CSM3023 WEB BASED APPLICATION DEVELOPMENT (K1)

BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH HONORS

SEMESTER 2 2023/2024

LAB 6 – JSP: JavaBeans & Java Standard Tag Library (JSTL)

Prepared by:

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Task1:
Coding:
Message1.jsp

```jsp
<%--
    Document   : Message1
    Created on : 8 May 2024, 2:42:58 pm
    Author     : Lenovo
--%>

<%@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 Scriplet</title>
    </head>
    <body>
        <h1>Using JSP Scriplet to call JavaBeans</h1>
        <%
            Message objMsg = new Message();
            // Assign value..
            objMsg.setMsg("Welcome to CSM3203 course...!");
            // Display value...
            out.println("<p>" + objMsg.getMsg() + "</p>");
            // Add date..
            out.println("<p>Current date is " + new java.util.Date() + "</p>");
        %>
    </body>
</html>
```

Message.java

```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 Lenovo
 */
public class Message {
    private String msg;

    public Message() {
    }

    public Message(String msg) {
        this.msg = msg;
    }

    public String getMsg() {
        return msg;
    }

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

}
```

Output:

Reflection

1. What you have learnt from this exercise?
   I have learnt how to use Javabeans to create object and use its attribute.

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

and Java Scriptlet.

Javabeans create object using <JSP:usebean> tag while scriplet create object normal way.

Task 2:
Coding:
registerTraining.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>Zass Coder Camp</title>
    </head>
    <body>
        <h1>Register IT Training</h1>
        <fieldset>
            <legend>Training Registration</legend>
            <form action="processTraining.jsp">
                <table>
                    <tr>
                        <td>
                            <label for="icNo">IC No</label>
                        </td>
                        <td>
                            <input type="text" id="icNo" name="icNo" placeholder="E.g.:911210-05-1234">
                        </td>
                    </tr>
                    <tr>
                        <td>
                            <label for="name">Name</label>
                        </td>
                        <td>
                            <input type="text" id="name" name="name" placeholder="Enter your name">
                        </td>
                    </tr>
                    <tr>
                        <td>
                            <label for="trainingType">Type of Training</label>
                        </td>
                        <td>
                            <select name="trainingType" id="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 for="noOfPax">No of Pax</label>
                        </td>
                        <td>
                            <input type="text" id="noOfPax" name="noOfPax" placeholder="No of pax">
                        </td>
                    </tr>
                    <tr>
                        <td>
                            <input type="radio" id="yes" name="isStudent" value="1">
                            <label for="yes">Yes</label>
                            <input type="radio" id="no" name="isStudent" value="0">
                            <label for="no">No</label>
                        </td>
                    </tr>
                    <tr>
                        <td>
                            <button type="submit" value="Submit">Submit</button>
                            <button type="reset" value="Reset">Cancel</button>
                        </td>
                    </tr>
                </table>
            </form>
        </fieldset>
    </body>
</html>
```

processTraining.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="lab5.com.Register"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Zass Coder Camp</title>
        <style>
            p{
                color: blue;
                font-family: Comic Sans MS;
            }
        </style>
    </head>
    <body>
        <h1>Training Registration Acknowledgement</h1>
        <%
            String ic_num = request.getParameter("icNo");
            String name = request.getParameter("name");
            int type = Integer.parseInt(request.getParameter("trainingType"));
            int pax_num = Integer.parseInt(request.getParameter("noOfPax"));
            int isStudent = Integer.parseInt(request.getParameter("isStudent"));
        %>

        <%
            Register zRegister = new Register(ic_num, name, type, pax_num, isStudent);
            // Assign value..
            zRegister.setIcNo(ic_num);
            zRegister.setName(name);
            zRegister.setTrainingType(type);
            zRegister.setNoOfPax(pax_num);
            zRegister.setIsStudent(isStudent);

            // Display value...
            out.println("<p>IC No : " + zRegister.getIcNo() + "</p>");
            out.println("<p>Name : " + zRegister.getName() + "</p>");
            out.println("<p>Type of Training : " + zRegister.getTrainingName(type) + "</p>");
            out.println("<p>Number of Pax : " + zRegister.getNoOfPax() + " person/s</p>");
            out.println("<p>Student: " + zRegister.stud2Str(isStudent) + "</p>");
            out.println("<p>Amount Due : RM " + String.format("%.2f", zRegister.getTrainingFee(type, pax_num, isStudent)) + "</p>");
        %>


    </body>
</html>
```

register.java

```java
/*
 */
package lab5.com;

/**
 *
 * @author Lenovo
 */
public class Register {
    private String icNo;
    private String name;
    private int trainingType;
    private int noOfPax;
    private int isStudent;

    public Register() {
    }

    public Register(String icNo, String name, int trainingType, int noOfPax, int isStudent) {
        this.icNo = icNo;
        this.name = name;
        this.trainingType = trainingType;
        this.noOfPax = noOfPax;
        this.isStudent = isStudent;
    }

    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;
    }
```

```java
    public int getTrainingType() {
        return trainingType;
    }

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

    public int getNoOfPax() {
        return noOfPax;
    }

    public void setNoOfPax(int noOfPax) {
        this.noOfPax = noOfPax;
    }

    public int getIsStudent() {
        return isStudent;
    }

    public void setIsStudent(int isStudent) {
        this.isStudent = isStudent;
    }

    public String getTrainingName(int trainingType){
        String name = "";
        switch(trainingType){
            case 1:
                name = "C++ training";
                break;
            case 2:
                name = "Java for beginner";
                break;
            case 3:
                name = "HTML5";
                break;
            case 4:
                name = "Java EEE";
                break;
            case 5:
                name = "Android Programming";
```

```
                break;
            }
            return name;
        }

        public double getTrainingFee(int trainingType, int noOfPax, int isStudent){
            double fee = 0;

            if(isStudent == 1){
                switch(trainingType){
                case 1:
                    fee = 3000 * noOfPax  * 0.9;
                    break;
                case 2:
                    fee = 3000 * noOfPax * 0.9;
                    break;
                case 3:
                    fee = 2800 * noOfPax * 0.9;
                    break;
                case 4:
                    fee = 5500 * noOfPax * 0.9;
                    break;
                case 5:
                    fee = 3200 * noOfPax * 0.9;
                }
            }else{
                switch(trainingType){
                case 1:
                    fee = 3000 * noOfPax;
                    break;
                case 2:
                    fee = 3000 * noOfPax;
                    break;
                case 3:
                    fee = 2800 * noOfPax;
                    break;
                case 4:
                    fee = 5500 * noOfPax;
                    break;
                case 5:
                    fee = 3200 * noOfPax;
                                break;
                            }
                        }
                        return fee;
                    }

                    public String stud2Str(int isStudent){
                        String studStr = "";
                        if(isStudent == 1){
                            studStr = "Yes";
                        }else{
                            studStr = "No";
                        }
                        return studStr;
                    }


                }

```

Output:

Register IT Training

Training Registration

IC No	040920-02-0865
Name	RyoukiTenkai
Type of Training	Java EEE
No of Pax	1
Student	(•) Yes ( ) No

Submit Cancel

Training Registration Acknowledgement

IC No : 040920-02-0865

Name : RyoukiTenkai

Type of Training : Java EEE

Number of Pax : 1 person/s

Student: Yes

Amount Due : RM 4950.00

Reflection

1. What you have learnt from this exercise?
   I have learned how to implement business logic using JavaBeans concept.
2. Describe the steps how you construct Register JavaBeans?
3. 1)Create default constructor
4. 2)Create constructor with argument
5. 3)Create setter and getter methods

Task 3
What you have learnt from this exercise?
I've learned how to add taglibs library inside my project libraries.

Task 4

Task1:

Coding:

```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>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>
```

Output:

Use JSTL's features

Welcome to CSM3023 - Web Programming courses..!

Task2:

Coding:

userRegistration.html

```html
<html>
    <head>
        <title>Biasiswa Al-Falah</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
    </head>
    <body>
        <fieldset>
            <legend>User Details</legend>
            <form action="processUser.jsp">
                <table>
                    <tr>
                        <td>
                            <label for="fname">Name</label>
                        </td>
                        <td>
                            <input type="text" id="fname" name="fname" placeholder="Enter firstname">
                        </td>
                    </tr>
                    <tr>
                        <td>
                            <label for="sname">Surname</label>
                        </td>
                        <td>
                            <input type="text" id="sname" name="sname" placeholder="Enter surname">
                        </td>
                    </tr>
                    <tr>
                        <td>
                            <label for="password">Password</label>
                        </td>
                        <td>
                            <input type="password" id="password" name="password" placeholder="Max 10 characters">
                        </td>
                    </tr>
                    <tr>
                        <td>
                            <label>Gender</label>
                        </td>
                        <td>
                            <label for="gender1">Male</label>
                            <input type="radio" id="gender1" name="gender" value="Male">
                            <label for="gender2">Female</label>
```

```
                    <input type="radio" id="gender2" name="gender" value="Female">
                </td>
            </tr>
            <tr>
                <td>Type of User</td>
                <td>
                    <select id="typeUser" name="typeUser">
                        <option value="Beginner">Beginner</option>
                        <option value="Intermediate">Intermediate</option>
                        <option value="Advanced">Advanced</option>
                    </select>
                </td>
            </tr>
            <tr>
                <td>
                    <label>Prefer Language</label>
                </td>
                <td>
                    <label for="lang1">Malay</label>
                    <input type="checkbox" id="lang1" name="language" value="Malay">
                    <label for="lang2">English</label>
                    <input type="checkbox" id="lang2" name="language" value="English">
                    <label for="lang3">Mandarin</label>
                    <input type="checkbox" id="lang3" name="language" value="Mandarin">
                    <label for="lang4">Tamil</label>
                    <input type="checkbox" id="lang4" name="language" value="Tamil">
                </td>
            </tr>
            <tr>
                <td>
                    <button type="submit" value="Submit">Submit</button>
                    <button type="reset" value="Reset">Cancel</button>
                </td>
            </tr>
        </table>
    </form>
</fieldset>
<footer>&copy;2024-Ziqman</footer>
</body>
</html>
```

processUser.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>Canberra University E-Learning</title>
    <style>p{color: violet;}</style>
</head>
<body>
    <h1>Retrieve info using c:param & display it using c:out</h1>

    <p>First Name: <c:out value="${param.fname}"/></p>
    <p>Surname: <c:out value="${param.sname}"/></p>
    <p>Gender: <c:out value="${param.gender}"/></p>
    <p>Type of User: <c:out value="${param.typeUser}"/></p>
    <p>Prefer Language: <c:out value="${param.language}"/></p>

    <c:set var="firstName" value="${param.fname}" />
    <c:set var="lastName" value="${param.sname}" />
    <c:set var="userGender" value="${param.gender}" />
    <c:set var="userType" value="${param.typeUser}" />
    <c:set var="preferredLanguage" value="${param.language}" />

    <!-- Using c:param:</p> -->
    <c:url var="processUrl" value="processUser.jsp">
        <c:param name="fname" value="${firstName}" />
        <c:param name="sname" value="${lastName}" />
        <c:param name="gender" value="${userGender}" />
        <c:param name="typeUser" value="${userType}" />
        <c:param name="language" value="${preferredLanguage}" />
    </c:url>

</body>
</html>
```

Output:

User Details

Name Sulaiman

Surname Ferrari

Password ••••••••••••••

Gender Male ◉ Female ○

Type of User Intermediate

Prefer Language Malay ☑ English ☐ Mandarin ☐ Tamil ☐

Submit Cancel

©2024-Ziqman

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

First Name: Sulaiman

Surname: Ferrari

Gender: Male

Type of User: Intermediate

Prefer Language: Malay

Task3:

jstlFormat1.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>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 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 by 3 decimal places : 2,880.464

Formatting number by % : 288,046%

Reflection

1. What you have learnt from this exercise?
   I have learnt how to use JSTL to retrieve information and formatting number.

Task 5

Coding:

```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>
        <!-- a Date time string -->

        <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>
            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:

fmt:parseDate feature

Time (fmt:formatDate type="time"): **1:07:05 AM**

Date (fmt:formatDate type="date"): **May 14, 2024**

Date, Time (fmt:formatDate type="both"): **May 14, 2024, 1:07:05 AM**

Date, Time Short (fmt:formatDate type="both" dateStyle="short"): **5/14/24, 1:07 AM**

Date, Time Medium (fmt:formatDate type="both" dateStyle="medium" timeStyle="medium"): **May 14, 2024, 1:07:05 AM**

Date, Time Long (fmt:formatDate type="both" dateStyle="long" timeStyle="long"): **May 14, 2024 at 1:07:05 AM MYT**

Date, Time (dd-Mm-yyyy HH:mm:ss): **14-05-2024 01:07:05**

Now String (dd-MM-yyyy HH:mm): **14-05-2024 01:07**

Exercise

Exercise1:
Circle.jsp
Coding:

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Circle Calculator</title>
    </head>
    <body>
        <h1>Circle Calculator 3.0</h1>
        <form action="processCircle.jsp">
            <table>
                <tr>
                    <td>
                        <label for="radius">Enter the circle radius:</label>
                    </td>
                    <td>
                        <input type="text" id="radius" name="radius">
                    </td>
                </tr>
                <tr>
                    <td></td>
                    <td>
                        <button type="submit" value="Submit">Submit</button>
                    </td>
                </tr>
            </table>
        </form>
    </body>
</html>
```

processCircle.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>JSP Page</title>
    </head>
    <body>
        <h1>Circle Calculation Result</h1>
        <c:set var="radius" value="${param.radius}" />

        <c:set var="pi" value="3.141592653589793" />

        <c:set var="area" value="${pi * radius * radius}" />
        <c:set var="perimeter" value="${2 * pi * radius}" />

        <p>Radius of the circle: <c:out value="${radius}" /></p>
        <p>Area of the circle: <fmt:formatNumber type="number" maxFractionDigits="3" value="${area}"/></p>
        <p>Perimeter of the circle: <fmt:formatNumber type="number" maxFractionDigits="3" value="${perimeter}"/></p>
    </body>
</html>
```

Output:

Circle Calculation Result

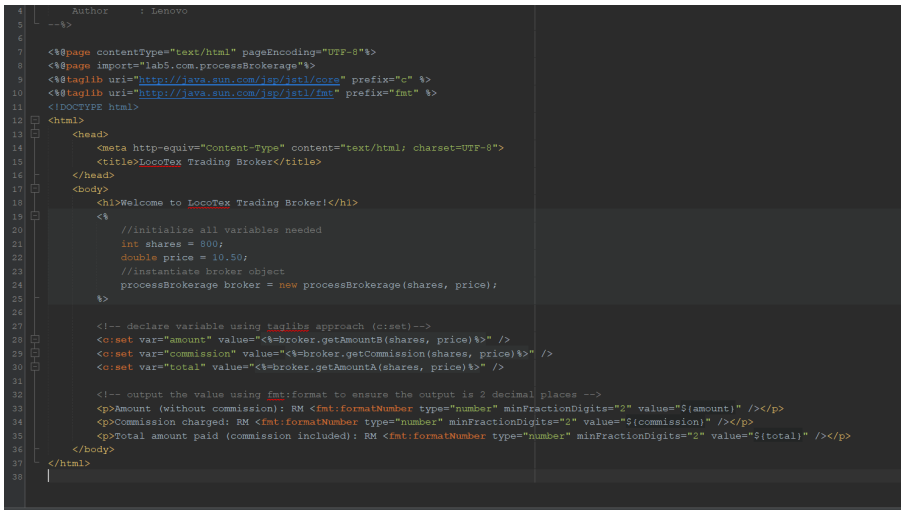
Radius of the circle: 21

Area of the circle: 1,385.442

Perimeter of the circle: 131.947

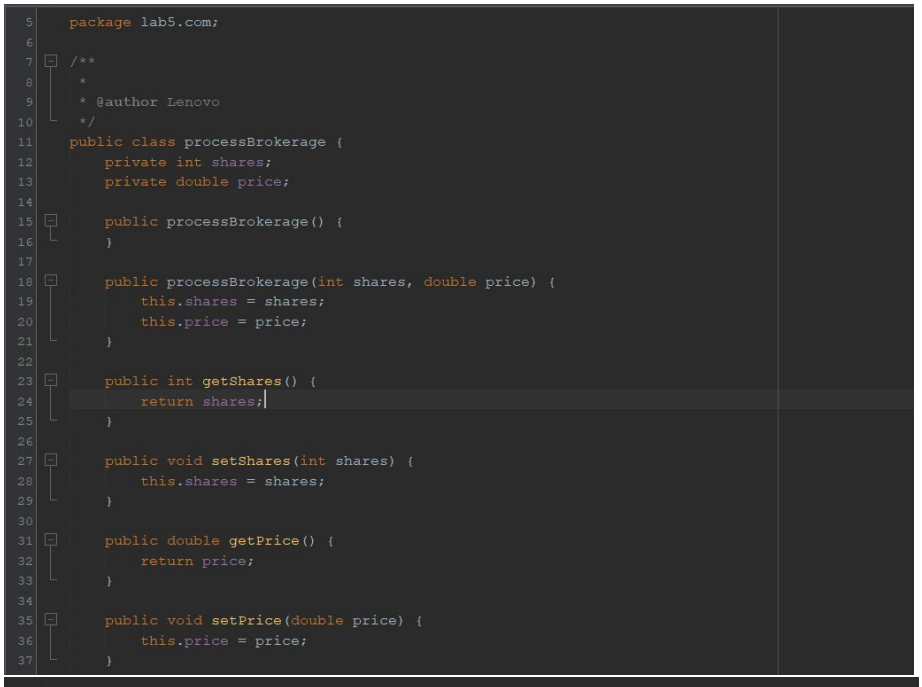
Exercise 2:

brokerage.jsp

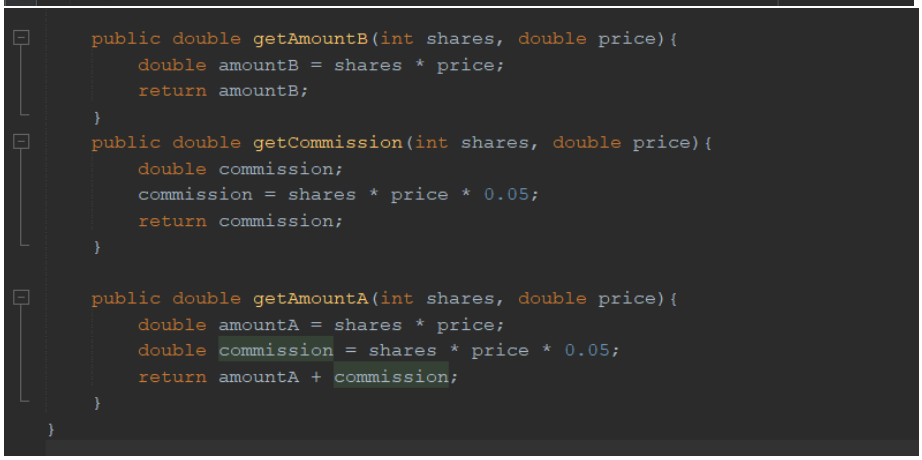


```
    Author     : Lenovo
--%>

<%@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 taglibs 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



```
package lab5.com;

/**
 *
 * @author Lenovo
 */
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 LocoTex Trading Broker!

Amount (without commission): RM 8,400.00

Commission charged: RM 420.00

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