



**UNIVERSITI MALAYSIA TERENGGANU**

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**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**

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(S67250)

## Task 1: Using Scriptlet to Access a Simple JavaBeans

Code :

Message1.jsp

```
<!--
    Document    : Message1
    Created on  : 8 May 2024, 2:22:48 pm
    Author     : ashaz
-->

<%@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 CSF3107 course....!");
        out.println("<p>" + objMsg.getMsg() + "</p>");
        out.println("<p>Current date is " + new java.util.Date() + "</p>");
    %>
</body>
</html>
```

Message.java

```
package lab5.com;

/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */

/**
 *
 * @author ashaz
 */

public class Message {
    private String msg;

    public String getMsg() {
        return msg;
    }

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

Output :



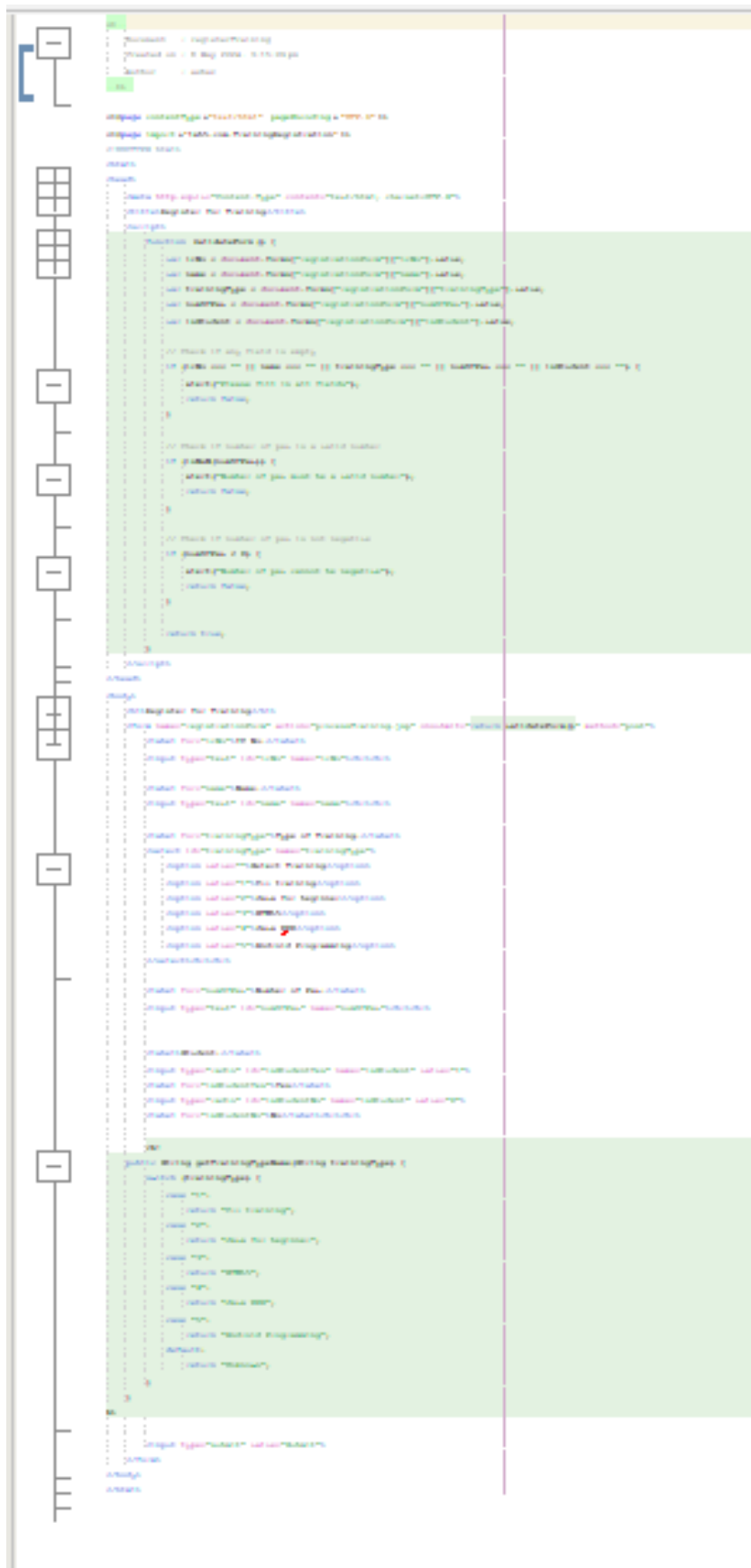
## **Reflection**

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



## processTraining.jsp

```
<!--
Document    : pocessTraining
Created on  : 8 May 2024, 3:33:18 pm
Author      : ashaz
-->

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="lab5.com.TrainingRegistration"%>
<!DOCTYPE html>

<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Processing Training Registration</title>
</head>
<body>
<%
// Retrieve form data
String icNo = request.getParameter("icNo");
String name = request.getParameter("name");
String trainingType = request.getParameter("trainingType");
int numOfPax = Integer.parseInt(request.getParameter("numOfPax"));
boolean isStudent = request.getParameter("isStudent").equals("1");

// Create an instance of TrainingRegistration
TrainingRegistration registration = new TrainingRegistration();
registration.setIcNo(icNo);
registration.setName(name);
registration.setTrainingType(trainingType);
registration.setNumOfPax(numOfPax);
registration.setStudent(isStudent);

// Calculate total fee
double totalFee = registration.calculateTotalFee();
%>

<h1>Training Registration Acknowledgement</h1>
<p>IC No: <%= registration.getIcNo() %></p>
<p>Name: <%= registration.getName() %></p>
<p>Type of Training: <%= registration.getTrainingType() %></p>
<p>Number of Pax: <%= registration.getNumOfPax() %> <%= "person/s" %></p>
<p>Student: <%= registration.isStudent() ? "Yes" : "No" %></p>
<p>Total Fee: RM <%= totalFee %></p>

</body>
</html>
```

## TrainingRegister.java

```

//
 * Click on the Project Structure icon in the IDE toolbar to change this license
 * Click on the Project Structure icon in the IDE toolbar to change this license
 */
package lab01.com;

```

```

//
 *
 * @author: Author
 */
public class TrainingRegistration {
    private String idNo;
    private String name;
    private String trainingType;
    private int numOTPass;
    private boolean isEnrolled;

    // Getters and setters
    public String getIdNo() {
        return idNo;
    }

    public void setIdNo(String idNo) {
        this.idNo = idNo;
    }

    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 getNumOTPass() {
        return numOTPass;
    }

    public void setNumOTPass(int numOTPass) {
        this.numOTPass = numOTPass;
    }

    public boolean isEnrolled() {
        return isEnrolled;
    }

    public void setEnrolled(boolean isEnrolled) {
        isEnrolled = isEnrolled;
    }

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

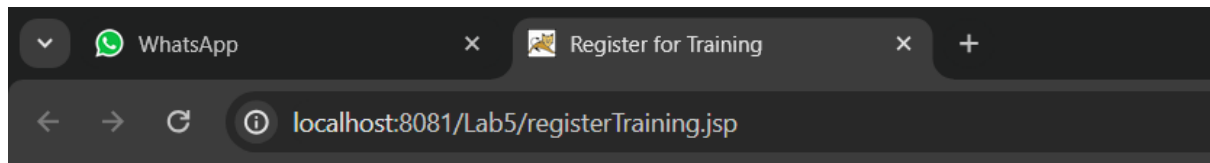
        switch (trainingType) {
            case "1": // C++ Training
                fee = 3000 * numOTPass;
                break;
            case "2": // Java Training
                fee = 3000 * numOTPass;
                break;
            case "3": // Python
                fee = 2500 * numOTPass;
                break;
            case "4": // Java JSP
                fee = 3500 * numOTPass;
                break;
            case "5": // Android Programming
                fee = 3200 * numOTPass;
                break;
            default:
                break;
        }

        // Apply discount fee
        if (isEnrolled) {
            fee *= 0.9; // 10% discount
        }

        return fee;
    }
}

```

Output :



## Register for Training

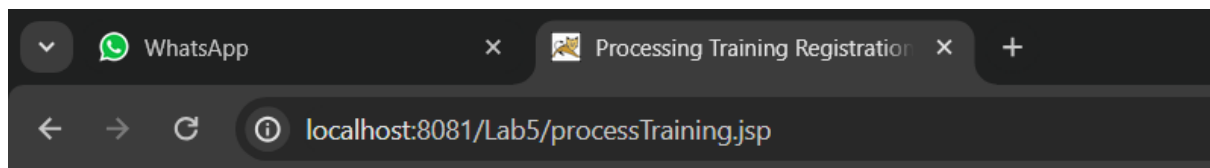
IC No:

Name:

Type of Training:

Number of Pax:

Student: ☒ Yes ☐ No



## Training Registration Acknowledgement

IC No: 020531060327

Name: Shazrul Izzuan

Type of Training: 1

Number of Pax: 1 person/s

Student: Yes

Total Fee: RM 2700.0

## 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 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

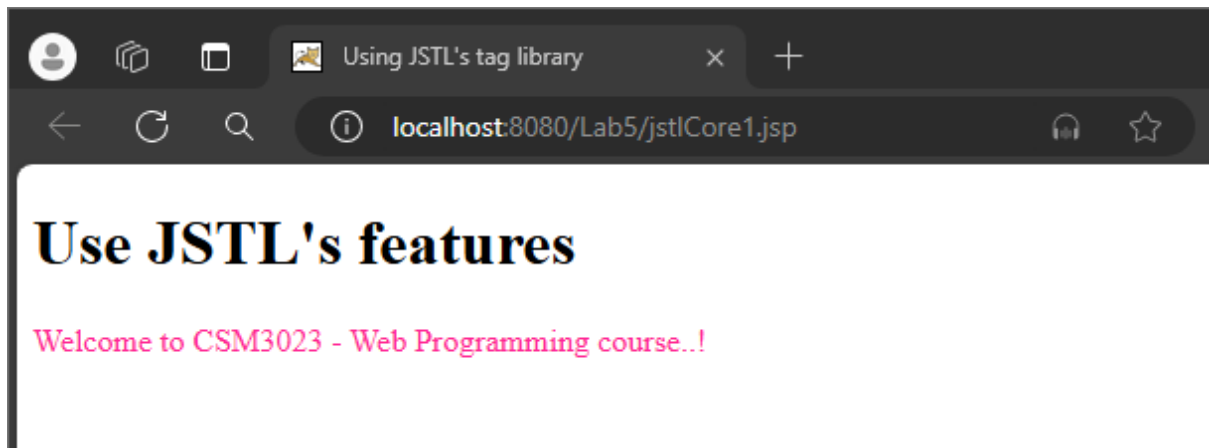
Code :

```
<!--
Document   : jstlCore1
Created on : 13 May 2024, 11:34:02 pm
Author    : ashaz
-->

<%@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 course..!" />
    <p> <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 lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>User Registration</title>
</head>
<body>
  <form action="processUser.jsp" method="POST">
    <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>
    <input type="checkbox" id="english" name="preferLanguage" value="english">
    <label for="english">English</label>
    <input type="checkbox" id="mandarin" name="preferLanguage" value="mandarin">
    <label for="mandarin">Mandarin</label>
    <input type="checkbox" id="tamil" name="preferLanguage" value="tamil">
    <label for="tamil">Tamil</label><br><br>

    <input type="submit" value="Submit">
    <input type="button" value="Cancel">
  </form>
  <footer>
    &copy; Shasrul Issuan
  </footer>
</body>
</html>
```

## processUser.jsp

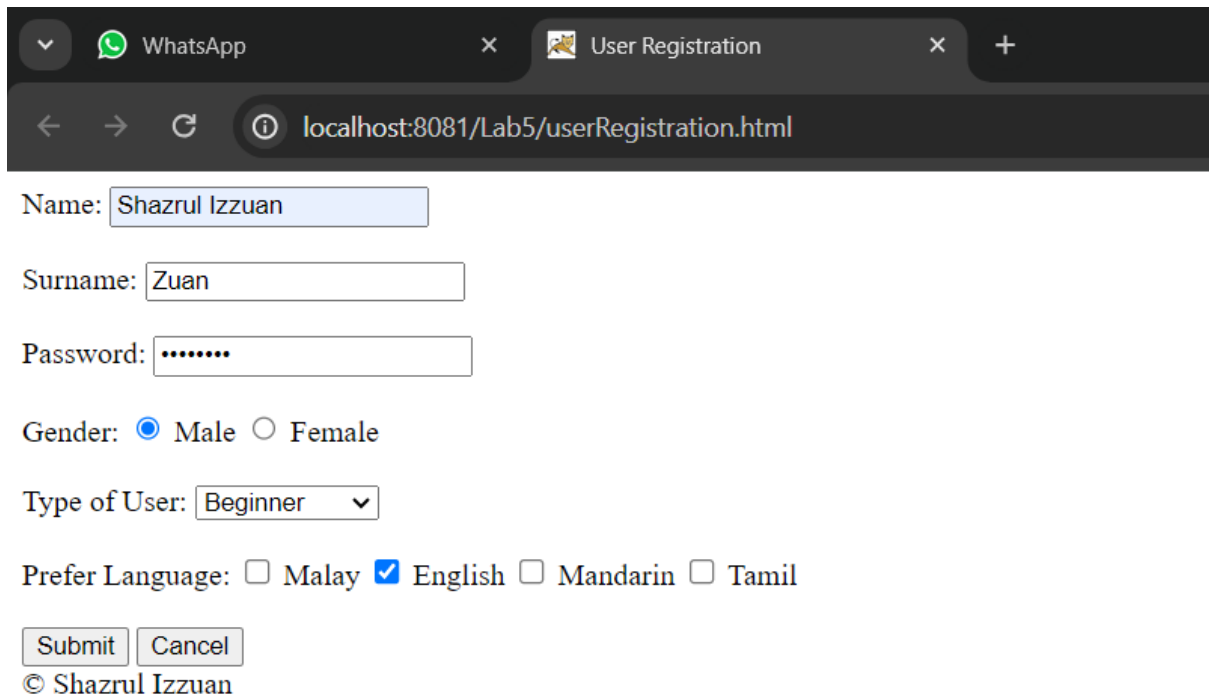
```
<%--
Document    : processUser
Created on  : 14 May 2024, 11:43:50 am
Author     : ashaz
--%>

<%@ page language="java" contentType="text/html; charset=UTF-8" 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>User Information</title>
</head>
<body>
<h2>Retrieve info using request parameters & display it using JSP expression</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><b>First Name:</b> <%= name %></p>
<p><b>Surname:</b> <%= surname %></p>
<p><b>Password:</b> <%= password %></p>
<p><b>Gender:</b> <%= gender %></p>
<p><b>Type of user:</b> <%= userType %></p>
<p><b>Prefer Language:</b> <%= preferLanguage %></p>
</body>
</html>
```

Output :



Name:

Surname:

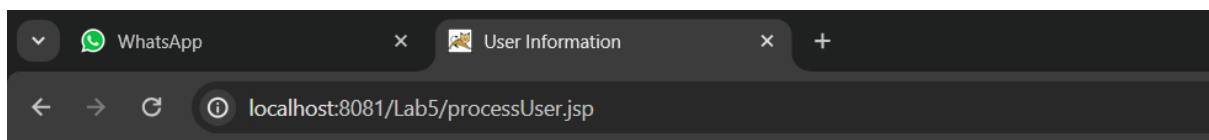
Password:

Gender: ☒ Male ☐ Female

Type of User:

Prefer Language: ☐ Malay ☒ English ☐ Mandarin ☐ Tamil

© Shazrul Izzuan



localhost:8081/Lab5/processUser.jsp

## Retrieve info using request parameters & display it using JSP expression

**First Name:** Shazrul Izzuan

**Surname:** Zuan

**Password:** Ahmad@34

**Gender:** male

**Type of user:** beginner

**Prefer Language:** english

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

Code :

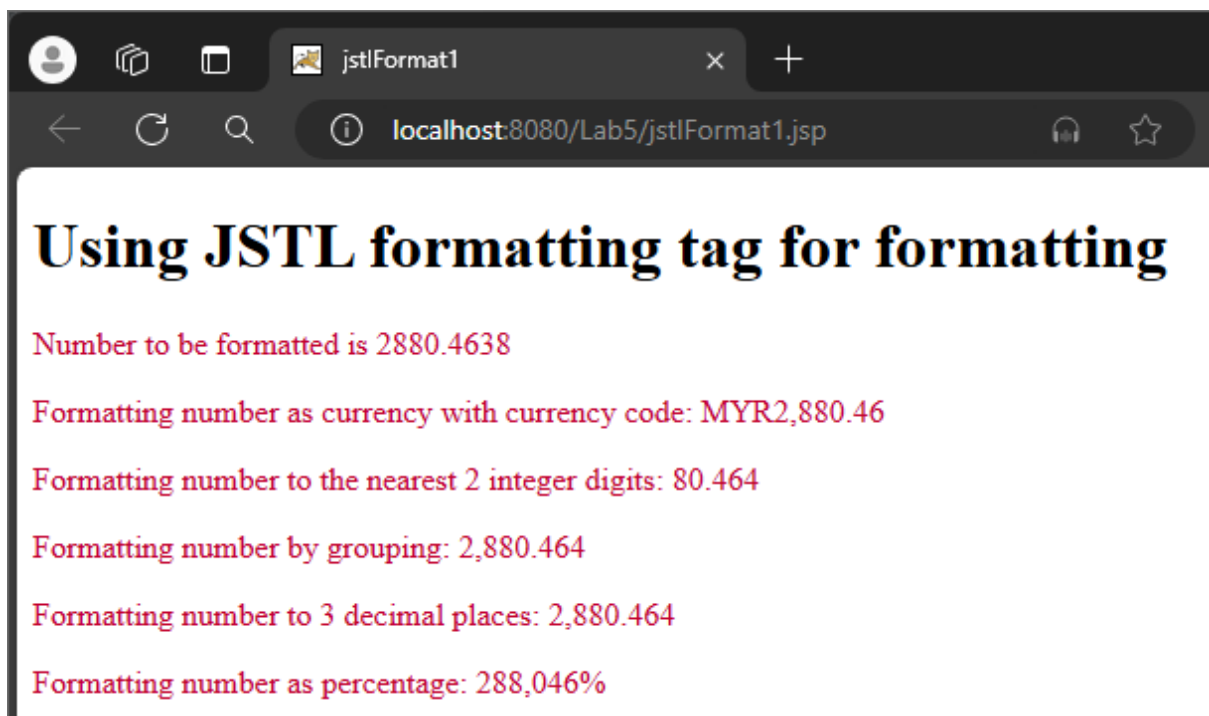
```
<!--
Document   : jstlFormat1
Created on : 14 May 2024, 11:52:58 am
Author    : ashaz
-->

<%% 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>JSP Page</title>
</head>
<body>
<h1>Using JSTL formatting tag for formatting</h1>

<!--Assign specific number to variable -->
<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 to 3 decimal places : <fmt:formatNumber type="number" maxFractionDigits="3" value="${total}"/></p>
<p>Formatting as percentage : <fmt:formatNumber type="percent" value="${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 : fnt_formatDate
Created on : 14 May 2024, 11:53:55 am
Author : ashan

<!--
-->

<@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" >

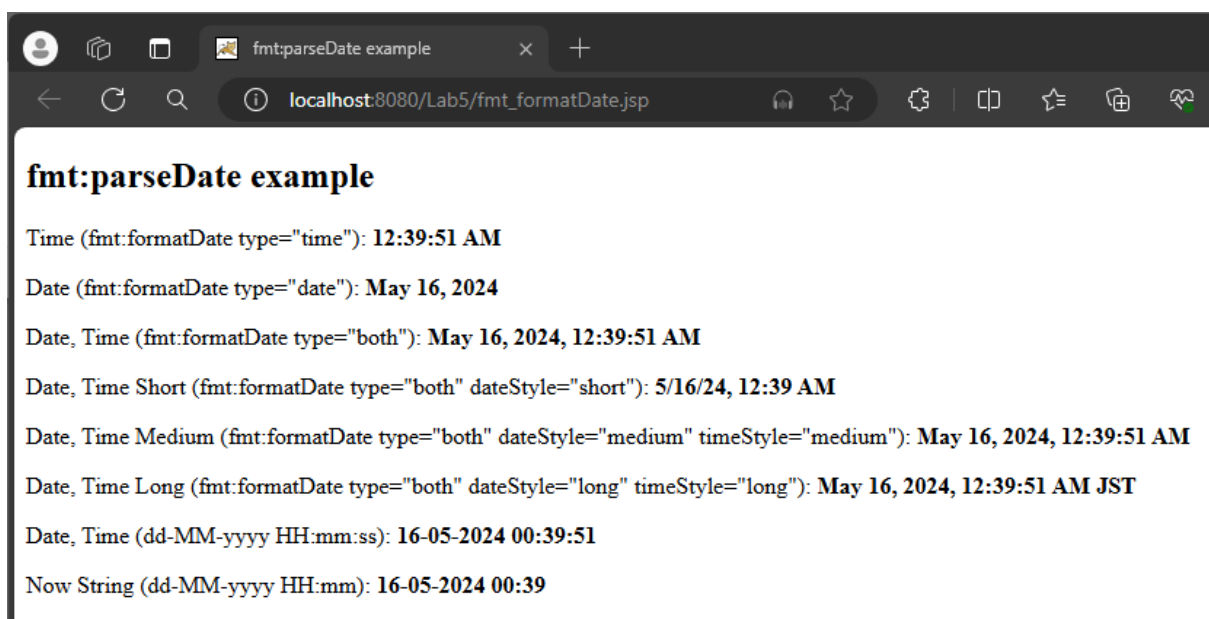
<DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>fnt:formatDate feature</title>
</head>
<body>
<h2>fnt:formatDate feature</h2>

<!-- 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="${new java.util.Date()}"/>
<cp>
Date (fnt:formatDate type="time"):
<strong>
<fmt:formatDate type="time" value="${now}" />
</strong>
</cp>
<cp>
Date (fnt:formatDate type="date"):
<strong>
<fmt:formatDate type="date" value="${now}" />
</strong>
</cp>
<cp>
Date, Time (fnt:formatDate type="both"):
<strong>
<fmt:formatDate type="both" value="${now}" />
</strong>
</cp>
<cp>
Date, Time Short (fnt:formatDate type="both" dateTimeStyle="short"):
<strong>
<fmt:formatDate type="both" dateTimeStyle="short" timeStyle="short" value="${now}" />
</strong>
</cp>
<cp>
Date, Time Medium (fnt:formatDate type="both" dateTimeStyle="medium" timeStyle="medium"):
<strong>
<fmt:formatDate type="both" dateTimeStyle="medium" timeStyle="medium" value="${now}" />
</strong>
</cp>
<cp>
Date, Time Long (fnt:formatDate type="both" dateTimeStyle="long" timeStyle="long"):
<strong>
<fmt:formatDate type="both" dateTimeStyle="long" timeStyle="long" value="${now}" />
</strong>
</cp>
<cp>
Date, Time (dd-MM-yyyy HH:mm:ss):
<strong>
<fmt:formatDate pattern="dd-MM-yyyy HH:mm:ss" value="${now}" />
</strong>
</cp>
<!-- Store in variable -->
<fmt:formatDate pattern="dd-MM-yyyy HH:mm" value="${now}" var="nowString"/>
<cp>
Now String (dd-MM-yyyy HH:mm):
<strong>
<c:out value="${nowString}" />
</strong>
</cp>
</body>
</html>

```

Output :





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

Code :

```
<!--
Document    : fmt_parseDate
Created on  : 14 May 2024, 11:55:39 am
Author      : ashaz
-->

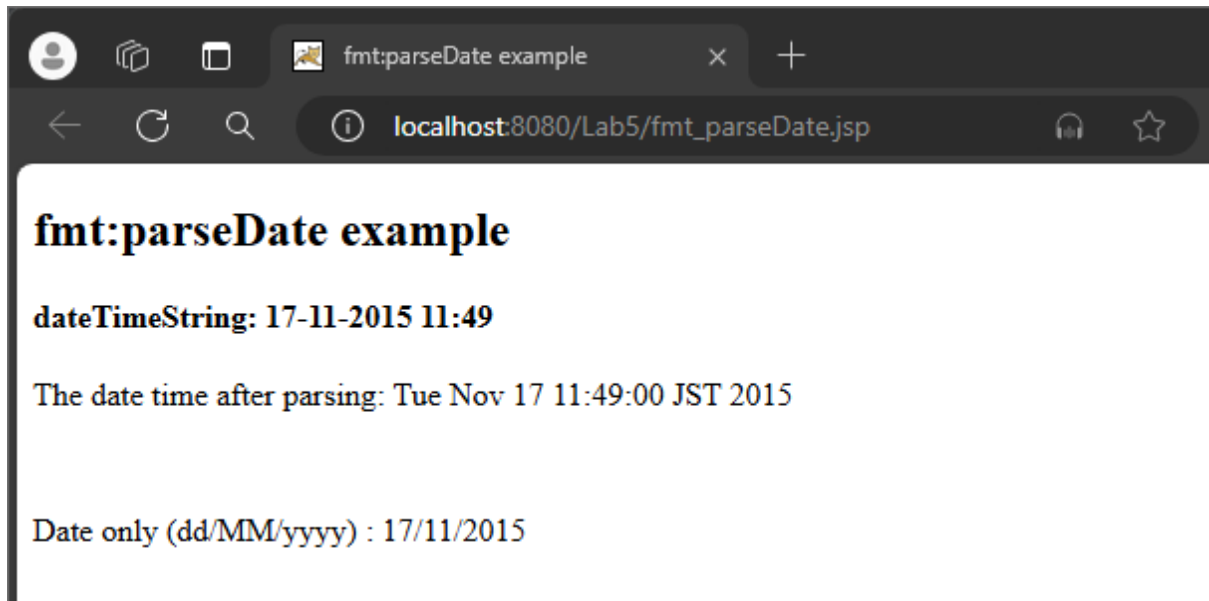
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>
<%@ taglib uri="http://java.sun.com/jsp/jstl/fmt" prefix="fmt" %>
<!DOCTYPE html>

<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  : 14 May 2024, 11:57:06 am
    Author      : ashaz
-->

<%@ page contentType="text/html; charset=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>
```

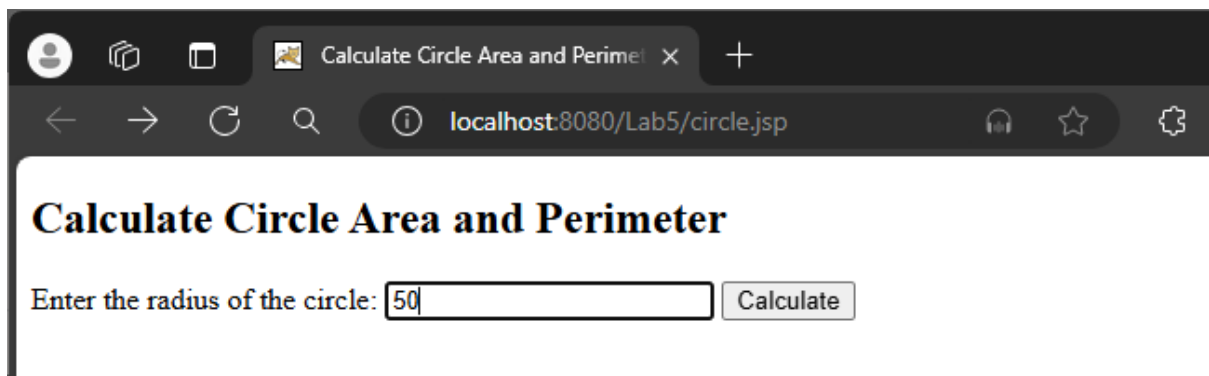
calculate.jsp

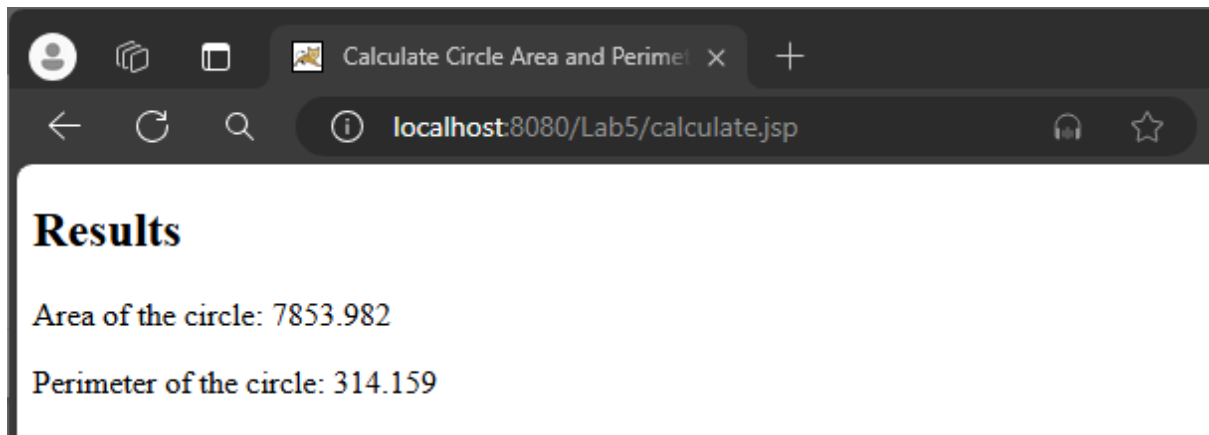
```
<!--
Document    : calculate
Created on  : 14 May 2024, 11:58:12 am
Author      : ashaz
-->

<%@ 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>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:





- **Number 2**

Code:

brokerage.jsp

```
<!--
Document   : brokerage
Created on : 15 May 2024, 2:31:45 pm
Author    : ashaz
-->

<%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>LocoTex Trading Broker</title>
</head>
<body>
<h1>Welcome to LocoTex Trading Broker!</h1>
<%
//initialize all variables needed
int shares = 800;
double price = 10.50;
//instantiate broker object
processBrokerage broker = new processBrokerage(shares, price);
%>

<!-- declare variable using Taglib approach (c:set)-->
<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)}" />

<!-- output the value using fmt:format to ensure the output is 2 decimal places -->
<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/Classes/Class.java to edit this template
 */
package lab5.com;

/**
 *
 * @author ashaz
 */
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;
    }

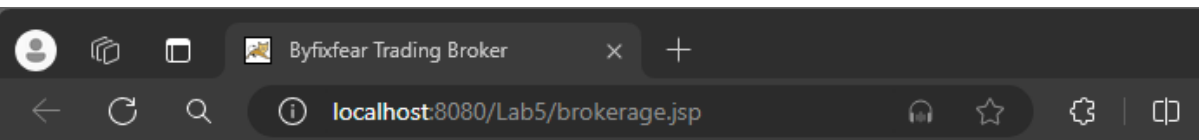
    public void setPrice(double price) {
        this.price = price;
    }

    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:



# Welcome to Byfixfear Trading Broker!

Amount (without commission): RM 8,400.00

Commission charged: RM 420.00

Total amount paid (commission included): RM 8,820.00