UNIVERSITI MALAYSIA TERENGGANU

FACULTY OF SCIENCE COMPUTER AND MATHEMATICS

CSM3023 (K1)

WEB BASED APPLICATION DEVELOPMENT

LAB 5

Prepared for:

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Prepared by:
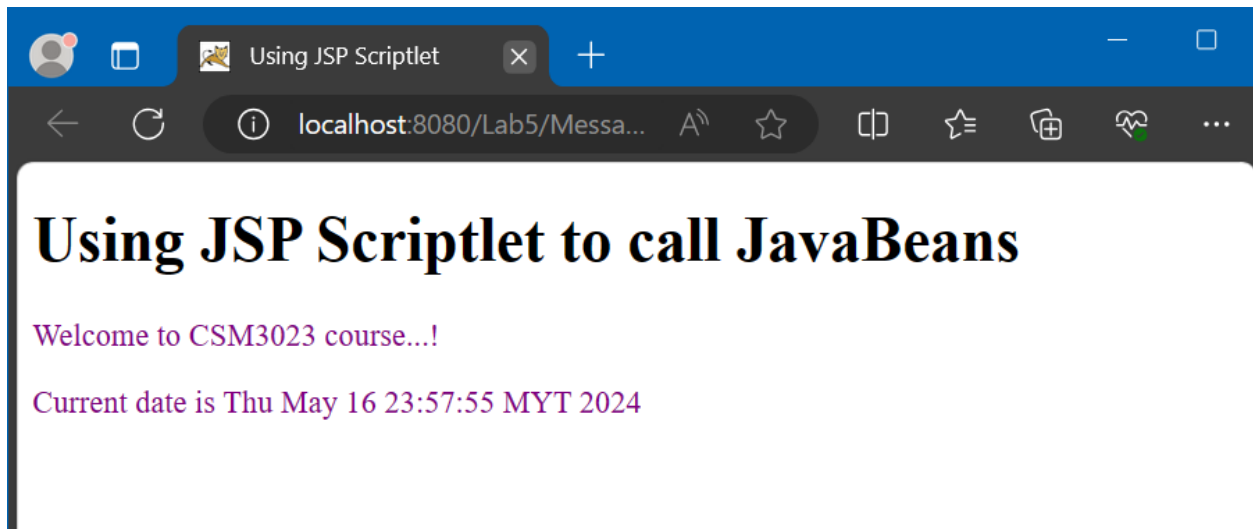
NUR AFIQAH BINTI ROSDI

(S67775)

Task 1

Source code

Message1.jsp

```jsp
<%--
    Document    : Message 1
    Created on : 8 May 2024, 2:48:52 pm
    Author      : NUR AFIQAH BINTI ROSDI
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language ="java"%>
<%@page info="Using JSP Standard Action to call JavaBeans"%>
<%@page import="java.util.Date,lab5.com.Message"%>

<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Using JSP Scriptlet</title>
    </head>
    <body text="purple">
        <h1 style="color: black;">Using JSP Scriptlet to call JavaBeans</h1>
        <%
            Message objMsg = new Message();

            objMsg.setMsg("Welcome to CSM3023 course...!");

            out.println("<p>" + objMsg.getMsg() + "</p>");

            out.println("<p>Current date is " + new java.util.Date() + "</p>");
        %>
    </body>
</html>
```

Message.java

```java
package lab5.com;

/**
 *NUR AFIQAH BINTI ROSDI
 *
 */

public class Message {
    public String msg;

    public Message(){

    }

    public void setMsg(String msg){
        this.msg = msg;
    }

    public String getMsg(){
        return msg;
    }
}
```

Output

Reflection

1. What you have learnt from this exercise?
   I have learnt how to access JavaBeans using Java Scriplet.

2. Explain the differences when calling JavaBeans using JSP Standard Action and Java Scriptlet.

Java standard action	Java scriplet
Example of tag used: <jsp:useBean <jsp:setProperty> <jsp:getProperty>:	Example of tag used: <% scriptlet tag %> <%= jsp expression tag % >
More readable and maintainable.	More flexible for complex logic.

Task 2

Source code

registerTraining.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language="java"%>
<%@page info="Page to use JavaBeans in Java Scriplet"%>
<%@page import="lab5.com.Register"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>JavaBeans in Java Scriptlet</title>
    </head>
    <body>
        <h1>Register IT Training</h1>
        <form name="trainingreg" action="processTraining.jsp" method="post">
        <fieldset>
        <legend>Training Registration</legend>
        <table>
        <tr>
            <td><label>IC No</label></td>
            <td><input type="text" name="ICNo" value="" placeholder="E.g.911210-05-1234" size="50"/></td>
        </tr>
        <tr>
            <td><label>Name</label></td>
            <td><input type="text" name="trainingName" value="" placeholder="Enter your name" size="50"/></td>
        </tr>
        <tr>
            <td><label>Type of Training</label></td>
            <td><select name="trainingType">

            <option value="1">C++ Training</option>
            <option value="2">Java for beginner</option>
            <option value="3">HTML5</option>
            <option value="4">Java EEE</option>
            <option value="5">Android Programming</option>

            </select></td>
        </tr>
        <tr>
            <td><label>No of Pax</label></td>
            <td><input type="text" name="paxNo" value="" placeholder="No of Pax" size="50"/></td>
        </tr>
        <tr>
            <td><label>Student</label></td>
            <td><label>Yes</label> <input type="radio" name="isStudent" value="1"/> <label>No</label> <input type="radio" name="isStudent" value="0"/></td>
        </tr>
        <tr>
            <td><br><input type="submit" id="btnSubmit" value="Submit"/>
            <input type="reset" id="btnCancel" value="Cancel"/></td>
        <td></td>
        </tr>
        </table>
        </fieldset>
        <br>
        </form>
        <footer>&copy;2024-Nur Afiqah</footer>
    </body>
</html>
```

processTraining.jsp

```
    %>
    <style>
        p {
            color: #001B94;
        }
    </style>
    </head>

    <body>
        <%
            double pricePerPax;
            double amountDue = 0.00;
            double discount = 0.10;
            String isStudentName = "";
            String tTypeName = "";

            if (t_Type.equals("1")){
                tTypeName = "C++ Training";
            } else if (t_Type.equals("2")){
                tTypeName = "Comprehensive Java for beginner";
            } else if (t_Type.equals("3")){
                tTypeName = "HTML5";
            } else if (t_Type.equals("4")){
                tTypeName = "JavaEE";
            } else if (t_Type.equals("5")){
                tTypeName = "Android Programming";
            }

            // Determine customer type and calculate amount due
            if (isStudent.equals("1")){
                isStudentName = "Yes";
                if (t_Type.equals("1") || t_Type.equals("2")){
                    pricePerPax = 3000.00;
                    amountDue = (p_No * pricePerPax) - (pricePerPax * discount);
                } else if (t_Type.equals("3")) {
                    pricePerPax = 2800.00;
                    amountDue = (p_No * pricePerPax) - (pricePerPax * discount);
                } else if (t_Type.equals("4")) {
```

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language="java"%>
<%@page info="Page to use JavaBeans in Java Scriplet"%>
<%@page import="java.text.DecimalFormat"%>
<!DOCTYPE html>

<html>
<head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>Training Registration Acknowledgement</title>
    <%
        String icNo = request.getParameter("ICNo");
        String t_Name = request.getParameter("trainingName");
        String t_Type = request.getParameter("trainingType");
        String paxNoParam = request.getParameter("paxNo");
        String isStudent = request.getParameter("isStudent");

        int p_No = 0;
        boolean isValidPaxNo = true;
        if (paxNoParam != null && !paxNoParam.isEmpty()) {
            try {
                p_No = Integer.parseInt(paxNoParam);
            } catch (NumberFormatException e) {
                isValidPaxNo = false;
            }
        } else {
            isValidPaxNo = false;
        }

        if (!isValidPaxNo) {
            out.println("<p>Error: Invalid number of pax provided.</p>");
        } else {
            lab5.com.Register objRegister = new lab5.com.Register();
            objRegister.setIcNo(icNo);
            objRegister.setTrainingName(t_Name);
            objRegister.setTrainingType(t_Type);
            objRegister.setPaxNo(p_No);
            objRegister.setStudent(isStudent);
```

```jsp
                        pricePerPax = 5500.00;
                        amountDue = (p_No * pricePerPax) - (pricePerPax * discount);
                    } else if (t_Type.equals("5")) {
                        pricePerPax = 3200.00;
                        amountDue = (p_No * pricePerPax) - (pricePerPax * discount);
                    }

                } else if (isStudent.equals("0")){
                    isStudentName = "No";
                    if (t_Type.equals("1") || t_Type.equals("2")){
                        pricePerPax = 3000.00;
                        amountDue = p_No * pricePerPax;
                    } else if (t_Type.equals("3")) {
                        pricePerPax = 2800.00;
                        amountDue = p_No * pricePerPax;
                    } else if (t_Type.equals("4")) {
                        pricePerPax = 5500.00;
                        amountDue = p_No * pricePerPax;
                    } else if (t_Type.equals("5")) {
                        pricePerPax = 3200.00;
                        amountDue = p_No * pricePerPax;
                    }
                }
            }
        %>
        <%DecimalFormat df = new DecimalFormat("0.00");%>
        <h1>Training Registration Acknowledgement</h1>
        <p>IC No: <%=objRegister.getIcNo()%></p>
        <p>Name: <%=objRegister.getTrainingName()%></p>
        <p>Type of Training: <%=tTypeName%></p>
        <p>Number of Pax: <%=objRegister.getPaxNo()%> person/s</p>
        <p>Student: <%=isStudentName%></p>
        <p>Amount Due:RM <%= df.format(amountDue)%></p>
    </body>
    <%
        }
    %>
    <footer>&copy;2024-Nur Afiqah</footer>
</html>
```

Register.java

```java
package lab5.com;

public class Register {
    private String trainingName;
    private String IcNo;
    private String trainingType;
    private int paxNo;
    private String student;

    public Register(){
    }
    public String getTrainingName() {
        return trainingName;
    }

    public void setTrainingName(String trainingName) {
        this.trainingName = trainingName;
    }

    public String getIcNo() {
        return IcNo;
    }

    public void setIcNo(String IcNo) {
        this.IcNo = IcNo;
    }

    public String getTrainingType() {
        return trainingType;
    }

    public void setTrainingType(String trainingType) {
        this.trainingType = trainingType;
    }

    public int getPaxNo() {
        return paxNo;
    }

    public void setPaxNo(int paxNo) {
        this.paxNo = paxNo;
    }

    public String getStudent() {
        return student;
    }

    public void setStudent(String student) {
        this.student = student;
    }
}
```

Output

Register IT Training

Training Registration

IC No	E.g.911210-05-1234
Name	Enter your name
Type of Training	C++ Training ▾
No of Pax	No of Pax
Student	Yes ○ No ○

Submit Cancel

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Training Registration Acknowledgement

IC No: 870510-11-2167

Name: Ahmad Abu

Type of Training: JavaEE

Number of Pax: 1 person/s

Student: Yes

Amount Due:RM 4950.00

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Reflection

1. What you have learnt from this exercise?
   I have learnt on how to use JavaBeans in JavaScriplet and perform business logic.

2. Describe the steps how you construct *Register* JavaBeans?
   1. Create package lab5.com.
   2. Create Java Class named Register.
   3. Declare instance variables inside the class.
   4. Create Setter and Gette Method.
   5. Create default constructor.

Task 4

Source code

```
<%--
    Document   : jstlCore1
    Created on : 18 May 2024, 10:28:41 am
    Author     : User
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@taglib uri= "http://java.sun.com/jsp/jstl/core" prefix="c"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Using JSTL tag library</title>
    </head>
    <body>
        <h1>Use JSTL's features</h1>
        <c:set var ="message" value="Welcome to CSM3023 - Web Programming courses..!"/>
        <p><c:out value="${message}"/></p>
    </body>
</html>
```

localhost:8080/Lab5/jstlCore1.jsp

Use JSTL's features

Welcome to CSM3023 - Web Programming courses..!

userRegistration.html

```
<!DOCTYPE html>
<html>
<head>
    <title>User Registration</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
    <form id="registrationform" action="processUser.jsp" method="post"
    onsubmit="patternMatching()">
    <fieldset>
    <legend>User Details</legend>
    <table>
        <tr>
        <td><label>Name</label></td>

        <td><input name="firstName" type="text" placeholder="Enter firstname" size="50"/></td>
        </tr>
        <tr>
        <td><label>Surname</label></td>

        <td><input name="surName" type="text" placeholder="Enter surname" size="50"/></td>
        </tr>
        <tr>
        <td><label>Password</label></td>
        <td><input name="password" type="password" placeholder="Max 10 characters" size="30"/></td>
        </tr>
        <tr>
        <td><label>Gender</label></td>

        <td>

        <label>Male </label><input name="gender" type="radio"
        value="Male"/>
        <label>Female </label><input name="gender" type="radio"
        value="Female"/>
        </td>
        </tr>
```

processUser.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>
<!DOCTYPE html>
<html>
<head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
    <style>
        p{
        font-family: monospace;
        font-size: 1.5em;
        color: blueviolet;
        }
    </style>
</head>
<body>
    <h1>Retrieve info using c:param & display it using c:out</h1>
    <p>First Name: <c:out value="${param.firstName}"/></p>
    <p>Surname: <c:out value="${param.surName}"/></p>
    <p>Gender: <c:out value="${param.gender}"/></p>
    <p>Type of User: <c:out value="${param.userType}"/></p>
    <p>Prefer Language:
    <c:forEach var="value" items="${paramValues.preferLang}">
    <c:out value="${value}"/>
    </c:forEach>
    </p>
</body>
</html>
```

localhost:8080/Lab5/userRegistration.html

User Details

Name	Mohamad Nor
Surname	Hassan
Password	••••••••
Gender	Male ● Female ○
Type of User	Advanced
Prefer Language	Malay ☑ English ☐ Mandarin ☐ Tamil ☐

Submit Cancel

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Retrieve info using c:param & display it using c:out

First Name: Mohamad Nor

Surname: Hassan

Gender: Male

Type of User: Advanced

Prefer Language: Malay

Jstlformat1.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>
<%@taglib uri="http://java.sun.com/jsp/jstl/fmt" prefix="fmt"%>
<!DOCTYPE html>
<html>
<head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSTL Formatting Tag</title>
    <style>
        p{
        font-family: arial;
        color: #E30004;
        }
    </style>
</head>
<body>
<h1>Using JSTL formatting tag for formatting</h1>

    <c:set var="total" value="2880.4638"/>
    <p>Number to be formatted is <c:out value="${total}"/></p>
    <p>Formatting number as currency with currency code : <fmt:formatNumber
    type="currency" currencyCode="MYR" value="${total}"/></p>
    <p>Formatting number to the nearest 2 integer digit : <fmt:formatNumber
    type="number" maxIntegerDigits="2" value="${total}"/></p>
    <p>Formatting number by grouping : <fmt:formatNumber type="number"
    groupingUsed="true" value="${total}"/></p>
    <p>Formatting number by 3 decimal places : <fmt:formatNumber type="number"
    maxFractionDigits="3" value="${total}"/></p>
    <p>Formatting number by % : <fmt:formatNumber type="percent"
    value="${total}"/></p>
</body>
</html>
```

Using JSTL formatting tag for formatting

Number to be formatted is 2880.4638

Formatting number as currency with currency code : MYR2,880.46

Formatting number to the nearest 2 integer digit : 80.464

Formatting number by grouping : 2,880.464

Formatting number by 3 decimal places : 2,880.464

Formatting number by % : 288,046%

Reflection
1. What the purpose of using JSTL's tag library?
   To reduce the amount of Java code (scriptlets) in JSP pages, making them easier to read and maintain.
2. List **FIVE(5)** categories of JSTL library.
   a) Core Tags
   b) SQL Tags
   c) JSTL functions
   d) XML tags
   e) Formatting Tags

Task 5

Source code

fmt_formatDate

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>
<%@taglib uri="http://java.sun.com/jsp/jstl/fmt" prefix="fmt"%>

<!DOCTYPE html>
<html>
<head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>fmt:parseDate feature</title>
</head>
<body>
    <h2>fmt:parseDate feature</h2>
    <c:set var="now" value="<%=new java.util.Date()%>"/>
    <p>
    Time (fmt:formatDate type="time"):
    <strong>
    <fmt:formatDate type="time" value="${now}"/>
    </strong></p>
    <p>
    Date (fmt:formatDate type="date"):
    <strong>
    <fmt:formatDate type="date" value="${now}"/>
    </strong>
    </p>
    <p>
    Date, Time (fmt:formatDate type="both"):
    <strong>
    <fmt:formatDate type="both" value="${now}"/>
    </strong></p>
    <p>
    Date, Time Short (fmt:formatDate type="both" dateStyle="short"
    timeStyle="short"):
    <strong>
    <fmt:formatDate type="both" dateStyle="short" timeStyle="short"
    value="${now}"/>
    </strong></p>
    <p>
    Date, Time Medium (fmt:formatDate type="both" dateStyle="medium"
```

fmt:parseDate feature

Time (fmt:formatDate type="time"): **7:04:52 PM**

Date (fmt:formatDate type="date"): **May 22, 2024**

Date, Time (fmt:formatDate type="both"): **May 22, 2024, 7:04:52 PM**

Date, Time Short (fmt:formatDate type="both" dateStyle="short" timeStyle="short"): **5/22/24, 7:04 PM**

Date, Time Medium (fmt:formatDate type="both" dateStyle="medium" timeStyle="medium"): **May 22, 2024, 7:04:52 PM**

Date, Time Long (fmt:formatDate type="both" dateStyle="long" timeStyle="long"): **May 22, 2024 at 7:04:52 PM MYT**

Date, Time (dd-MM-yyyy HH:mm:ss): **22-05-2024 19:04:52**

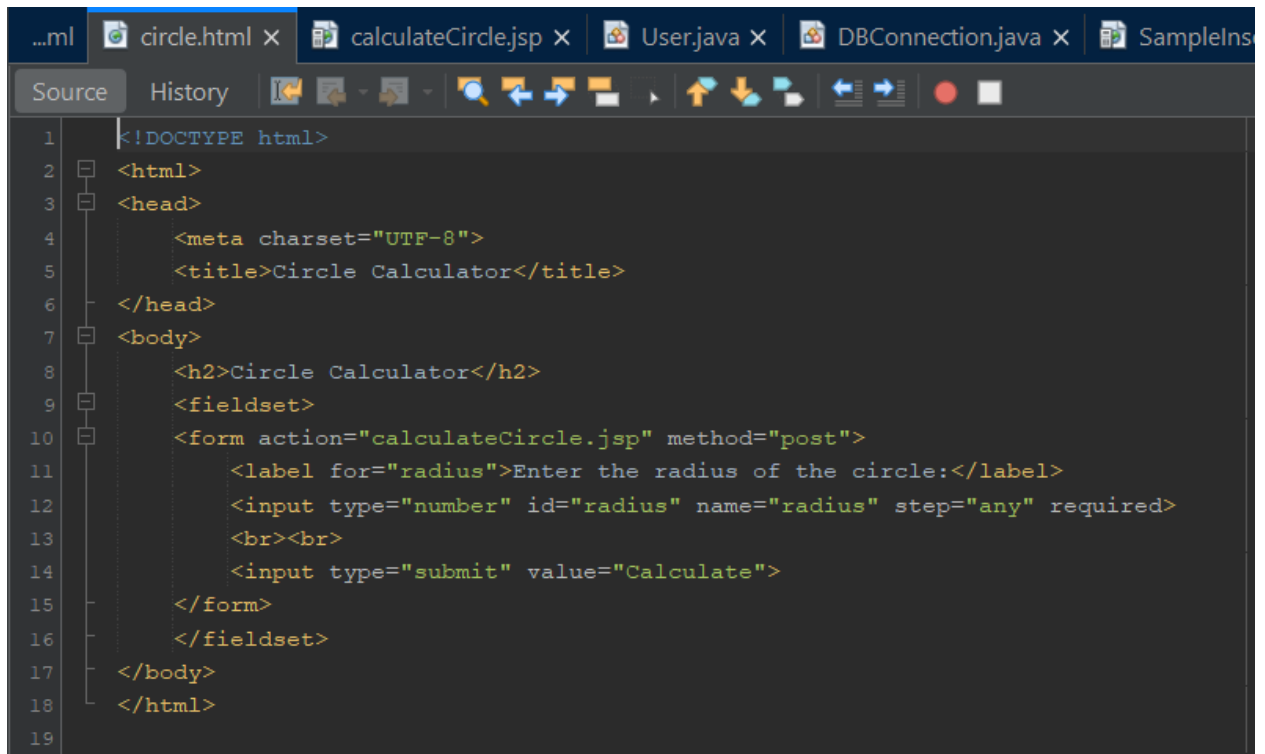Now String (dd-MM-yyyy HH:mm): **22-05-2024 19:04**

Reflection

1. What you have learnt from this exercise?
   I have learnt on how to use JSTL tags for parsing and formatting dates.

Exercise 1

Source code

Source   History

```html
1    <!DOCTYPE html>
2    <html>
3    <head>
4        <meta charset="UTF-8">
5        <title>Circle Calculator</title>
6    </head>
7    <body>
8        <h2>Circle Calculator</h2>
9        <fieldset>
10       <form action="calculateCircle.jsp" method="post">
11           <label for="radius">Enter the radius of the circle:</label>
12           <input type="number" id="radius" name="radius" step="any" required>
13           <br><br>
14           <input type="submit" value="Calculate">
15       </form>
16       </fieldset>
17   </body>
18   </html>
19
```

Source | History

```jsp
1   <%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>
2   <%@ taglib uri="http://java.sun.com/jsp/jstl/fmt" prefix="fmt" %>
3
4   <!DOCTYPE html>
5   <html>
6   <head>
7       <meta charset="UTF-8">
8       <title>Circle Calculation Results</title>
9   </head>
10  <body>
11      <h2>Circle Calculation Results</h2>
12      <%
13          String radiusStr = request.getParameter("radius");
14          if (radiusStr != null && !radiusStr.isEmpty()) {
15              double radius = Double.parseDouble(radiusStr);
16              double area = Math.PI * Math.pow(radius, 2);
17              double perimeter = 2 * Math.PI * radius;
18      %>
19      <fieldset>
20          <p>Radius: <fmt:formatNumber value="<%= radius %>" type="number" maxFractionDigits="3"/></p>
21          <p>Area: <fmt:formatNumber value="<%= area %>" type="number" maxFractionDigits="3"/></p>
22          <p>Perimeter: <fmt:formatNumber value="<%= perimeter %>" type="number" maxFractionDigits="3"/></p>
23      </fieldset>
24      <%
25          } else {
26      %>
27          <p>Please enter the radius and submit the form to see the results.</p>
28      <%
29          }
30      %>
31  </body>
32  </html>
```

Output

Circle Calculator

Enter the radius of the circle: [   ]

[Calculate]

Circle Calculation Results

Radius: 9

Area: 254.469

Perimeter: 56.549

Exercise 2

Source code

```jsp
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>
<%@ taglib uri="http://java.sun.com/jsp/jstl/fmt" prefix="fmt" %>
<jsp:useBean id="transaction" class="com.example.StockTransaction" scope="request" />

<!DOCTYPE html>
<html>
<head>
    <title>Enter Stock Details</title>
</head>
<body>
    <h1>Enter Stock Details</h1>
    <form action="index.jsp" method="post">
        <label for="shares">Number of Shares:</label>
        <input type="number" id="shares" name="shares" required><br>
        <label for="pricePerShare">Price per Share (RM):</label>
        <input type="number" id="pricePerShare" name="pricePerShare" step="0.01" required><br>
        <button type="submit">Calculate</button>
    </form>

    <c:if test="${param.shares != null && param.pricePerShare != null}">
        <%
            int shares = Integer.parseInt(request.getParameter("shares"));
            double pricePerShare = Double.parseDouble(request.getParameter("pricePerShare"));
            transaction.setShares(shares);
            transaction.setPricePerShare(pricePerShare);
        %>

        <h1>Stock Transaction Details</h1>
        <table border="1">
            <tr>
                <th>Description</th>
                <th>Amount (RM)</th>
            </tr>
            <tr>
                <td>Amount paid for the stock alone</td>
                <td><fmt:formatNumber value="${transaction.amountPaidForStock}" type="currency" currencySymbol="RM" /></td>
            </tr>
            <tr>
                <td>Amount of the commission</td>
                <td><fmt:formatNumber value="${transaction.commission}" type="currency" currencySymbol="RM" /></td>
            </tr>
            <tr>
                <td>Total amount paid (stock + commission)</td>
                <td><fmt:formatNumber value="${transaction.totalAmountPaid}" type="currency" currencySymbol="RM" /></td>
            </tr>
        </table>
    </c:if>
</body>
</html>
```

```java
 6    public class StockTransaction {
 7        private int shares;
 8        private double pricePerShare;
 9        private double commissionRate;
10
11        public StockTransaction() {
12            this.commissionRate = 0.05;
13        }
14
15        public double getAmountPaidForStock() {
16            return shares * pricePerShare;
17        }
18
19        public double getCommission() {
20            return getAmountPaidForStock() * commissionRate;
21        }
22
23        public double getTotalAmountPaid() {
24            return getAmountPaidForStock() + getCommission();
25        }
26
27        // Getters and setters for shares, pricePerShare, and commissionRate
28        public int getShares() {
29            return shares;
30        }
31
32        public void setShares(int shares) {
33            this.shares = shares;
34        }
35
36        public double getPricePerShare() {
37            return pricePerShare;
38        }
39
40        public void setPricePerShare(double pricePerShare) {
41            this.pricePerShare = pricePerShare;
42        }

44        public double getCommissionRate() {
45            return commissionRate;
46        }
47
48        public void setCommissionRate(double commissionRate) {
49            this.commissionRate = commissionRate;
50        }
51    }
52
```

Output

Enter Stock Details

Number of Shares: 800
Price per Share (RM): 10.50
Calculate

Enter Stock Details

Number of Shares:
Price per Share (RM):
Calculate

Stock Transaction Details

Description	Amount (RM)
Amount paid for the stock alone	RM8,400.00
Amount of the commission	RM420.00
Total amount paid (stock + commission)	RM8,820.00