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*Date 28/4/2023*

*CSM3023*

*WEB BASED APPLICATION DEVELOPMENT*

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*OMAR ISMAIL ABDJALEEL ALOMORY*

*LAB 3(MP2)*

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## Task 1

Compiled successfully(memberRegistration.jsp).

```
ant -f "C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSM3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3" -Dnb.internal.action.name=compile.s
compile-single-jsp:
init:
  deps-module-jar:
  deps-ear-jar:
  deps-jar:
library-inclusion-in-archive:
library-inclusion-in-manifest:
compile:
Created dir: C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSM3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3\build\generated\src
Created dir: C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSM3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3\build\generated\classes
Compiling 1 source file to C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSM3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3\build\generated\classes
BUILD SUCCESSFUL (total time: 7 seconds)
```

Output(memberRegistration.jsp).

## Passing data from main JSP's page to another JSP's page

Member Registration

IC No \*

Name \*

Compiled successfully (memberProcessing.jsp).

```
ant -f "C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSM3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3" -Dnb.internal.action.name=compile.s
compile-single-jsp:
init:
  deps-module-jar:
  deps-ear-jar:
  deps-jar:
library-inclusion-in-archive:
library-inclusion-in-manifest:
compile:
Compiling 1 source file to C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSM3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3\build\generated\classes
BUILD SUCCESSFUL (total time: 0 seconds)
```

Output (overall)

(memberRegistration.jsp).

## Passing data from main JSP's page to another JSP's page

Member Registration

IC No \*

Name \*

(memberProcessing)

## Passing data from main JSP's page to another JSP's page

Thank you for registering in this event...

This is your details:

IC No : 880812106842

Name : Mohamad Nor

### Reflection:

#### 1. How do you want to submit specific information from one form to next form?

We can use the object `Request.getParameter()` to retrieve the value from one form to another and then save it with Java Scriptlet/JavaBeans, then display it or do any processing on it.

#### 2. What happened if the field name you specify in `request.getParameter("field_name")` in second page is different from the field name you defined in first page?

The values that have different `field_name` in the second page would be displayed as null.

E.g.

```
<html>Passing data from main JSP's page to another JSP's page</html>
<fieldset>
  <%
    // Define variables...
    String myIC = null;
    String myName = null;

    // Use request.getParameter() method to retrieve data from main's form...
    myIC = request.getParameter("my_icno");
    myName = request.getParameter("his_name");
  %>

  <!-- Display the output -->
  <p>Thank you for registering in this event...</p>
  <p>This is your details:</p>
  <p>IC No : <%=myIC%></p>
  <p>Name : <%=myName%></p>
</fieldset>
```

## Passing data from main JSP's page to another JSP's page

Thank you for registering in this event...

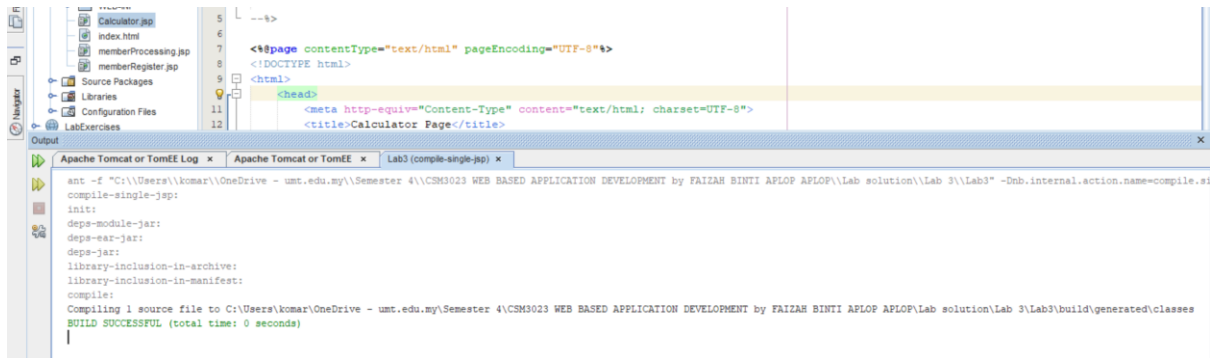
This is your details:

IC No : 880812106842

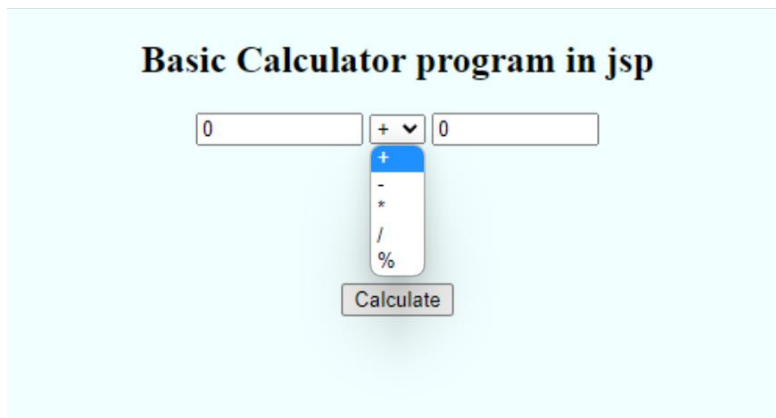
Name : null

## Task 2

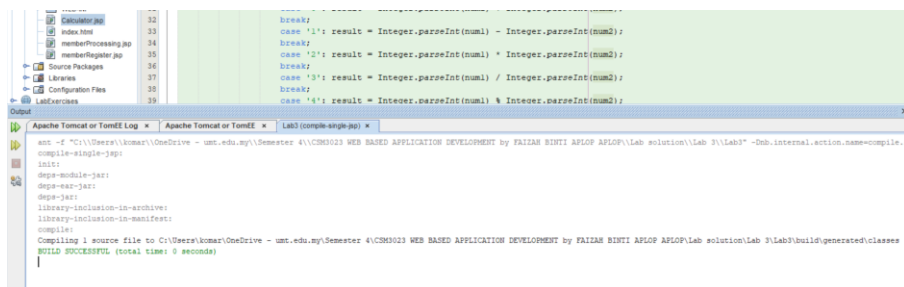
Compiled successfully(Calculator.jsp).



Output



Compile and test (Calculator.jsp).



## Addition, Subtraction, Multiplication, Division, Mod.

Basic Calculator program in jsp	Basic Calculator program in jsp	Basic Calculator program in jsp
<input type="text" value="4"/> + <input type="text" value="2"/> <input type="button" value="Calculate"/> Result = 6	<input type="text" value="4"/> - <input type="text" value="2"/> <input type="button" value="Calculate"/> Result = 2	<input type="text" value="4"/> * <input type="text" value="2"/> <input type="button" value="Calculate"/> Result = 8
<input type="text" value="4"/> / <input type="text" value="2"/> <input type="button" value="Calculate"/> Result = 2	<input type="text" value="4"/> % <input type="text" value="2"/> <input type="button" value="Calculate"/> Result = 0	

### Reflection:

#### 1. How do you want to submit specific information from one form to next form?

We can use the object `Request.getParameter()` to retrieve the value from one form to another and then save it with Java Scriplet/JavaBeans, then display it or do any processing on it.

#### 2. What happened if the field name you specify in `request.getParameter("field_name")` in second page is different from the field name you defined in first page?

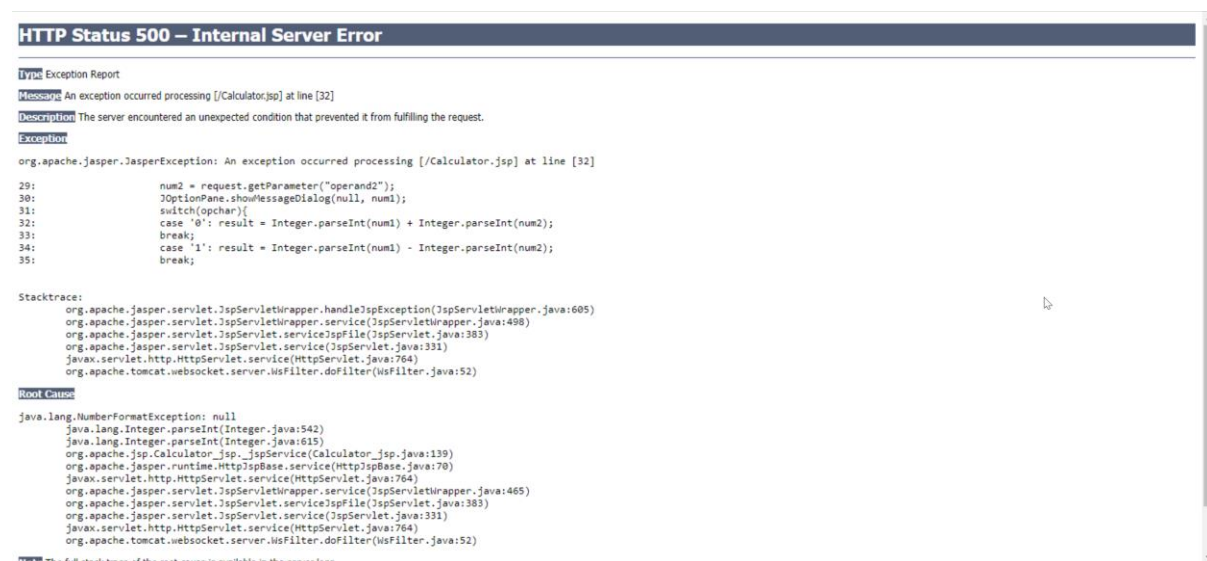
Error would occur due to the arithmetic operation on null values. *"HTTP status 500 - internal server error"*

### Illustration:

```
<%  
    String num1 = "0", num2 = "0";  
    int result = 0;  
    String op = "+";  
  
    char opchar = op.charAt(0);  
    if(request.getParameter("op") != null){  
        op = request.getParameter("op");  
        opchar = op.charAt(0);  
  
        num1 = request.getParameter("the_first_operand1");  
        num2 = request.getParameter("operand2");  
  
        switch(opchar){  
            case '0': result = Integer.parseInt(num1) + Integer.parseInt(num2);  
            break;  
            case '1': result = Integer.parseInt(num1) - Integer.parseInt(num2);  
            break;  
            case '2': result = Integer.parseInt(num1) * Integer.parseInt(num2);  
            break;  
            case '3': result = Integer.parseInt(num1) / Integer.parseInt(num2);  
            break;  
            case '4': result = Integer.parseInt(num1) % Integer.parseInt(num2);  
            break;  
        }  
    }  
}
```

Because the `request.getParameter("op")` is not null, it passes the first condition(which is True), then the `request` object reads the `"op"` without any problem, it also reads the `num1` and `num2`. But in this case `num1` would be null because its parameter is defined differently(`the_first_operand1`) from the `field_name` in the form(`operand1`). So, when it comes to try and do some arithmetic operation, it throws an error.

## The error message



**HTTP Status 500 – Internal Server Error**

**Type** Exception Report

**Message** An exception occurred processing [/Calculator.jsp] at line [32]

**Description** The server encountered an unexpected condition that prevented it from fulfilling the request.

**Exception**

```
org.apache.jasper.JasperException: An exception occurred processing [/Calculator.jsp] at line [32]

29:         num2 = request.getParameter("operand2");
30:         JOptionPane.showMessageDialog(null, num1);
31:         switch(opchar){
32:             case '0': result = Integer.parseInt(num1) + Integer.parseInt(num2);
33:             break;
34:             case '1': result = Integer.parseInt(num1) - Integer.parseInt(num2);
35:             break;
```

**Stacktrace:**

```
org.apache.jasper.servlet.JspServletWrapper.handleJspException(JspServletWrapper.java:605)
org.apache.jasper.servlet.JspServletWrapper.service(JspServletWrapper.java:498)
org.apache.jasper.servlet.JspServlet.serviceJspFile(JspServlet.java:383)
org.apache.jasper.servlet.JspServlet.service(JspServlet.java:331)
javax.servlet.http.HttpServlet.service(HttpServlet.java:764)
org.apache.tomcat.websocket.server.WsFilter.doFilter(WsFilter.java:52)
```

**Root Cause**

```
java.lang.NumberFormatException: null
    java.lang.Integer.parseInt(Integer.java:542)
    java.lang.Integer.parseInt(Integer.java:615)
    org.apache.jsp.Calculator_jsp._jspService(Calculator_jsp.java:139)
    org.apache.jasper.runtime.HttpJspBase.service(HttpJspBase.java:70)
    javax.servlet.http.HttpServlet.service(HttpServlet.java:764)
    org.apache.jasper.servlet.JspServletWrapper.service(JspServletWrapper.java:465)
    org.apache.jasper.servlet.JspServlet.serviceJspFile(JspServlet.java:383)
    org.apache.jasper.servlet.JspServlet.service(JspServlet.java:331)
    javax.servlet.http.HttpServlet.service(HttpServlet.java:764)
    org.apache.tomcat.websocket.server.WsFilter.doFilter(WsFilter.java:52)
```

NOTE: The full stack trace of the root cause is available in the server log

To remove this error we can easily add check with if statement to confirm that the values are not null, if null put default "0".



```
String num1 = "0", num2 = "0";
int result = 0;
String op = "+";

char opchar = op.charAt(0);
if(request.getParameter("op") != null){
    op = request.getParameter("op");
    opchar = op.charAt(0);

    num1 = request.getParameter("the_first_operand1");
    num2 = request.getParameter("operand2");
    if(num1 == null){
        num1 = "0";
    }else if(num2 == null){
        num2 = "0";
    }else{
        JOptionPane.showMessageDialog(null, num1);
        switch(opchar){
            case '0': result = Integer.parseInt(num1) + Integer.parseInt(num2);
            break;
            case '1': result = Integer.parseInt(num1) - Integer.parseInt(num2);
            break;
            case '2': result = Integer.parseInt(num1) * Integer.parseInt(num2);
            break;
            case '3': result = Integer.parseInt(num1) / Integer.parseInt(num2);
            break;
            case '4': result = Integer.parseInt(num1) % Integer.parseInt(num2);
            break;
        }
    }
}
```

This is not the appropriate solution, because the field\_name is incorrect and there is no use of this page if it cannot do arithmetic operation. So we need to check all our field names and match them all.

## Task 3

Compiled successfully.



Output

Read Java array and populate it into HTML's table

Salesman	Jan	Feb	Mar
Salesman 1	2500	2100	2200
Salesman 2	2000	1900	2400
Salesman 3	1800	2000	2450

Reflection:

### 1. Write a sample syntax to declare 2D Java array.

To declare 2D array in Java we can follow these ways:

- `data_type myArray [][] = new data_type[number_of_rows][number_of_columns];`
- `data_type myArray [][] = {{data1, data2,data3}, {data4,data5,data6}};`

### 2. Define a sequence of steps on how you accomplish Task 7.

- We must make two **for** loop or **while** loop.
- The first loop will represent the row no, and the second loop will represent the column no.
- Then we have to read rows by rows and print out the data with HTML tags.
- For a single row we will go through each column and print the data to HTML Page.
- If we going to use String datatype (because as we know java support only one datatype for the array), then we have to put condition for the header of the table.
- If the rows no is equal to 0, then this is the header we process the header and print it out first.
- If rows is greater than 0, then this is the body of the table, so we process the rest of the data.

The figure below show the source code used for this problem.

```

<%
    // later we can convert the string into int if we want to process the data.
    for (int i = 0; i < myArray.length; i++) {
        if (i > 0) {
            out.print("<tr><td>Salesman " + (i + 1) + "</td>");
        } else {
            out.print("<tr>");
        }
        for (int r = 0; r < myArray[i].length; r++) {
            if (i == 0) {
                out.print("<th>" + myArray[i][r] + "</th>");
            } else {
                out.print("<td>" + myArray[i][r] + "</td>");
            }
        }
        out.print("</tr>");
    }
}
%>

```

*If datatype is String*

```

<%
    //initializing the 2D array
    int data[][] = {
        {2500,2100,2200},
        {2000,1900,2400},
        {1800,2200,2450}
    };
    // populating 2D array in HTML using java for loops and HTML's tags
    for(int i = 0; i < data.length; i++){
        out.print("<tr><td>Salesmen"+(i+1)+"</td>");
        for(int j = 0; j < data[i].length; j++){
            out.print("<td>" + data[i][j] + "</td>");
        }
        out.print("</tr>");
    }
}
%>

```

*If datatype is int*

### 3. What is the difference between HTML's page and JSP's page

HTML is a markup language used for creating static web pages, while JSP is a server-side technology used to create dynamic web pages. The main difference between them is that HTML pages are static, while JSP pages are dynamic and can contain Java code for server-side processing tasks such as interacting with databases or processing user input.



## Task 4

Compiled successfully(processCalculateCarLoan.jsp).



Output

### Perform Car Loan Calculation

Loan Calculation

Loan Amount \*

Period

### Perform Car Loan Calculation

#### Details of car loan:

Loan Request : 50000  
Period of payment : 7  
Total Loan (+ Interest): 65750.00

### Perform Car Loan Calculation

Loan Calculation

Loan Amount \*

Period

### Perform Car Loan Calculation

#### Details of car loan:

Loan Request : 50,000  
Period of payment : 4  
Total Loan (+ Interest): 62750.00

### 1. How you want to retrieve data from previous page?

We retrieve data when submitting form from previous page ,then by using the **request** object and the method **getParameter()** (**request.getParameter(field\_name)**) we get all the data in that form as long as all the parameter's name are matched.

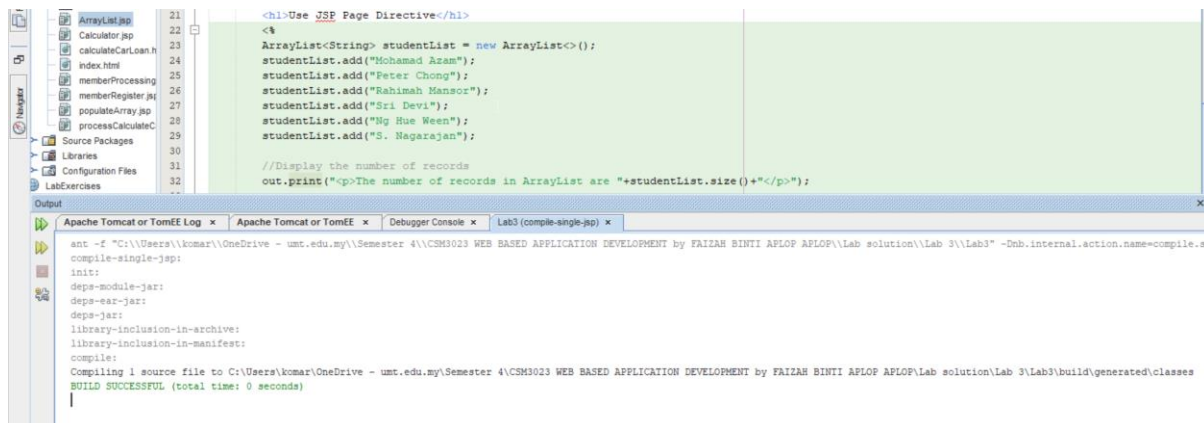
### 2. Where the construction of logic occur for calculating Total Loan ( + interest) ?

It occurs in the scriptlet in the JSP file. To do the calculation properly we need to process the data in the scriptlet `<%here%>` and then display it `<%=here%>`.

```
}
totalWithInt = Integer.parseInt(loanAmt) *tax;
```

## Task 5

Compiled successfully.



The screenshot shows an IDE with a project named 'Lab3'. The 'ArrayList.jsp' file is open, displaying the following code:

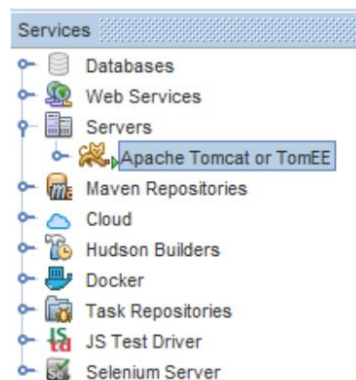
```
<html>Use JSP Page Directive</html>
<%
    ArrayList<String> studentList = new ArrayList<>();
    studentList.add("Mohamad Azam");
    studentList.add("Peter Chong");
    studentList.add("Rahimah Mansor");
    studentList.add("Sri Devi");
    studentList.add("Ng Hue Ween");
    studentList.add("S. Nagarajan");

    //Display the number of records
    out.print("<p>The number of records in ArrayList are "+studentList.size()+"</p>");
%>
```

The 'Output' window at the bottom shows the compilation process:

```
ant -f "C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSH3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3" -Dnb.internal.action.name=compile.s
compile-single-jsp:
init:
depa-module-jar:
depa-eaz-jar:
depa-jar:
library-inclusion-in-archive:
library-inclusion-in-manifest:
compile:
Compiling 1 source file to C:\Users\komar\OneDrive - umt.edu.my\Semester 4\CSH3023 WEB BASED APPLICATION DEVELOPMENT by FAIZAH BINTI APLOP APLOP\Lab solution\Lab 3\Lab3\build\generated\classes
BUILD SUCCESSFUL (total time: 0 seconds)
```

Apache Tomcat already on



Output

### Use JSP Page Directive

The number of records in ArrayList are 6

Record 1 is Mohamad Azam

Record 2 is Peter Chong

Record 3 is Rahimah Mansor

Record 4 is Sri Devi

Record 5 is Ng Hue Ween

Record 6 is S. Nagarajan

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### 1. What you have learnt from this exercise?

We learnt how to use directive elements to call ArrayList, or any other libraries.

## 2. Write a sample syntax how you want to use java Math object in JSP?

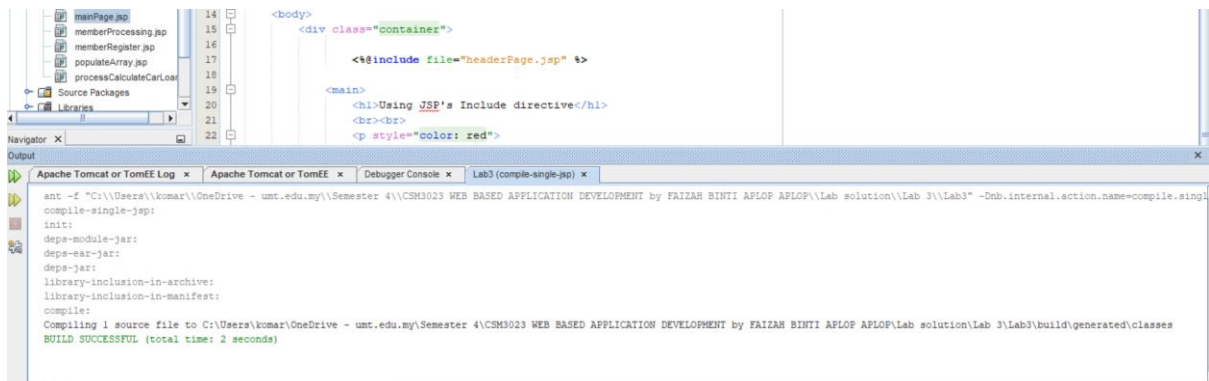
```
<%@ page language="java" %>
<%@ page import="java.lang.Math" %>
<html>
  <body>
    <%
      double x = 3.14159;
      double y = Math.sin(x);
    %>
    <p>The sine of <%=x%> is <%=y%></p>
  </body>
</html>
```

## 3. List and write a sample syntax for THREE (3) of JSP page directive.

- <%@ page contentType="text/html; charset=UTF-8" %>
- <%@ page import="java.util.ArrayList" %>
- <%@ page language="java" %>
- <%@ page import="java.lang.Math" %>

## Task 6

Compiled successfully.



Output

ABC Sdn Bhd

## Using JSP's Include directive

Java Server Page (JSP) is a technology for controlling the content or appearance of Web pages through the use of servlets, small programs that are specified in the Web page and run on the Web server to modify the Web page before it is sent to the user who requested it.

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### 1. What you have learnt from this exercise?

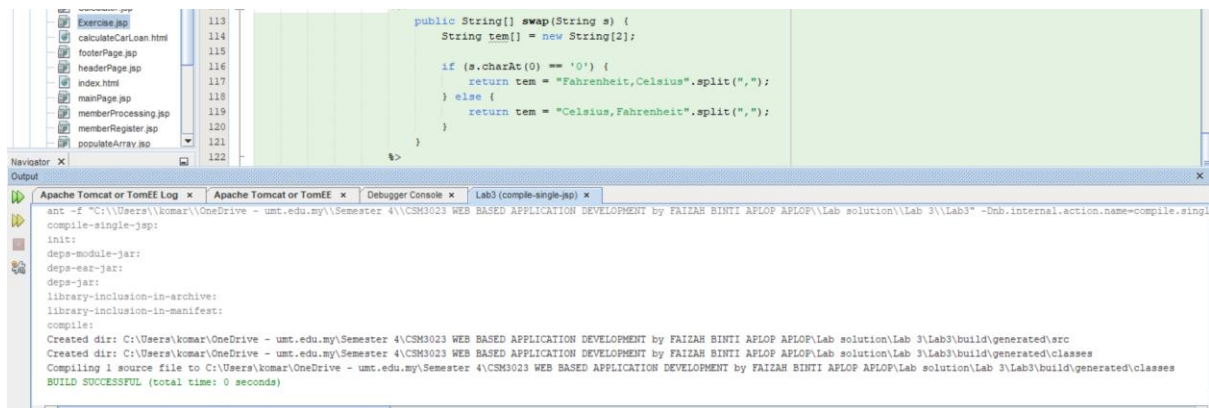
This is the most interesting thing I have ever learnt. In this exercise I learnt how to include another HTML page to the main page using include directive. (`<%@include file="headerPage.jsp" %>`). The fun part is how we can integrate the header and the footer with the main page. Definitely would be handy in future.

2. Write a syntax how you want to include common.html file that located at a directory known as master.

```
<%@include file="master/common.html" %>
```

## Exercise

Compiled successfully.



Output (Temperature)

### Temperature Converter

Temperature	Fahrenheit
<input type="text" value="E.g. 32"/>	<input type="text" value="0"/>
To which you want to convert:	Fahrenheit ▼
<input type="button" value="Convert"/> <input type="button" value="Reset"/>	

Key in the temperature

### Temperature Converter

Temperature	Fahrenheit
<input type="text" value="25"/>	<input type="text" value="0"/>
To which you want to convert:	Fahrenheit ▼
<input type="button" value="Convert"/> <input type="button" value="Reset"/>	

Click Convert

### Temperature Converter

Temperature	Fahrenheit
<input type="text" value="E.g. 32"/>	<input type="text" value="77"/>
To which you want to convert:	Fahrenheit ▼
<input type="button" value="Convert"/> <input type="button" value="Reset"/>	

Output (Rectangle Area Comparison)

Rectangle Area Comparison

Rectangle 1:

Length:

Width:

Rectangle 2:

Length:

Width:

Compare Areas

Reset

Key in the values of each rectangle.

Rectangle Area Comparison

Rectangle 1:

Length:

6

Width:

8

Rectangle 2:

Length:

9

Width:

7

Compare Areas

Reset

Click Compare Areas

Rectangle Area Comparison

Rectangle 1:

Length:

Width:

Rectangle 2:

Length:

Width:

Compare Areas

Reset

Rectangle 2 has a greater area of 63.00.

Full output

Temperature Converter

Temperature	Fahrenheit
<input type="text" value="E.g. 32"/>	<input type="text" value="77"/>
To which you want to convert:	Fahrenheit ▾

Convert

Reset

Rectangle Area Comparison

Rectangle 1:	
Length: <input type="text"/>	Width: <input type="text"/>
Rectangle 2:	
Length: <input type="text"/>	Width: <input type="text"/>

Compare Areas

Reset

Rectangle 2 has a greater area of 63.00.