
    Created on : 27 Apr 2024, 11:06:37 am
    Author     : USER
--%>

<%@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>
        <%!
            //Added by: 27 April 2024 - Mohamad Haris Zakuwan
            //Define constants...
            final double USD = 3.92;
            final double STG = 5.96;
            final double EURO = 4.47;

            //Define method to perform currency exchange...
            private double calculateRate(String currency, int amount) {
                double currencyChange = 0.00;

                if (currency.equals("1"))
                    currencyChange = amount / USD;
                else if (currency.equals("2"))
                    currencyChange = amount / STG;
                else if (currency.equals("3"))
                    currencyChange = amount / EURO;

                return currencyChange;
            }
        %>

        <%-- Retrieve the value for Amount and Convert to --%>
        <%
            int amount = Integer.parseInt(request.getParameter("amount"));
            String convertTo = request.getParameter("convert");

            // Call the calculateRate method to perform currency conversion
            double result = calculateRate(convertTo, amount);
        %>

        <h1>Currency Conversion Result</h1>
        <p>Amount in Ringgit Malaysia: RM<%= amount %></p>
        <p>Amount in Euro: <%= String.format("%.2f", result) %></p>

    </body>
    <footer>
        &copy;2024 Haris Zakuwan
    </footer>
</html>
```

Output:



Reflection

1. What have you learn from this exercise?

create a basic web application using JSP, incorporate JSP scriptlets to handle form submissions and perform calculations, and format output using JSP expressions.

Task 3

jspParamater.jsp

```jsp
<%--
    Document   : jspParameter
    Created on : 27 Apr 2024, 11:20:16 am
    Author     : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Using JSP Standard Action</title>
    </head>
    <body>
        <h1>Using jsp:include and jsp:param to display information on JSP page</h1>
        <%
            String sCode = "CSM3023";
            String sSubject = "Web Programming 2";
            String sCredit = "3(2+1)";
        %>

        <jsp:include page="subjectInfo.jsp" flush="true">
            <jsp:param name="code" value="<%=sCode%>"/>
            <jsp:param name="subject" value="<%=sSubject%>"/>
            <jsp:param name="credit" value="<%=sCredit%>"/>
        </jsp:include>
    </body>
</html>
```

subjectInfo.jsp

```jsp
<%--
    Document   : subjectInfo
    Created on : 27 Apr 2024, 11:31:29 am
    Author     : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Using JSP Standard Action</title>
    </head>
    <body>
        <h1>Calling subjectInfo.jsp</h1>
        <p>Code = <%=request.getParameter("code")%></p>
        <p>Subject = <%=request.getParameter("subject")%></p>
        <p>Credit = <%=request.getParameter("credit")%></p>
    </body>
</html>
```

Output:

Using jsp:include and jsp:param to display information on JSP page

Calling subjectInfo.jsp

Code = CSM3023

Subject = Web Programming 2

Credit = 3(2+1)

Reflection:

1. What you have learnt from this exercise?

How to use JSP Standard Actions like <jsp:include> and <jsp:param> to include content from one JSP file into another and pass parameters to it.

2. List TWO (2) other JSP Standard Action Tag.

- **<jsp:forward>**: Used to forward the request from one JSP file to another resource (like another JSP, HTML, or servlet).
- **<jsp:useBean>**: Used to declare and instantiate JavaBeans components within a JSP page.

Task 4

Forward.jsp

```jsp
<%--
    Document   : forward
    Created on : 27 Apr 2024, 11:36:38 am
    Author     : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Using JSP Standard Action(forward)</title>
    </head>
    <body>
        <h2>Using jsp:forward to display user info.</h2>
        <jsp:forward page="forwardInfo.jsp">
            <jsp:param name= "U_Name" value="Haris Zakuwan"/>
            <jsp:param name= "Email" value="hariszakuwan@gmail.com"/>
            <jsp:param name= "Nationality" value="Malaysia"/>
            <jsp:param name= "Background" value="Developer"/>
        </jsp:forward>
    </body>
</html>
```

forwardInfo.jsp

```jsp
<%--
    Document   : forwardInfo
    Created on : 27 Apr 2024, 11:43:39 am
    Author     : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>&lt;Forwarded_Action Example in JSP&gt;</title>
    </head>
    <body>

        <% String name = request.getParameter("U_Name"); %>
        <% String Email = request.getParameter("Email"); %>
        <% String Nationality = request.getParameter("Nationality"); %>
        <% String Background = request.getParameter("Background"); %>
        <% if (name != null) {%>
        <b><br><br><h2 align="center">

                <%=name%><br>
                <%=Email%><br>
                <%=Nationality%><br>
                <%=Background%><br><br>

                <% out.print("Today is:" + java.util.Calendar.getInstance().getTime());%>
            </h2></b></br>
            <%}%>
    </body>
</html>
```

Output:

Haris Zakuwan
hariszakuwan@gmail.com
Malaysia
Developer

Today is:Tue Apr 30 02:07:16 MYT 2024

Reflection
1. What you have learnt from this exercise?
How to use the <jsp:forward> JSP Standard Action to forward a request from one JSP file to another while passing parameters.

2. List TWO(2) More JSP Standard Action Tag.

- **<jsp:useBean>**: Instantiates a JavaBean component or retrieves an existing one from the page context or request scope.
- **<jsp:setProperty>**: Sets properties on JavaBeans components instantiated using **<jsp:useBean>**.

Task 5
insuranceQuotation.jsp

```jsp
<%--
    Document   : insuranceQuotation
    Created on : 27 Apr 2024, 12:32:24?pm
    Author     : USER
--%>

<html>
<head>
    <title>Insurance Quotation</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <script>
        function validateForm() {
            let icno = document.getElementById("icno").value;
            let name = document.getElementById("name").value;
            let price = document.getElementById("price").value;

            if(icno === "" || name === "" || price === "") {
                alert("Please fill in all fields");
                return false;
            }
            return true;
        }
    </script>
</head>
<body>
<h1>Insurance Quotation</h1>

<form action="processInsuranceQuo.jsp" onsubmit="return validateForm()">
    <fieldset>
        <legend>Insurance Calculation</legend>
        <label for="icno">ICNo :</label>
        <input type="number" id="icno" name="icno"><br><br>
        <label for="name">Name :</label>
        <input type="text" id="name" name="name"><br><br>
        <label for="price">Market Price :</label>
        <input type="number" id="price" name="price"><br><br>
        <label for="cover">Coverage Type:</label>
        <select name="cover" id="cover">
            <option value="1" selected="selected">Comprehensive</option>
            <option value="2">Third-party</option>
        </select><br><br>
        <label for="disc">No claims discount(NCD):</label>
        <select name="disc" id="disc">
            <option value="1" selected="selected">10%</option>
            <option value="2">25%</option>
            <option value="3">35%</option>
            <option value="4">55%</option>
        </select><br><br>
        <button type="submit">Calculate</button>
        <button type="reset">Clear</button>
    </fieldset>
</form>
</body>
</html>
```

processInsuranceQuo.jsp

```jsp
<%--
    Document   : processInsuranceQuo
    Created on : 27 Apr 2024, 12:32:49 pm
    Author     : USER
--%>

<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<%
    String icNo = request.getParameter("icno");
    String customerName = request.getParameter("name");
    double marketPrice = Double.parseDouble(request.getParameter("price"));
    String coverageType = request.getParameter("cover");
    int ncd = Integer.parseInt(request.getParameter("disc"));

    double discount = 0.0;
    switch (ncd) {
        case 1:
            discount = 0.1;
            break;
        case 2:
            discount = 0.25;
            break;
        case 3:
            discount = 0.35;
            break;
        case 4:
            discount = 0.55;
            break;
    }

    double totalAmount = marketPrice * (1 - discount);
    double gst = totalAmount * 0.06;
    double finalAmount = totalAmount + gst;
%>
<html>
<body>
    <h1>Insurance Quotation Result</h1>
    <p>IC No: <%= icNo %></p>
    <p>Customer Name: <%= customerName %></p>
    <p>Market Price: <%= marketPrice %></p>
    <p>Coverage Type: <%= (coverageType.equals("1")) ? "Comprehensive" : "Third-party" %></p>
    <p>No Claim Discount (NCD): <%= (discount * 100) %>%</p>
    <p>Insurance Amount: <%= totalAmount %></p>
    <p>6% GST: <%= gst %></p>
    <p><strong>Final Amount (with 6% GST): <%= finalAmount %></strong></p>
</body>
</html>
```

Output:

Insurance Quotation

Insurance Quotation Result

IC No: 030617140423

Customer Name: haris

Market Price: 4000.0

Coverage Type: Comprehensive

No Claim Discount (NCD): 25.0%

Insurance Amount: 3000.0

6% GST: 180.0

Final Amount (with 6% GST): 3180.0

Reflection

1. What you have learnt from this exercise?

How to create a web form for insurance quotation using HTML and JavaScript for client-side validation. How to process form data in a JSP file (processInsuranceQuo.jsp) to calculate insurance amounts based on user input.

2. List all Java features you used in Java Scriptlet.

- Variable declaration and initialization
- Parsing string inputs to numeric values (e.g., **Double.parseDouble()**, **Integer.parseInt()**)
- Control structures (e.g., **switch-case**)
- Arithmetic operations
- Outputting dynamic content using **<%= %>** tags

Exercise
bmiCalculator.jsp

```jsp
<%--
    Document   : bmiCalculator
    Created on : 27 Apr 2024, 11:56:24 am
    Author     : USER
--%>

<%@ page contentType="text/html;charset=UTF-8" %>
<html>
<head>
    <title>BMI Calculator</title>
</head>
<body>
    <h1>BMI Calculator</h1>
    <form method="post" action="calculateBMI.jsp">
        Enter your weight in kilograms: <input type="text" name="weight"><br>
        Enter your height in meters: <input type="text" name="height"><br>
        <input type="submit" value="Calculate BMI">
    </form>
</body>
</html>
```

calculateBMI.jsp

```jsp
<%--
    Document   : calculateBMI
    Created on : 27 Apr 2024, 11:56:47 am
    Author     : USER
--%>

<%@ page contentType="text/html;charset=UTF-8" %>
<%@ page import="java.text.DecimalFormat" %>
<%@ page import="java.io.PrintWriter" %>

<%
double weight = Double.parseDouble(request.getParameter("weight"));
double height = Double.parseDouble(request.getParameter("height"));
double bmi = weight / (height * height);

DecimalFormat df = new DecimalFormat("#.##");
String bmiFormatted = df.format(bmi);

String bmiCategory;
if (bmi < 18.5) {
    bmiCategory = "underweight";
} else if (bmi >= 18.5 && bmi <= 25) {
    bmiCategory = "optimal weight";
} else {
    bmiCategory = "overweight";
}
%>

<html>
<head>
    <title>BMI Result</title>
</head>
<body>
    <h1>Your BMI Result</h1>
    <p>Your BMI is: <%= bmiFormatted %></p>
    <p>You are <%= bmiCategory %>.</p>
</body>
</html>
```

Output:

BMI Calculator

Enter your weight in kilograms: 60

Enter your height in meters: 1.7

Calculate BMI

Your BMI Result

Your BMI is: 20.76

You are optimal weight.