



UNIVERSITI MALAYSIA TERENGGANU

CSM3023 – WEB PROGRAMMING 2

BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH HONORS

LAB 5 – JSP: JavaBeans & Java Standard Tag Library (JSTL)

SEMESTER II 2023/2024

Prepared for:

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Prepared by:

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(S66355)

Link Github :

<https://github.com/arifhaikal2001/CSM3023-LAB-5.git>

Task 1: Using Scriptlet to Access a Simple JavaBeans

Code :

Message1.jsp

```
<%--
    Document   : Message1
    Created on : 8 May 2024, 2:56:17 pm
    Author    : ARIF HAIKAL
--%>

<%@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>
        <h1>Using JSP Scriptlet to call JavaBeans</h1>

        <%
            Message objMsg = new Message();
            objMsg.setMsg("Welcome to CSM3023 course..!");

            out.println("<p><font color=\"purple\">" + objMsg.getMsg() + "</font></p>");
            out.println("<p style=\"color:purple;\">Current date is " + new java.util.Date() +
"</p>");
        %>
    </body>
</html>
```

Message.java

```
package lab5.com;

public class Message {

    private String msg;

    public Message() {
    }

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

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

Output :



Reflection

1. What you have learnt from this exercise?
 - How to show a message, time and date using JSP.
2. Explain the differences when calling JavaBeans using JSP Standard Action and Java Scriptlet.
 - While Java Scriptlet mixes Java code directly within HTML, calling JavaBeans using JSP Standard Action uses tags to isolate business logic from display.

Task 2: Problem Solving using JavaBeans

Code :

registerTraining.jsp

```
<%--
    Document : registerTraining
    Created on : 16 May 2024, 1:01:07 am
    Author : ARIF HAIKAL
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="lab5.com.TrainingRegister"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Register for Training</title>
        <style>
            label {
                display: inline-block;
                margin-right: 10px;
                width: 150px;
            }
        </style>
    </head>
    <body>
        <h1>Register IT Training</h1>

        <form action="processTraining.jsp" method="post">
            <fieldset>
                <legend>Training Registration</legend>
                <label for="icno">IC No </label>
                <input type="text" id="icno" name="icno" placeholder="E.g 124578-08-0564"
required>
                <br><br>
                <label for="name">Name </label>
                <input type="text" id="name" name="name" placeholder="Enter your name"
required>
                <br><br>

                <label for="type">Type of Training</label>
                <select id="type" name="type" required>
                    <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>
                <br><br>
            </fieldset>
        </form>
    </body>
</html>
```

```

        <label for="number">No of Pax </label>
        <input type="number" id="number" name="number" placeholder="No of Pax"
required>
        <br><br>

        <label for="student">Student</label>
        <input type="radio" id="studentYes" name="student" value="1" required>
        <label for="studentYes">Yes</label>
        <input type="radio" id="studentNo" name="student" value="0" required>
        <label for="studentNo">No</label>
        <br><br>

        <button type="submit">Submit</button>
        <button type="reset">Cancel</button>
    </fieldset>
    <br>
</form>
</body>
<footer>
    &copy;2024 ARIF HAIKAL
</footer>
</html>

```

processTraining.jsp

```

<%--
    Document : processTraining
    Created on : 16 May 2024, 1:44:14 am
    Author : ARIF HAIKAL
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Training Registration Acknowledgement</title>
    </head>
    <body>
        <h1>Training Registration Acknowledgement</h1>

        <%
            String icno = request.getParameter("icno");
            String name = request.getParameter("name");
            String type = request.getParameter("type");
            int number = Integer.parseInt(request.getParameter("number"));
            String student = request.getParameter("student");
            double fee = 0.0;

            // Define training fees
            switch (type) {
                case "1":
                    fee = 3000;
                    type = "C++ training";

```

```

        break;
    case "2":
        fee = 3000;
        type = "Java for beginner";
        break;
    case "3":
        fee = 2800;
        type = "HTML5";
        break;
    case "4":
        fee = 5500;
        type = "Java EEE";
        break;
    case "5":
        fee = 3200;
        type = "Android Programming";
        break;
    default:
        out.println("Invalid training type.");
        break;
}

// Calculate total amount
double totalAmount = fee * number;

// Apply student discount if applicable
if (student.equals("1")) {
    totalAmount *= 0.9;
}

// Format the output amount
java.text.DecimalFormat df = new java.text.DecimalFormat("0.00");
%>

<p style="color:blue;">IC No: <%= icno %> </p>
<p style="color:blue;">Name: <%= name %> </p>
<p style="color:blue;">Type of Training: <%= type %> </p>
<p style="color:blue;">Number of Pax: <%= number %> </p>
<p style="color:blue;">Student: <%= (student.equals("1") ? "Yes" : "No") %> </p>
<p style="color:blue;"><strong>Amount Due: RM <%= df.format(totalAmount)
%></strong></p>
</body>
</html>

```

TrainingRegister.java

```

package lab5.com;

/**
 *
 * @author ARIF HAIKAL
 */
public class TrainingRegister {

```

```
private String icNo;
private String name;
private String trainingType;
private int numOfPax;
private boolean isStudent;

// Getters and setters
public String getIcNo() {
    return icNo;
}

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

public String getName() {
    return name;
}

public void setName(String name) {
    this.name = name;
}

public String getTrainingType() {
    return trainingType;
}

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

public int getNumOfPax() {
    return numOfPax;
}

public void setNumOfPax(int numOfPax) {
    this.numOfPax = numOfPax;
}

public boolean isStudent() {
    return isStudent;
}

public void setStudent(boolean student) {
    isStudent = student;
}

// Method to calculate total fee
public double calculateTotalFee() {
    double fee = 0;

    switch (trainingType) {
        case "1": // C++ training
            fee = 3000 * numOfPax;
            break;
```

```
        case "2": // Java for beginner
            fee = 3000 * numOfPax;
            break;
        case "3": // HTML5
            fee = 2800 * numOfPax;
            break;
        case "4": // Java EEE
            fee = 5500 * numOfPax;
            break;
        case "5": // Android Programming
            fee = 3200 * numOfPax;
            break;
        default:
            break;
    }

    // Apply discount for students
    if (isStudent) {
        fee *= 0.9; // 10% discount
    }

    return fee;
}
```

Output :

Register for Training

localhost:8080/Lab5/registerTraining.jsp

Register IT Training

Training Registration

IC No

010328140795

Name

ARIF HAIKAL

Type of Training

Android Programming

No of Pax

1

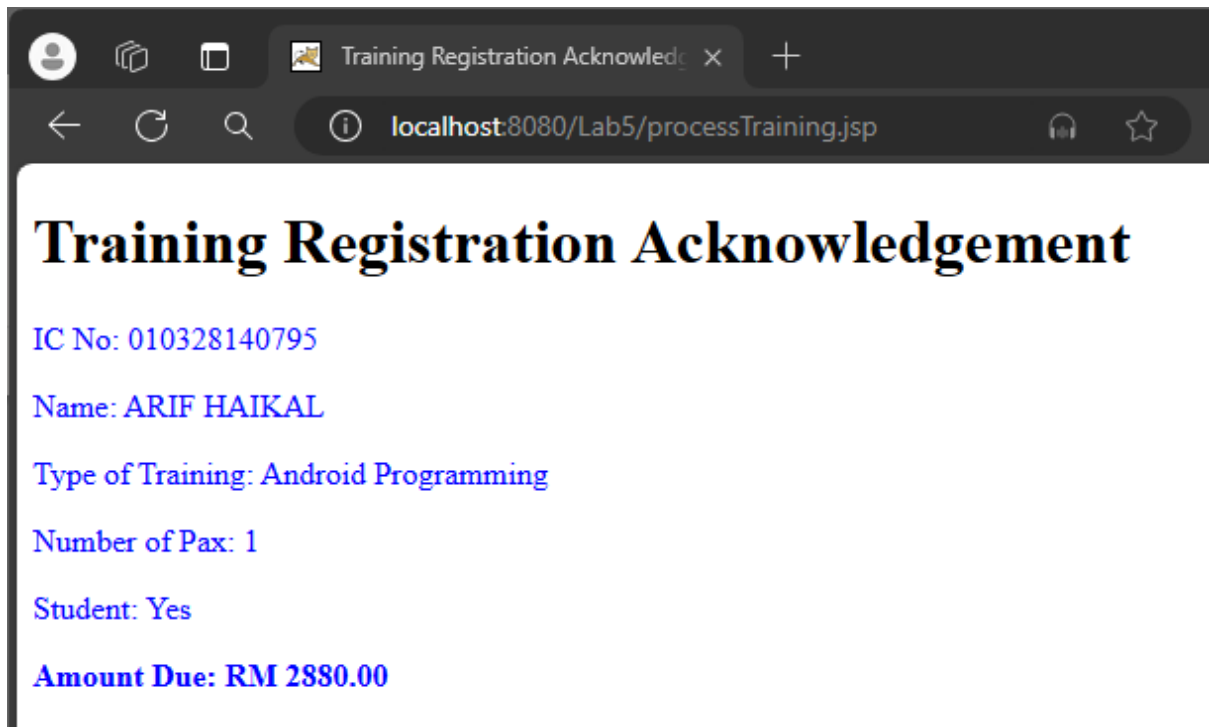
Student

☒ Yes ☐ No

Submit

Cancel

©2024 ARIF HAIKAL

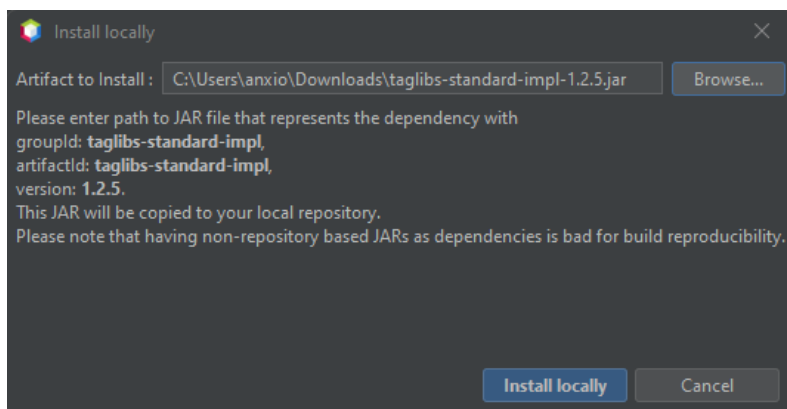
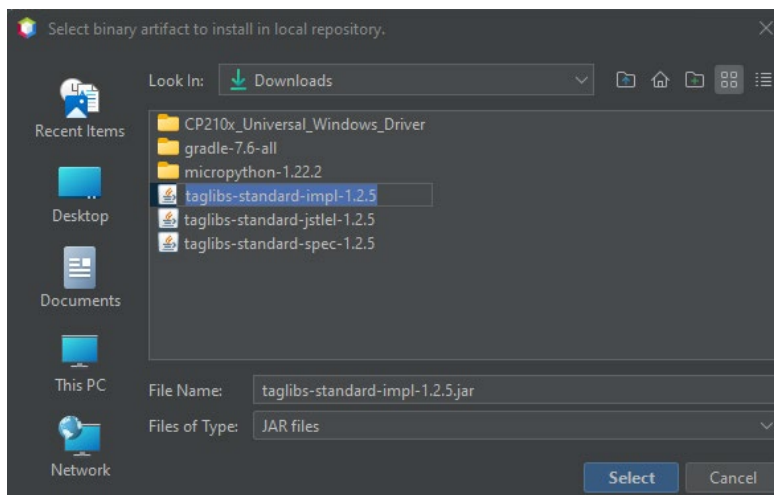
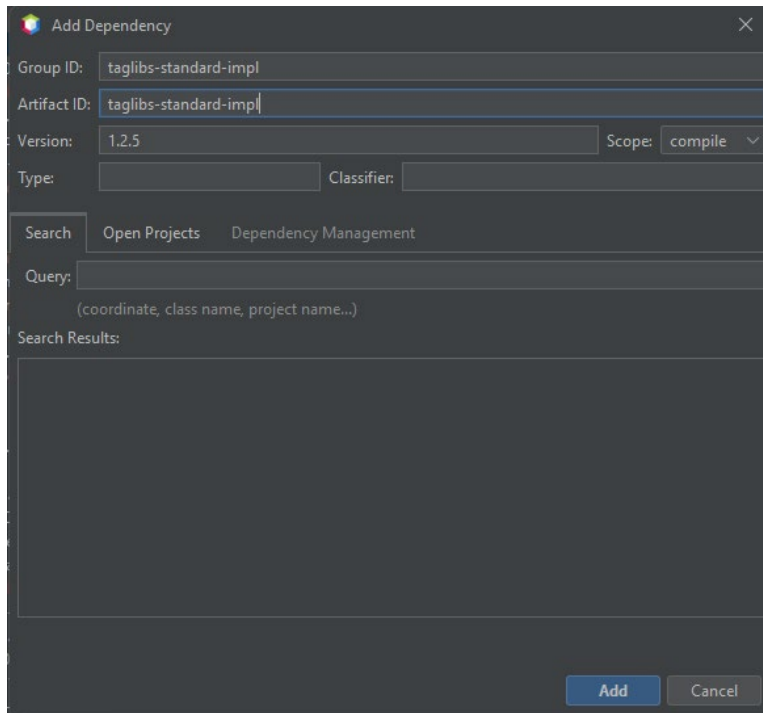


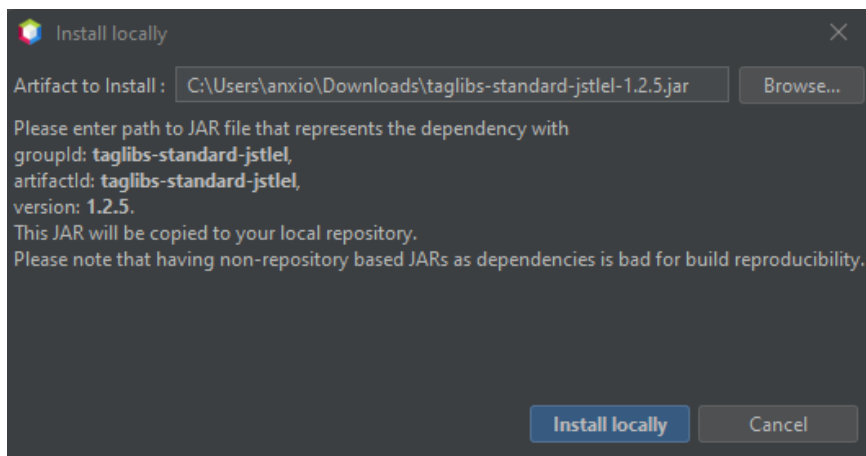
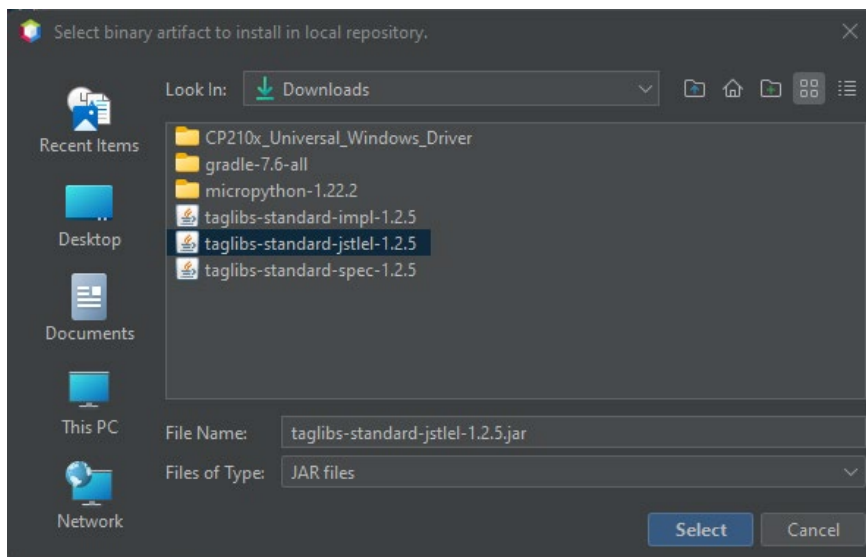
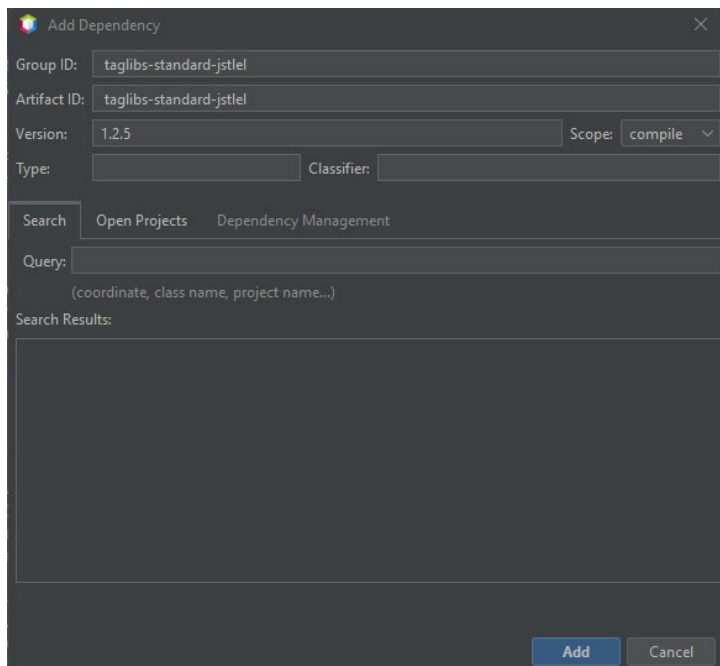
Reflection

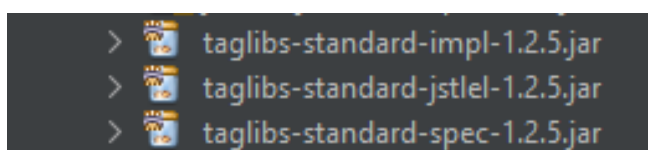
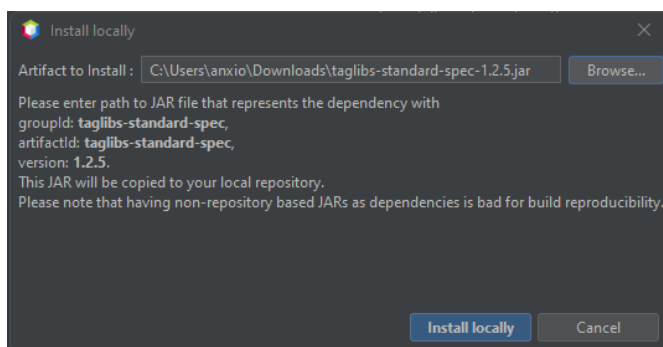
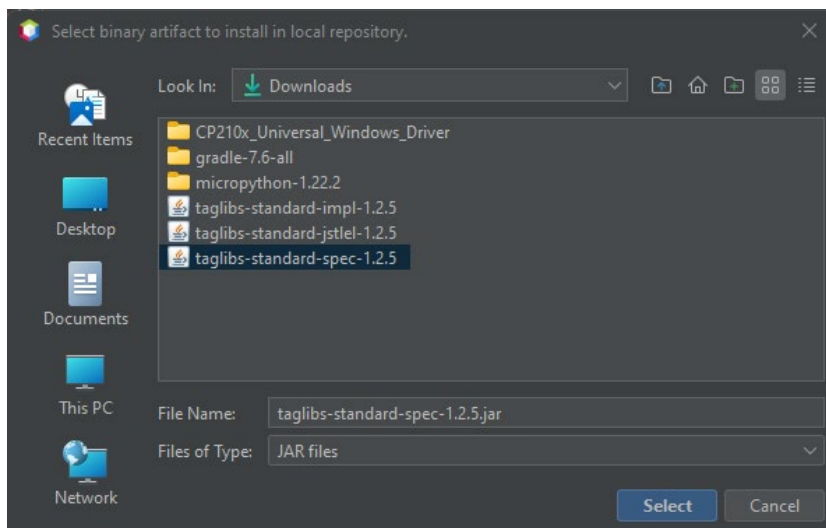
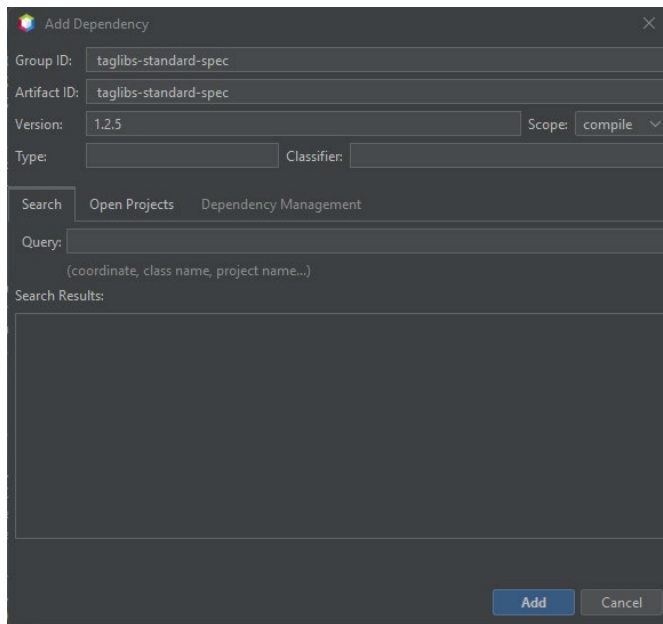
1. What you have learnt from this exercise?
 - How to show the registration detail.

2. Describe the steps how you construct Register JavaBeans?
 - Make a Java class having private properties, public getter and setter methods for each property, and a no-argument constructor in order to build Register JavaBeans.

Task 3: Installing JSTL Taglibs







Task 4: Using Java Standard Tag Library (JSTL)

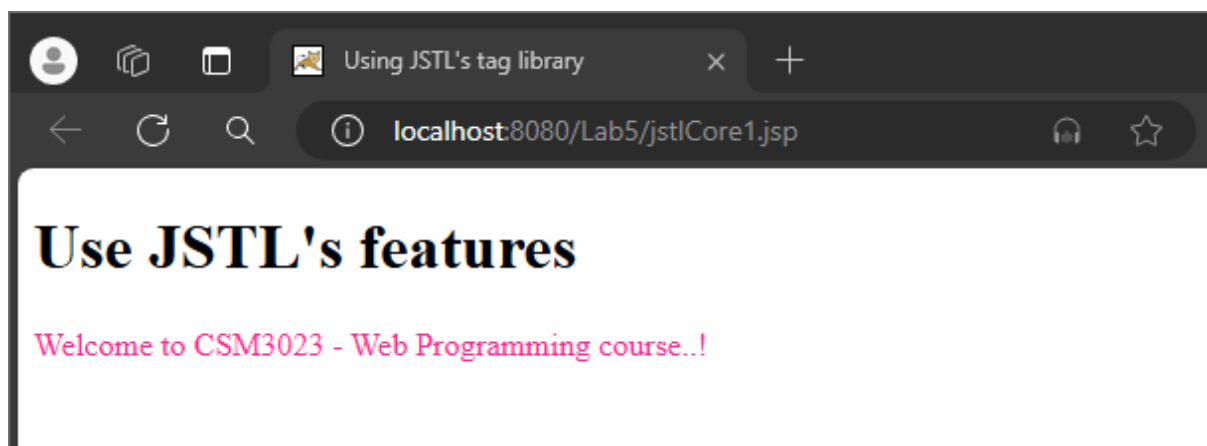
- **Task 1** Assign value “Welcome to CS F3107–Web Programming courses” and display the value inside JSP page

Code :

```
<%--
  Document   : jstlCore1
  Created on : 15 May 2024, 11:46:59 pm
  Author      : ARIF HAIKAL
--%>

<%@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's tag library</title>
  </head>
  <body>
    <h1>Use JSTL's features</h1>
    <c:set var="message" value="Welcome to CSM3023 - Web Programming course..!"
  />
    <p style="color: #FF2994;"> <c:out value="${message}"/></p>
  </body>
</html>
```

Output :



- **Task 2-Using JSTL's core to request information from one page and display the information**

Code :

userRegistration.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
-->
<html>
  <head>
    <title>User Registration</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
    <form action="processUser.jsp" method="POST">

    <fieldset>
      <legend>User Details</legend>
      <br>

      <label for="name">Name:</label>
      <input type="text" id="name" name="name" required><br><br>

      <label for="surname">Surname:</label>
      <input type="text" id="surname" name="surname" required><br><br>

      <label for="password">Password:</label>
      <input type="password" id="password" name="password" required><br><br>

      <label for="gender">Gender:</label>
      <input type="radio" id="male" name="gender" value="Male" required>
      <label for="male">Male</label>
      <input type="radio" id="female" name="gender" value="Female" required>
      <label for="female">Female</label><br><br>

      <label for="userType">Type of User:</label>
      <select id="userType" name="userType">
        <option value="Beginner">Beginner</option>
        <option value="Intermediate">Intermediate</option>
        <option value="Advanced">Advanced</option>
      </select><br><br>

      <label for="preferLanguage">Prefer Language:</label>
      <input type="checkbox" id="malay" name="preferLanguage" value="Malay">
      <label for="malay">Malay</label>
    </form>
  </body>
</html>
```

```



```

processUser.jsp

```

<%--
Document : processUser
Created on : 16 May 2024, 12:07:45 am
Author : ARIF HAIKAL
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>User Information</title>
</head>
<body>
<h2>Retrieve info using c:param & display it using c:out</h2>

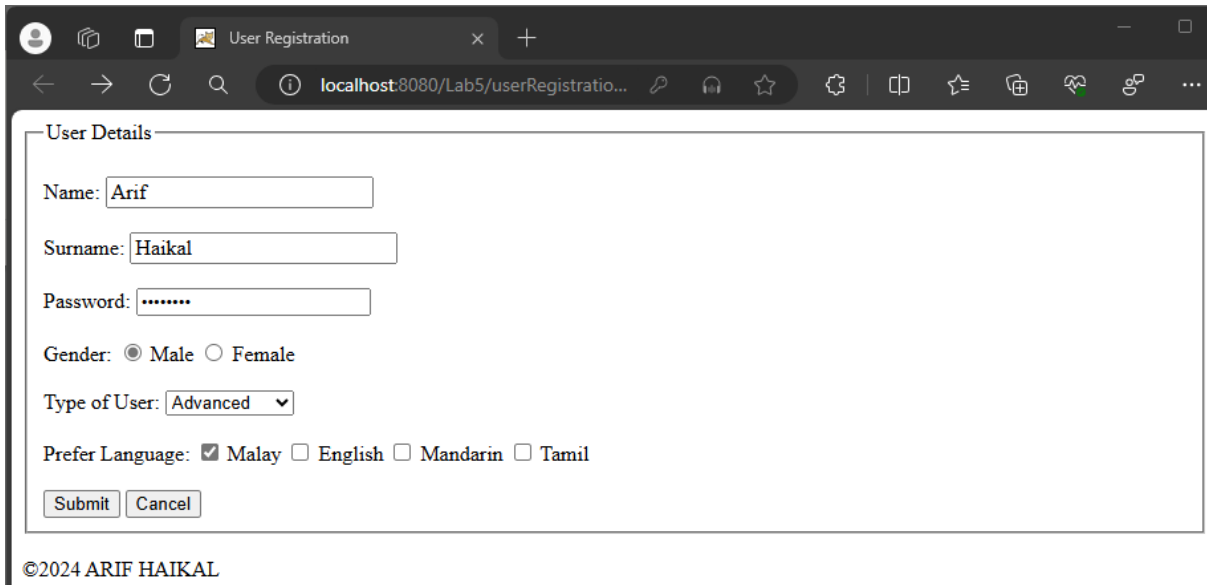
<%
String name = request.getParameter("name");
String surname = request.getParameter("surname");
String password = request.getParameter("password");
String gender = request.getParameter("gender");
String userType = request.getParameter("userType");
String preferLanguage = request.getParameter("preferLanguage");
%>

<p style="color: #B469FF;"><b>First Name:</b> <%= name %></p>
<p style="color: #B469FF;"><b>Surname:</b> <%= surname %></p>
<p style="color: #B469FF;"><b>Password:</b> <%= password %></p>
<p style="color: #B469FF;"><b>Gender:</b> <%= gender %></p>
<p style="color: #B469FF;"><b>Type of user:</b> <%= userType %></p>
<p style="color: #B469FF;"><b>Prefer Language:</b> <%= preferLanguage %></p>

</body>
</html>

```

Output :



User Details

Name:

Surname:

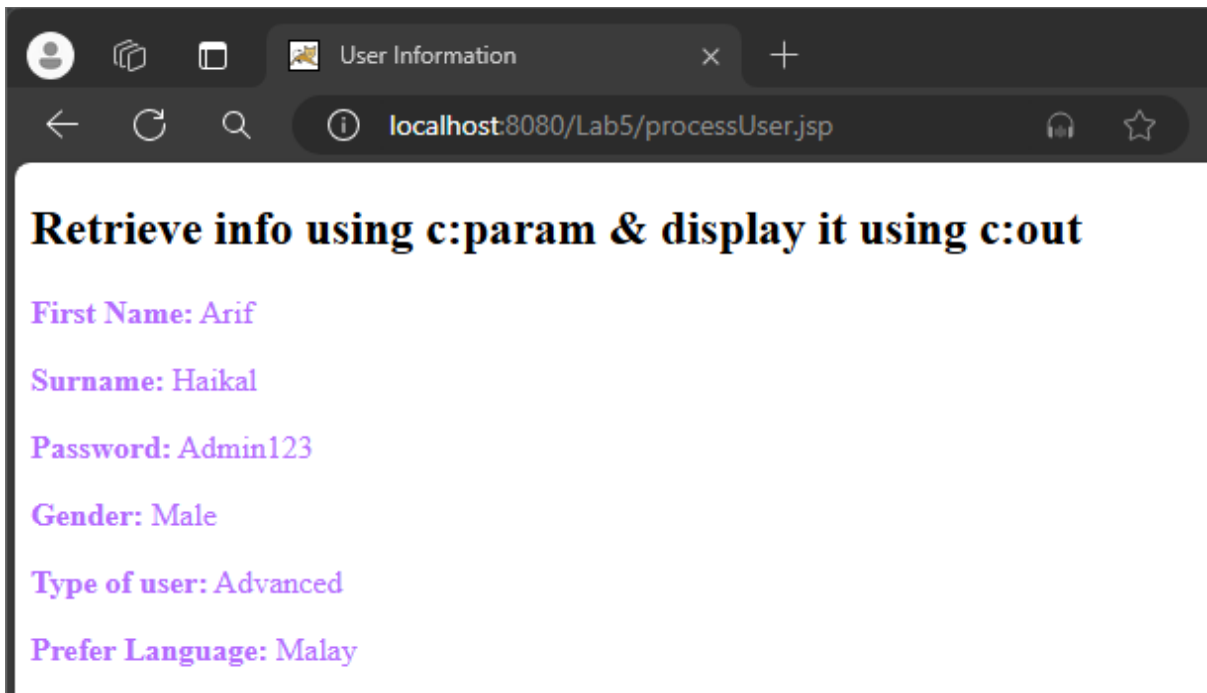
Password:

Gender: ☒ Male ☐ Female

Type of User:

Prefer Language: ☒ Malay ☐ English ☐ Mandarin ☐ Tamil

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

First Name: Arif

Surname: Haikal

Password: Admin123

Gender: Male

Type of user: Advanced

Prefer Language: Malay

- **Task 3 - Using JSTL's fmt to format number and currency**

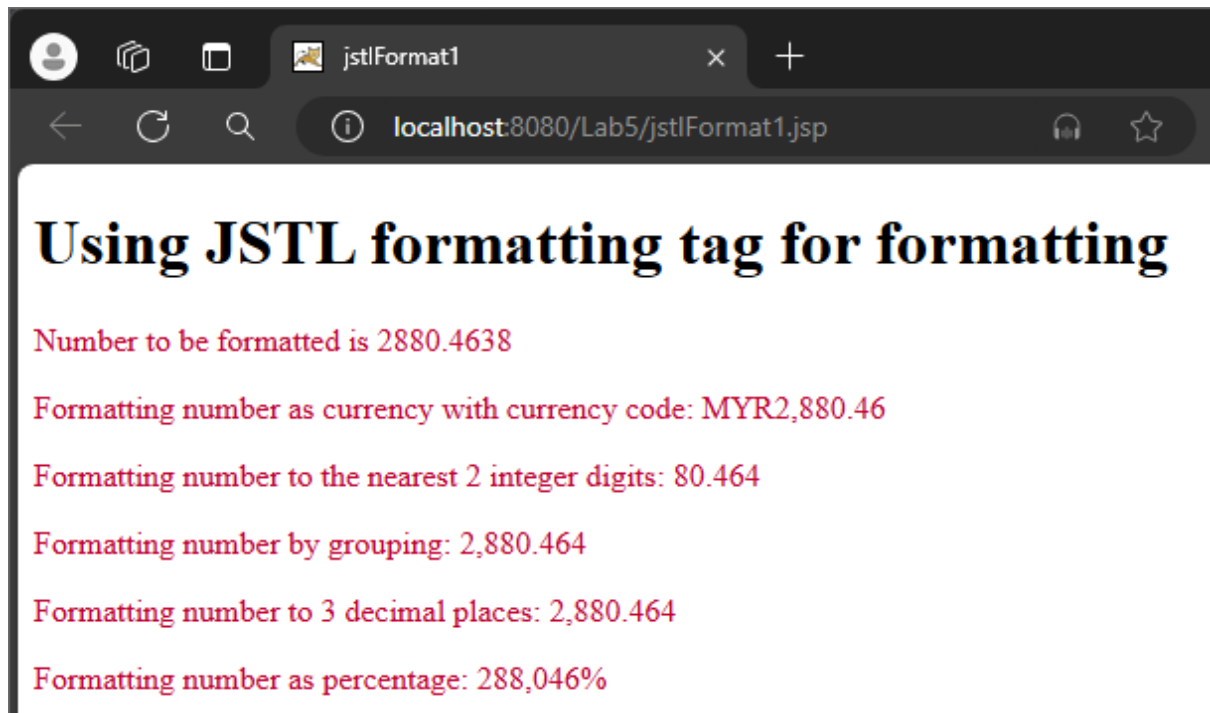
Code :

```
<%--
  Document   : jstlFormat1
  Created on : 15 May 2024, 4:43:04 pm
  Author    : ARIF HAIKAL
--%>

<%@ page contentType="text/html; charset=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>jstlFormat1</title>
  <style>
    .formatted-output {
      color: #C2002D;
    }
  </style>
</head>
<body>
  <h1>Using JSTL formatting tag for formatting</h1>

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

Output :



Reflection

1. What the purpose of using JSTL's tag library?
 - JSTL's tag library is meant to make the process of creating dynamic web pages easier by offering reusable, standard tags for common tasks like data formatting, conditionals, and iteration.
2. List FIVE(5) categories of JSTL library.
 - Core
 - Formatting
 - SQL
 - XML
 - Functions

Task 5: Using JSP Standard Tag Library

- **Task 1 Using JSTL's fmt to format Date**

Code :

```
<%--
  Document   : fmt_formatDate
  Created on : 16 May 2024, 12:35:55 am
  Author    : ARIF HAIKAL
--%>

<%@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 example</title>
  </head>
  <body>
    <h2>fmt:parseDate example</h2>

    <!-- Declare JSTL's taglib directives -->
    <%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>
    <%@ taglib uri="http://java.sun.com/jsp/jstl/fmt" prefix="fmt" %>

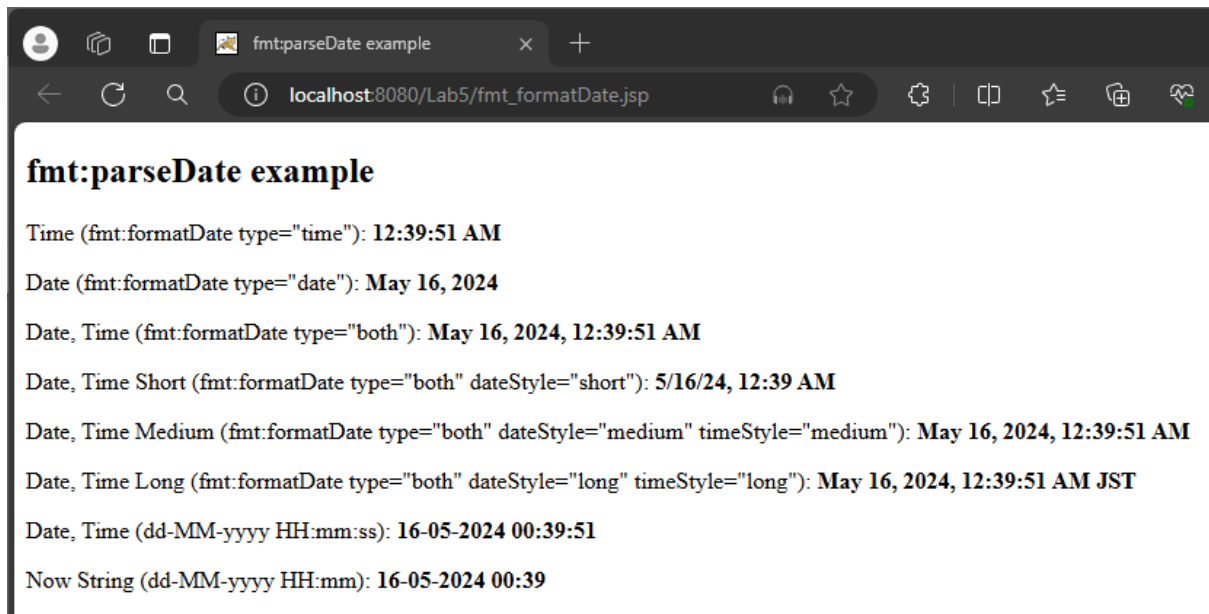
    <c:set var="now" value="<%=new java.util.Date()%>" />
    <p>
      Time (fmt:formatDate type="time"):
      <strong>
        <fmt:formatDate type="time" value="{now}" />
      </strong>
    </p>
    <p>
      Date (fmt:formatDate type="date"):
      <strong>
        <fmt:formatDate type="date" value="{now}" />
      </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"):
      <strong>
        <fmt:formatDate type="both" dateStyle="short" timeStyle="short" value="{now}"
    />
```

```

        </strong>
    </p>
    <p>
        Date, Time Medium (fmt:formatDate type="both" dateStyle="medium"
timeStyle="medium"):
        <strong>
            <fmt:formatDate type="both" dateStyle="medium" timeStyle="medium"
value="{now}" />
        </strong>
    </p>
    <p>
        Date, Time Long (fmt:formatDate type="both" dateStyle="long" timeStyle="long"):
        <strong>
            <fmt:formatDate type="both" dateStyle="long" timeStyle="long" value="{now}"
/>
        </strong>
    </p>
    <p>
        Date, Time (dd-MM-yyyy HH:mm:ss):
        <strong>
            <fmt:formatDate pattern="dd-MM-yyyy HH:mm:ss" value="{now}" />
        </strong>
    </p>
    <!-- Store in variable -->
    <fmt:formatDate pattern="dd-MM-yyyy HH:mm" value="{now}" var="nowString"/>
    <p>
        Now String (dd-MM-yyyy HH:mm):
        <strong>
            <c:out value="{nowString}" />
        </strong>
    </p>
</body>
</html>

```

Output :



- **Task 2 - Using JSTL's fmt to Parse Date**

Code :

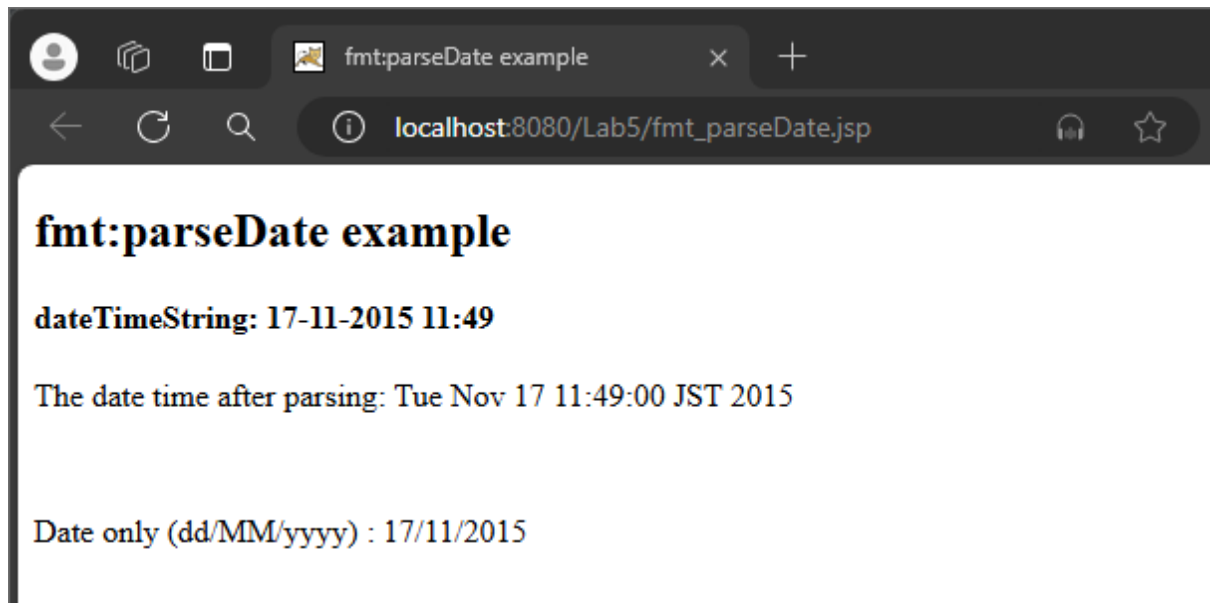
```
<%--
  Document : fmt_parseDate
  Created on : 16 May 2024, 12:48:41 am
  Author : ARIF HAIKAL
--%>

<%@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 example</title>
  </head>
  <body>
    <h2>fmt:parseDate example</h2>
    <c:set var="dateTimeString" value="17-11-2015 11:49" />
    <h4>
      dateTimeString:
      <c:out value="${dateTimeString}"/>
    </h4>

    <!-- Parsing a date time String, and store in a variable type of java-->
    <fmt:parseDate value="${dateTimeString}"
      type="both" var="parsedDatetime" pattern="dd-MM-yyyy HH:mm" />

    <p>
      The date time after parsing:
      <c:out value="${parsedDatetime}" />
    </p>
    <br/>
    <p>
      Date only (dd/MM/yyyy) :
      <fmt:formatDate value="${parsedDatetime}" pattern="dd/MM/yyyy"/>
    </p>
  </body>
</html>
```

Output :



Reflection

1. What you have learnt from this exercise?
 - To get the details time and date using JSP.

Exercise

- **Number 1**

Code:

circle.jsp

```
<%--
  Document   : circle
  Created on : 16 May 2024, 1:27:46 am
  Author    : ARIF HAIKAL
--%>

<%@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>Calculate Circle Area and Perimeter</title>
  </head>
  <body>
    <h2>Calculate Circle Area and Perimeter</h2>
    <form method="post" action="calculate.jsp">Enter the radius of the circle: <input
type="text" name="radius">
      <input type="submit" value="Calculate">
    </form>
  </body>
</html>
```

:

calculate.jsp

```
<%--
  Document   : calculate
  Created on : 16 May 2024, 1:27:51 am
  Author    : ARIF HAIKAL
--%>

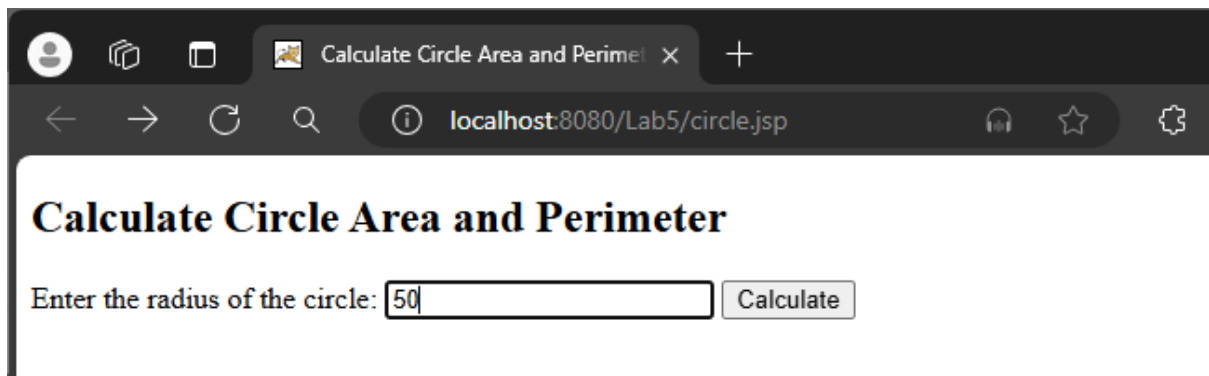
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>
<%@ taglib uri="http://java.sun.com/jsp/jstl/fmt" prefix="fmt" %>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>Calculate Circle Area and Perimeter</title>
  </head>
  <body>
    <h2>Results</h2>
```



```
<%-- Retrieve radius from request --%>
<c:set var="radius" value="${param.radius}" />
<%-- Calculate area and perimeter --%>
<c:set var="area" value="${3.14159265 * radius * radius}" />
<c:set var="perimeter" value="${2 * 3.14159265 * radius}" />

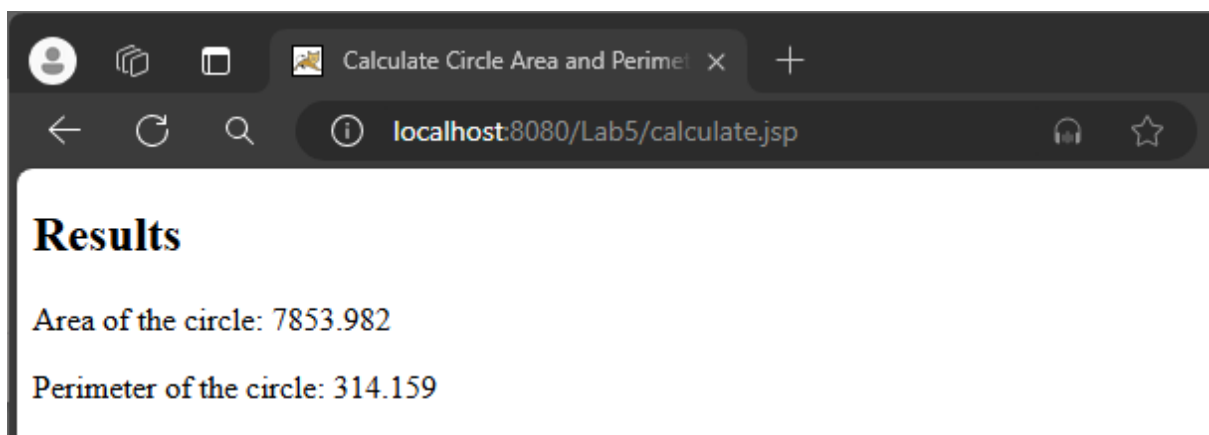
<p>Area of the circle: <fmt:formatNumber value="${area}" pattern="###.###"/></p>
<p>Perimeter of the circle: <fmt:formatNumber value="${perimeter}"
pattern="###.###"/></p>
</body>
</html>
```

Output:



Calculate Circle Area and Perimeter

Enter the radius of the circle:



Results

Area of the circle: 7853.982

Perimeter of the circle: 314.159

- **Number 2**

Code:

brokerage.jsp

```
<%--
  Document   : brokerage
  Created on : 16 May 2024, 1:33:30 am
  Author      : ARIF HAIKAL
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="lab5.com.processBrokerage"%>
<%@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>Byfixfear Trading Broker</title>
  </head>
  <body>
    <h1>Welcome to Byfixfear Trading Broker!</h1>
    <%
      int shares = 800;
      double price = 10.50;
      //instantiate broker object
      processBrokerage broker = new processBrokerage(shares, price);
    %>

    <c:set var="amount" value="<%=broker.getAmountB(shares, price)%>" />
    <c:set var="commission" value="<%=broker.getCommission(shares, price)%>" />
    <c:set var="total" value="<%=broker.getAmountA(shares, price)%>" />

    <p>Amount (without commission): RM <fmt:formatNumber type="number"
minFractionDigits="2" value="{amount}" /></p>
    <p>Commission charged: RM <fmt:formatNumber type="number"
minFractionDigits="2" value="{commission}" /></p>
    <p>Total amount paid (commission included): RM <fmt:formatNumber type="number"
minFractionDigits="2" value="{total}" /></p>
  </body>
</html>
```

processBrokerage.java

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
 this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Other/File.java to edit this template
 */
package lab5.com;

/**
 *
 * @author ARIF HAIKAL
 */
public class processBrokerage {

    private int shares;
    private double price;

    public processBrokerage() {
    }

    public processBrokerage(int shares, double price) {
        this.shares = shares;
        this.price = price;
    }

    public int getShares() {
        return shares;
    }

    public void setShares(int shares) {
        this.shares = shares;
    }

    public double getPrice() {
        return price;
    }

    public void setPrice(double price) {
        this.price = price;
    }

    public double getAmountB(int shares, double price){
        double amountB = shares * price;
        return amountB;
    }

    public double getCommission(int shares, double price){
        double commission;
        commission = shares * price * 0.05;
        return commission;
    }

    public double getAmountA(int shares, double price){
        double amountA = shares * price;
        double commission = shares * price * 0.05;
    }
}
```

```
    return amountA + commission;  
  }  
}
```

Output:

