LAB 7

Topics: JSP, Servlet, Session Management in web application

1. Write a Java web application using **HttpSession** which allows only logged in users to access the other JSPs/Servlets of the application. Write the following components:
    1. **Login.html** allows users to provide username and password and send them as request parameters toLoginVerifierServlet.
    2. **LoginVerifierServlet** takes username and password from login.html and verifies it. If credentials are correct then it creates a session. It displays welcome message along with username and links to first.jsp and second.jsp.
    3. **first.jsp** and **second.jsp** display some text with username and can be accessed if the user is logged in. (you should delegate to Login.html if the user is not logged in)

```
<html>
<head>
	<title>Login Validation page</title>
</head>
<body>
<h1>Login Validation page</h1>
<form action="LoginVerifierServlet" method="post">
	<label>Name
		<input type="text" name="username">
	</label><br><br>
	<label>Password
		<input type="password" name="password">
	</label><br><br>
	<input type="submit" value="Submit">
</form>


</body>
</html>
```

```
package lab7.q1;

import jakarta.servlet.*;
import jakarta.servlet.http.*;
import jakarta.servlet.annotation.*;

import java.io.IOException;
import java.io.PrintWriter;
import java.sql.*;

@WebServlet(name = "LoginVerifierServlet", value = "/lab7/q1/LoginVerifierServlet")
public class LoginVerifierServlet extends HttpServlet {
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        response.setContentType("text/html");
        String username = request.getParameter("username");
        String password = request.getParameter("password");
        PrintWriter out = response.getWriter();

        if (username.equals("dhrumil") && password.equals("1234")) {
            HttpSession session = request.getSession();
            session.setAttribute("username",username);
```

```
            out.print("Successful login<br>");
            out.print("username is, " + username + " <br>");
            out.print("<a href='first.jsp'>first.jsp</a><br>");
            out.print("<a href='second.jsp'>second.jsp</a>");
        } else {
            out.println("Sorry Username or password error");
            RequestDispatcher rd = request.getRequestDispatcher("/lab7/q1/Login.html");
            rd.include(request,response);
        }
    }

    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        doGet(request,response);
    }
}

<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>Title</title>
</head>
<body>
<h1>Hello first.jsp</h1>
<%
    if(!session.isNew()){
        String username = session.getAttribute("username").toString();
        out.print("Successful login<br>");
        out.print("username is, " + username + " <br>");
        out.print("<a href='logout.jsp'>logout</a><br>");
        out.print("<a href='second.jsp'>second.jsp</a>");
    }else{
%>
<jsp:forward page="logout.jsp" />
<%
    }
%>
</body>
</html>

<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>Title</title>
</head>
<body>
<h1>Hello second.jsp</h1>
<%
    if(!session.isNew()){
        String username = session.getAttribute("username").toString();
        out.print("Successful login<br>");
        out.print("username is, " + username + " <br>");
        out.print("<a href='logout.jsp'>logout</a><br>");
        out.print("<a href='first.jsp'>first.jsp</a>");
    }else{
%>
<jsp:forward page="logout.jsp" />
<%
    }
%>
</body>
```

```
</html>

<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>Title</title>
</head>
<body>
<%
  session.invalidate();
%>
<jsp:forward page="Login.html"/>
</body>
</html>
```

Login Validation page

Name dhrumil

Password ••••

Submit

Successful login
username is, dhrumil
first.jsp
second.jsp

Hello first.jsp

Successful login
username is, dhrumil
logout
second.jsp

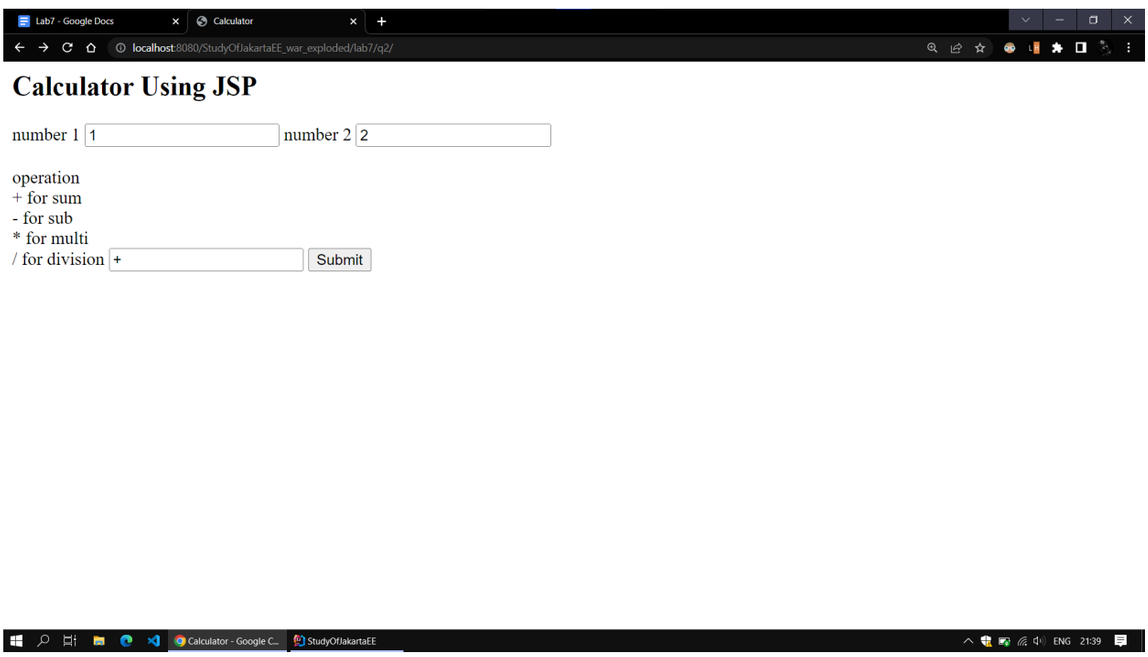
2. Write a web based java application containing a JSP which performs the simple arithmetic calculation. Take the necessary operands and operators in textboxes. Write your JSP code using **jsp:useBean** action tag.

```jsp
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>Calculator</title>
</head>
<body>
<h2>Calculator Using JSP</h2>
<form method="post" action="ans.jsp">
  <label>number 1
    <input type="number" name="a">
  </label>
  <label>number 2
    <input type="number" name="b">
  </label>
  <label><br></br>operation
    <br>+ for sum
    <br>- for sub
    <br>* for multi
    <br>/ for division
    <input type="text" name="operation">
  </label>
  <input type="submit" value="Submit">
</form>

</body>
</html>
```

```jsp
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
      <title>Ans</title>
</head>
<body>
<jsp:useBean id="obj" class="lab7.q2.Calculator" />
<jsp:setProperty name="obj" property="*" />
<h2>Ans = <%= obj.calc() %></h2>
</body>
</html>
```

```java
package lab7.q2;

public class Calculator {
    int a;
    int b;
    String operation;
    int ans;
    public int getA() {
        return a;
    }
    public void setA(int a) {
        this.a = a;
    }
    public int getB() {
        return b;
    }
```

```
    public void setB(int b) {
        this.b = b;
    }
    public String getOperation() {
        return operation;
    }
    public void setOperation(String operation) {
        this.operation = operation;
    }
    public int getAns() {
        return ans;
    }
    public void setAns(int ans) {
        this.ans = ans;
    }
    public int calc(){
        if(operation.equals("+"))return ans=a+b;
        if(operation.equals("-"))return ans=a-b;
        if(operation.equals("*"))return ans=a*b;
        if(operation.equals("/"))return ans=a/b;
        else return ans=-1;
    }
}
```



Ans = 3

3. Write a web application with the following components:
   - **Book.java** provides a bean/class data members, accessors, mutators, toString, default and parameterized constructor as required.
   - **Genre.html** provides a list of book genres to the user to choose from. Send the chosen genre as a request parameter to ControllerServlet.
   - **ControllerServlet** contains a list of books according to genre. Set a request scope attribute “mybooks” with the array/collection of books of the chosen genre. Forward the request to DisplayTheList.jsp
   - **DisplayTheList.jsp** displays the details of the books by getting them from the attribute “mybooks”.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Title</title>
</head>
<body>
<form method="post" action="ControllerServlet">
    <label>Select Genre of Book<br>
            <input type="radio" name="genre-select" value="Fiction">Fiction<br>
            <input type="radio" name="genre-select" value="Comedy">Comedy<br>
            <input type="radio" name="genre-select" value="Motivational">Motivational<br>
            <input type="radio" name="genre-select" value="Biography">Biography<br>
            <input type="radio" name="genre-select" value="History">History<br>
    </label>
    <input type="submit" value="Find Books">
</form>
</body>
</html>
<%@ page import="java.util.List" %>
<%@ page import="lab7.q3.Book" %>
<%@ page contentType="text/html;charset=UTF-8" %>
<html>
<head>
    <title>Your List</title>
</head>
<body>

<h2>Your Selected Genre list is: </h2>
<%
    Book[] a =  (Book[]) request.getAttribute("mybooks");
```

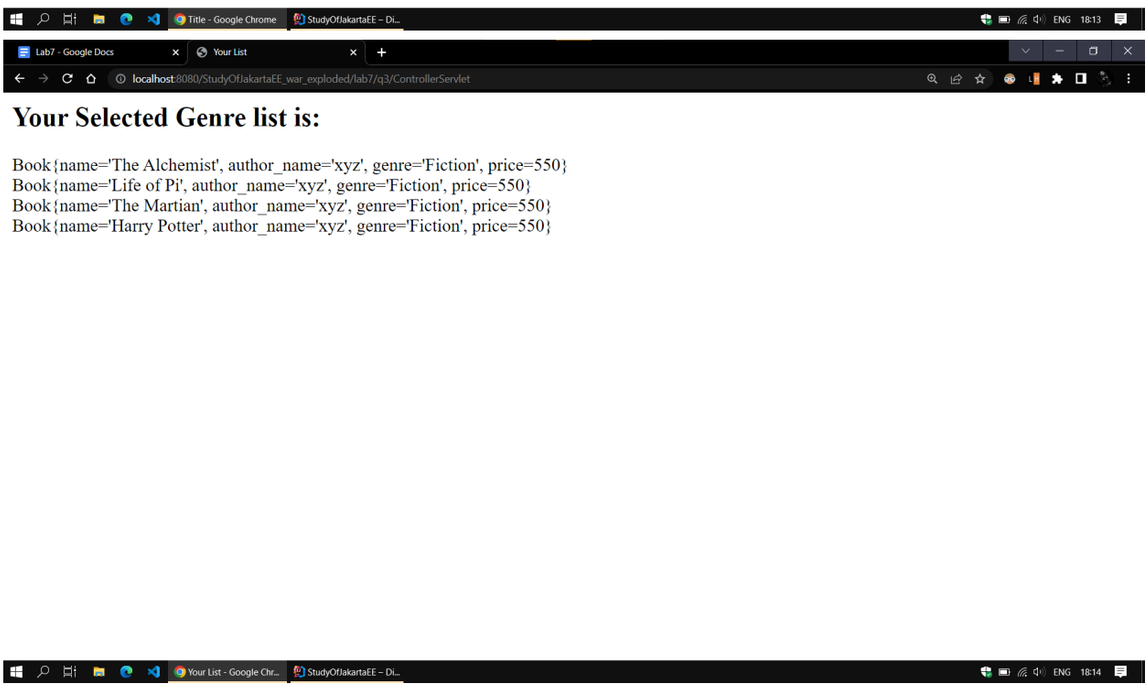
```
    for (Book a1: a) {
        out.print(a1+"<br>");
    }
%>
</body>
</html>
```

```
package lab7.q3;

public class Book {
    private String name;
    private String author_name;
    private String genre;
    private int price;
    public Book() {
        this.name = null;
        this.author_name = null;
        this.genre = null;
        this.price = -1;
    }

    public Book(String name, String author_name, String genre, int price) {
        this.name = name;
        this.author_name = author_name;
        this.genre = genre;
        this.price = price;
    }

    public String getName() {
        return name;
    }

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

    public String getAuthor_name() {
        return author_name;
    }

    public void setAuthor_name(String author_name) {
        this.author_name = author_name;
    }

    public String getGenre() {
        return genre;
    }

    public void setGenre(String genre) {
        this.genre = genre;
    }

    public int getPrice() {
        return price;
    }

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

```
    @Override
    public String toString() {
        return "Book{" +
                "name='" + name + '\'' +
                ", author_name='" + author_name + '\'' +
                ", genre='" + genre + '\'' +
                ", price=" + price +
                '}';
    }
}
```

```
package lab7.q3;

import jakarta.servlet.*;
import jakarta.servlet.http.*;
import jakarta.servlet.annotation.*;

import java.io.IOException;
import java.util.ArrayList;
import java.util.Arrays;
import java.util.List;

@WebServlet(name = "ControllerServlet ", value = "/lab7/q3/ControllerServlet")
public class ControllerServlet extends HttpServlet {
    public Book[] getList(String genre){
        if(genre.equals("Fiction")){
            Book b1 = new Book("The Alchemist","xyz","Fiction",550);
            Book b2 = new Book("Life of Pi","xyz","Fiction",550);
            Book b3 = new Book("The Martian","xyz","Fiction",550);
            Book b4 = new Book("Harry Potter","xyz","Fiction",550);
            return new Book[]{b1,b2,b3,b4};
        }
        if(genre.equals("Comedy")) {
            Book b1 = new Book("Cruel Shoes","xyz","Comedy",550);
            Book b2 = new Book("You Deserve A Drink","xyz","Comedy",550);
            Book b3 = new Book("The Innocents","xyz","Comedy",550);
            Book b4 = new Book("The Book of Joan","xyz","Comedy",550);
            return new Book[]{b1,b2,b3,b4};
        }
        if(genre.equals("Motivational")) {
            Book b1 = new Book("Think and Grow Rich","xyz","Motivational",550);
            Book b2 = new Book("The Power of Positive Thinking","xyz","Motivational",550);
            Book b3 = new Book("The 5 Second Rule","xyz","Motivational",550);
            Book b4 = new Book("The ONE Thing","xyz","Motivational",550);
            return new Book[]{b1,b2,b3,b4};
        }
        if(genre.equals("Biography")){
            Book b1 = new Book("Satya ke Prayog","xyz","Biography",550);
            Book b2 = new Book("Wings of Fire","xyz","Biography",550);
            Book b3 = new Book("The Diary of a Young Girl","xyz","Biography",550);
            Book b4 = new Book("A Promised Land","xyz","Biography",550);
            return new Book[]{b1,b2,b3,b4};
        }
        if(genre.equals("History")){
            Book b1 = new Book("India's Ancient Past","xyz","History",550);
            Book b2 = new Book("The Art of War","xyz","History",550);
            Book b3 = new Book("The Guns of August","xyz","History",550);
            Book b4 = new Book("Hiroshima","xyz","History",550);
            return new Book[]{b1,b2,b3,b4};
        }
        else{
            return new Book[]{new Book()};
```

```
        }
    }   @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        doPost(request,response);
    }

    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        String genre = request.getParameter("genre-select");
        Book[] arg = getList(genre);
        request.setAttribute("mybooks",arg);
        RequestDispatcher rd = request.getRequestDispatcher("/lab7/q3/DisplayTheList.jsp");
        rd.forward(request,response);
    }
}
```



Practice Problem

Write a Java web application with the following components:

a) A servlet to display the request headers.
b) A JSP which displays the total number of hits to that page since it has been last deployed.
c) A servlet/jsp that sets response header and observes this header with the response in your browser.

Write a scriptless jsp to display the words in uppercase and the word-count (no. of words) of the text written in a textbox.

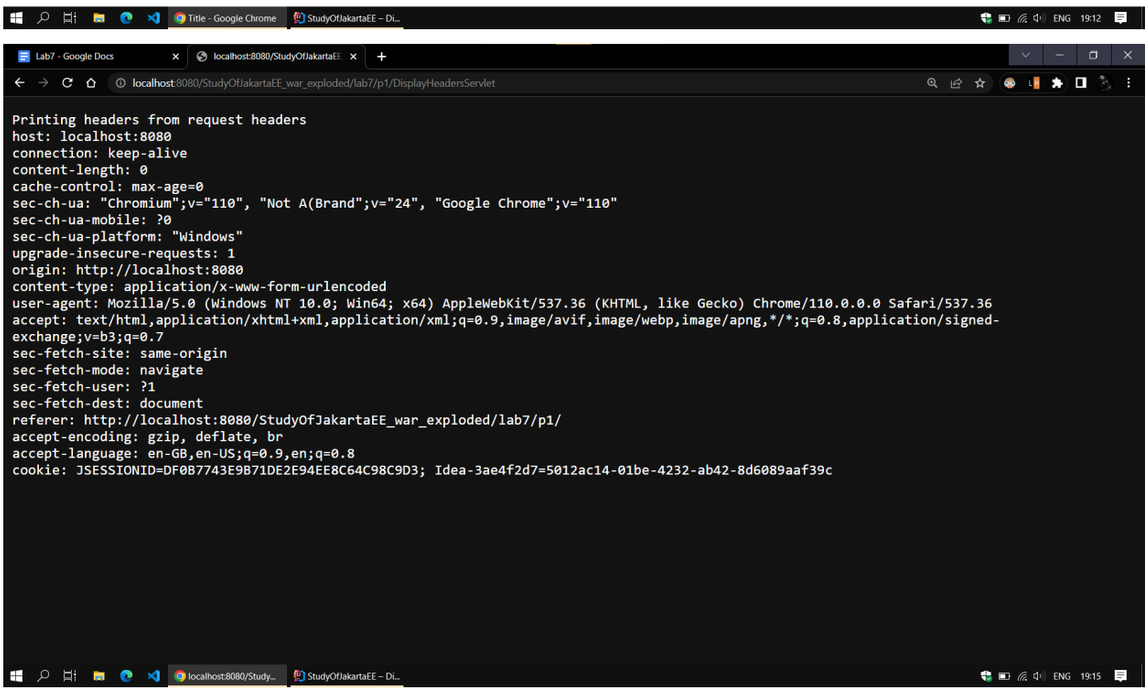
e.g. in the textbox "This is Scriptless JSP" is entered by the user.

Words:
THIS
IS
SCRIPTLESS
JSP
Count:4

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Title</title>
</head>
<body>
<h2>Select option</h2>
<form action="DisplayHeadersServlet" method="post">
  <input type="submit" value="a) Display Request headers"><br>
</form>
<form action="showHits.jsp" method="post">
    <input type="submit" value="b) Display the total number of hits"><br>
</form>
<form action="setAndObserveHeader.jsp" method="post">
    <input type="submit" value="c) jsp that sets response header and observes this
header with the response"><br><br>
</form>
<form action="countNumberOfWords.jsp" method="post">
    <input type="text" name="sentence"><br>
    <input type="submit" value="Count number of Words"><br>
</form>
</body>
</html>
<%@ page import="java.util.Collection" %>
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>Title</title>
</head>
<body>

<%
    response.setIntHeader("Refresh", 5);
    out.print("Custom Header set :" + "(\"Refresh\", 5)<br><br>");
    out.print("Page will reload in every 5 seconds, see time for reference");
```

```
%>
    <% java.util.Date d = new java.util.Date();
    out.println(d.toString()); %>
</body>
</html>

<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>Hits After Deployment</title>
</head>
<body>

<%
  int count = 1;
  if(application.getAttribute("count_of_hits") != null){
    count = (int) application.getAttribute("count_of_hits")+1;
  }
  application.setAttribute("count_of_hits", count);
  out.print("Total number of counts after deployment is: "+ count);
%>
<jsp:include page="index.html" />
</body>
</html>
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>

<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>Title</title>
</head>
<body>
<%! int count = 0; %>
<div id="main">
    <c:set var="counter" value="0" />
    <c:forTokens items="${param.sentence}" delims=" " var="word">
        <c:set var="counter" value="${counter+1}"/>
        <c:out value="${word.toUpperCase()}" />
        <br>
    </c:forTokens>
</div>
    <jsp:include page="index.html" />
</body>
</html>

package lab7.p1;

import jakarta.servlet.*;
import jakarta.servlet.http.*;
import jakarta.servlet.annotation.*;

import java.io.IOException;
import java.io.PrintWriter;
import java.util.Enumeration;

@WebServlet(name = "DisplayHeadersServlet", value =
"/lab7/p1/DisplayHeadersServlet")
public class DisplayHeadersServlet extends HttpServlet {
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
        doPost(request,response);
```

```
    }
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
        PrintWriter out = response.getWriter();
        Enumeration<String> headernames = request.getHeaderNames();
        out.println("Printing headers from request headers");
        String s = null;
        while (headernames.hasMoreElements()){
            s = headernames.nextElement();
            out.println(s +": "+request.getHeader(s));
        }
//        RequestDispatcher rd = request.getRequestDispatcher("index.html");
//        rd.include(request,response);
    }
}
```



Total number of counts after deployment is: 4

Select option

a) Display Request headers

b) Display the total number of hits

c) jsp that sets response header and observes this header with the response

Count number of Words

Custom Header set :("Refresh", 5)

Page will reload in every 5 seconds, see time for reference Sun Feb 12 19:31:05 IST 2023