TRINITY INTERNATIONAL COLLEGE

(Tribhuvan University Affiliated)

Lab Assignment 7: Advance Java Programming

<u>**Submitted By:**</u>   <u>**Submitted to:**</u>

Name:

Program: **B. Sc. (CSIT)**

Roll No:

Semester: seventh (7th)

Date:

KATHMANDU, NEPAL
2020

Unit 7: Servlets and Java Server Pages

1. Write a simple JSP program to display "Kathmandu, Nepal" 10 times. [2069]

⇨

Program

```jsp
<%--
    Document    : Display10Times
    Created on : Jun 26, 2020, 9:13:20 AM
    Author      : dipen
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
                                        charset=UTF-8">
        <title>Display Address 10 Times</title>
    </head>
    <body>
        <%
            for(int i = 1; i<=10; i++)
            {
                out.println("Kathmandu,Nepal<br>");
            }
        %>
    </body>
</html>
```
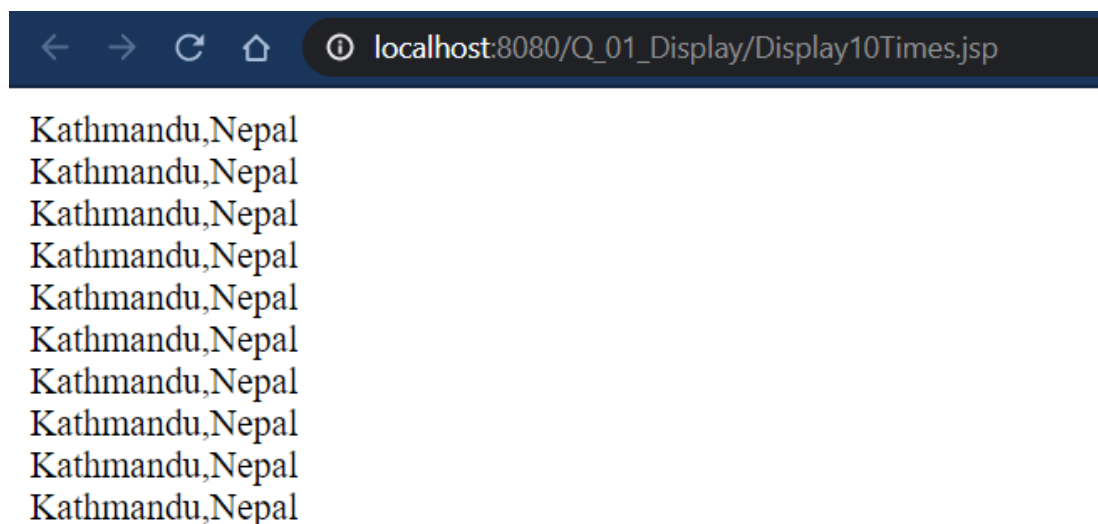
Output:

localhost:8080/Q_01_Display/Display10Times.jsp

Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal
Kathmandu,Nepal

2. Write a simple JSP program to display "Lalitpur, Nepal" 10 times. [2070]
   ⇨

Program

```jsp
<%--
    Document    : Display10Times
    Created on : Jun 26, 2020, 9:13:20 AM
    Author      : dipen
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
                                            charset=UTF-8">
        <title>Display Address 10 Times</title>
    </head>
    <body>
        <%
            for(int i = 1; i<=10; i++)
            {
                out.println("Lalitpur,Nepal<br>");
            }
        %>
    </body>
</html>
```
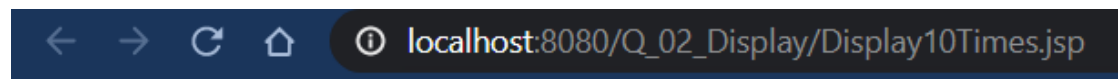
Output:

localhost:8080/Q_02_Display/Display10Times.jsp

Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal
Lalitpur,Nepal

3. Write a simple JSP program to display "Tribhuvan University" 10 times. [2071, 2074]

⇨

Program

```jsp
<%--
    Document    : Display10Times
    Created on : Jun 26, 2020, 9:13:20 AM
    Author      : dipen
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
                                        charset=UTF-8">
        <title>Display Address 10 Times</title>
    </head>
    <body>
        <%
            for(int i = 1; i<=10; i++)
            {
                out.println("Tribhuvan University<br>");
            }
        %>
    </body>
</html>
```

Output:

Tribhuvan University
Tribhuvan University
Tribhuvan University
Tribhuvan University
Tribhuvan University
Tribhuvan University
Tribhuvan University
Tribhuvan University
Tribhuvan University
Tribhuvan University
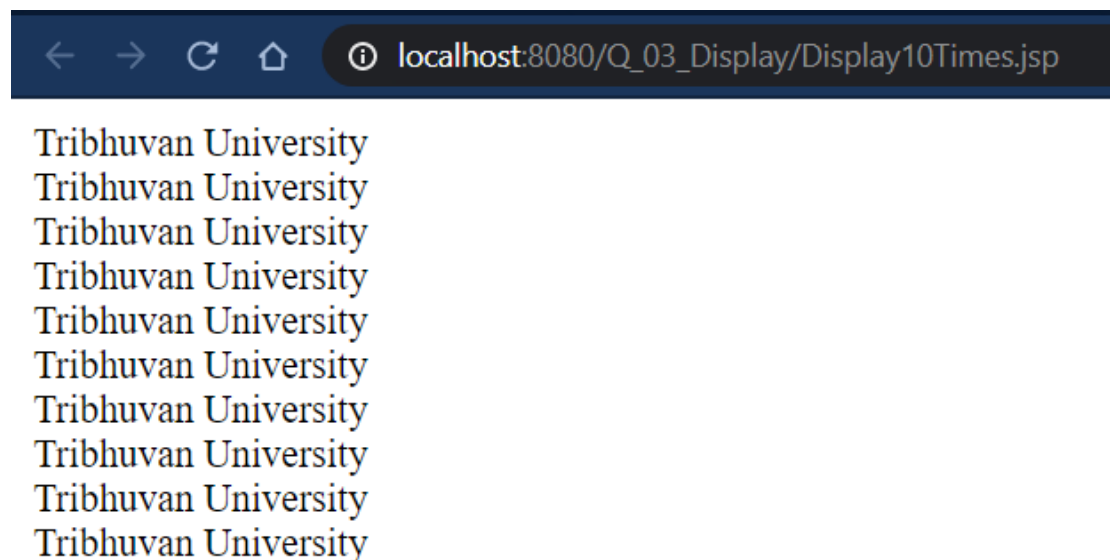
4. Write a program that to illustrate the use of JSP. [2073]

⇨

Program

```jsp
<%--
    Document    : UsingJSP
    Created on  : Jun 26, 2020, 9:22:29 AM
    Author      : dipen
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
                                            charset=UTF-
                                            8">
        <title>Illustrate the use of JSP</title>
    </head>
    <body>
        <%
          for(int i =1; i<=5; i++)
            out.println("Illustration for the use of JSP.<br>");
        %>
    </body>
</html>
```

Output:
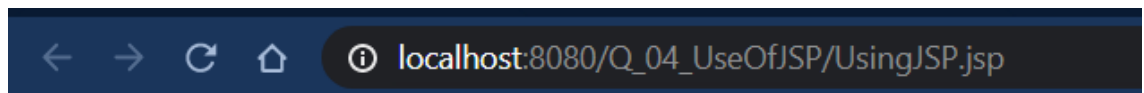
Illustration for the use of JSP.
Illustration for the use of JSP.
Illustration for the use of JSP.
Illustration for the use of JSP.
Illustration for the use of JSP.

5. Write a program to create a JSP web form to take input of a student and submit it to second JSP file which may simply print the values of form submission. [2075]

⇨

Program
StudentForm.jsp

```jsp
<%--
    Document    : StudentForm
    Created on  : Jun 26, 2020, 9:26:23 AM
    Author      : dipen
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
                                    charset=UTF-8">
        <title>Student Form.</title>
    </head>
    <body>
        <h1>Fill up the form!</h1>
        <form action="PrintDetail.jsp" method="POST">

            Name: <input type="text" name="name"><br><br>
            Roll No.: <input type="text" name="roll"><br><br>
            Address: <input type="text" name="address"><br><br>
            <input type="submit" value="Submit">
        </form>
    </body>
</html>
```

PrintDetail.jsp

```jsp
<%--
    Document    : PrintDetail
    Created on  : Jun 26, 2020, 9:33:47 AM
    Author      : dipen
--%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
                                    charset=UTF-8">
        <title>Print Student Details.</title>
    </head>
    <body>
        <h1>Student Details!</h1>
        Name: <%= request.getParameter("name") %><br>
        Roll No.: <%= request.getParameter("roll") %><br>
        Address: <%= request.getParameter("address") %><br>
    </body>
</html>
```
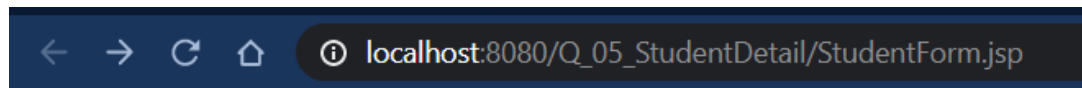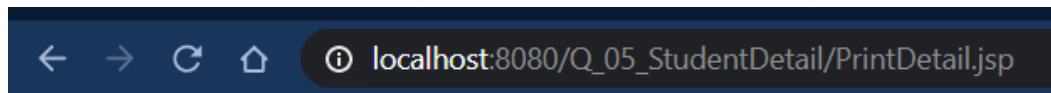
6. Write a simple Servlet program to display "Kathmandu, Nepal" 10 times.
   ⇨

   Program

```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@WebServlet(urlPatterns ={"/Display10Times"})
public class Display10Times extends HttpServlet
{
    @Override
    protected void doGet(HttpServletRequest request,
                                 HttpServletResponse response)
                        throws ServletException, IOException
    {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter())
         {
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Message</title>");
            for(int i = 1; i<=10; i++)
            {
            out.println("<h1>Kathmandu Nepal.</h1>");
            }
            out.println("</head>");
         }
    }
}
```

   Output:
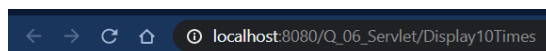
   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

   Kathmandu Nepal.

7. Write a Servlet program to process a login form and authenticate the user. You can use hardcoded values for username and password.

⇨

Program
LoginForm.html

```html
<!DOCTYPE html>
<html>
    <head>
        <title>Login Form</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width,
 initial-
 scale=1.0">
    </head>
    <body>
        <form action="LoginDemo" method="POST">

            Username: <input type="text" name="username"/>
            </br>
            </br>
            Password:<input type="password" name="password"/>
            </br>
            </br>
            <input type="submit" value="Submit"/>

        </form>
    </body>
</html>
```

LoginDemo.java

```java
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;


@WebServlet(urlPatterns = {"/LoginDemo"})
public class LoginDemo extends HttpServlet
{

    protected void doPost(HttpServletRequest request,
                                    HttpServletResponse response)
                            throws ServletException, IOException
    {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter())
        {
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet LoginDemo</title>");
```

```java
            out.println("</head>");
            out.println("<body>");

            //getting form input values
            String getUsername = request.getParameter("username");
            String getPassword = request.getParameter("password");

            //checking username and password.
            if(getUsername.equals("admin") &&
                                getPassword.equals("admin"))
            {
                out.println("<h1 style=color:green;>User is
                            authenticated.<br> Welcome to the
                            admin page!</h1>");
            }
            else
            {
                out.println("<h1 style=color:red;>User is
                            invalid!!<br> Username or Password
                            error.</h1>");
            }
            out.println("</body>");
            out.println("</html>");
        }
    }
}
```
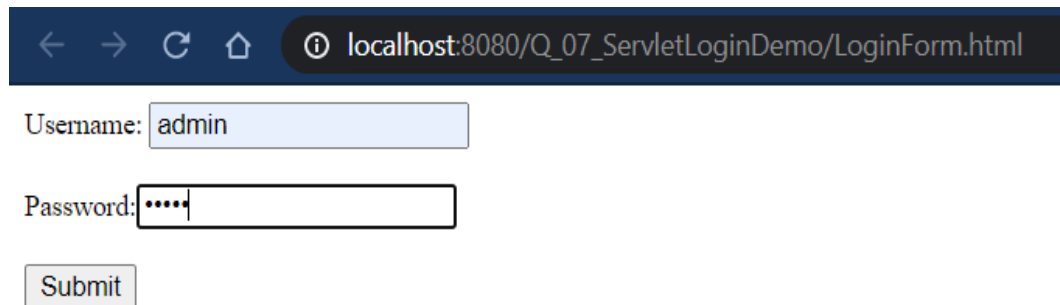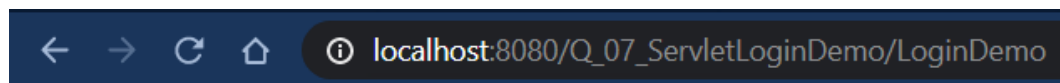
Output:

If username = admin & password = admin then user is authenticated.

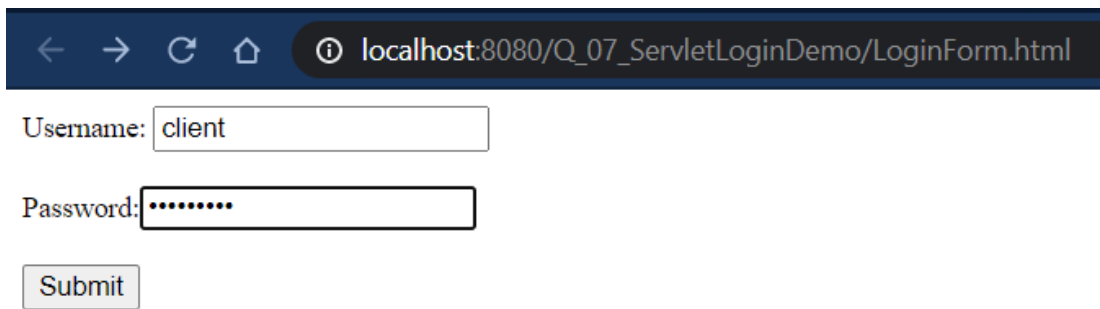← → C ⌂ ⓘ localhost:8080/Q_07_ServletLoginDemo/LoginForm.html

Username: admin

Password: •••••

Submit

← → C ⌂ ⓘ localhost:8080/Q_07_ServletLoginDemo/LoginDemo

User is authenticated.
Welcome to the admin page!
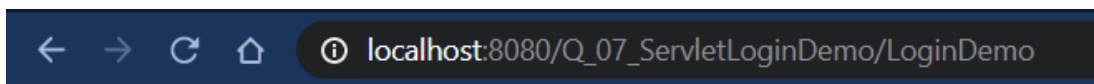
If username or password is other than admin then user is invalid.

User is invalid!!
Username or Password error.

8. Write a Servlet program to show how to create and retrieve the value of a cookie.
⇨

Program
UserForm.html

```html
<html>
    <head>
        <title>User Form</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-
                                                    scale=1.0">
    </head>
    <body>
        <form action="WelcomeCookie" method="POST">
            Username: <input type="text" name="username"/>
            <input type="submit" value="Submit"/>
        </form>
    </body>
</html>
```

WelcomeCookie.java

```java
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.Cookie;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
```

```java
@WebServlet(urlPatterns = {"/WelcomeCookie"})
public class WelcomeCookie extends HttpServlet
{
    //create Cookie
    private void addCookies(HttpServletResponse response,String name,
                                                        String value)
    {
        Cookie cookie = new Cookie(name, value);
        response.addCookie(cookie);
    }
    //Read Cookie
    private String getCookie(HttpServletRequest request, String name)
    {
        Cookie[] cookies = request.getCookies();

        if(cookies == null)
            return null;
        for(Cookie cookie: cookies)
        {
            if(cookie.getName().equals(name))
                return cookie.getValue();
        }
        return null;
    }
    protected void doPost(HttpServletRequest request,
     HttpServletResponse response)throws ServletException, IOException
    {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter())
        {
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet WelcomeCookie</title>");
            out.println("</head>");
            out.println("<body>");

            //getting the form input from user
            String name = request.getParameter("username");

            //Creating Cookie
            addCookies(response, name, name);
            out.print("Cookie was created with the cookie name as " +
                                                        name);
            //calling getCookie() method to get the cookie value
            String cookieValue = getCookie(request,name);
            if(cookieValue!=null)
                out.println("</br>Welcome " + cookieValue);
            out.println("</body>");
            out.println("</html>");
        }
    }
}
```
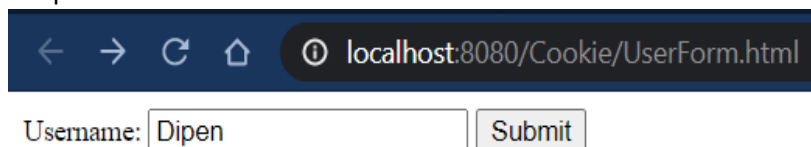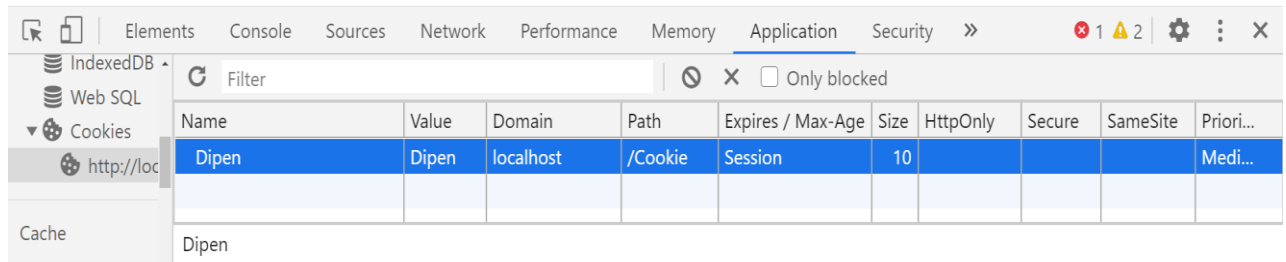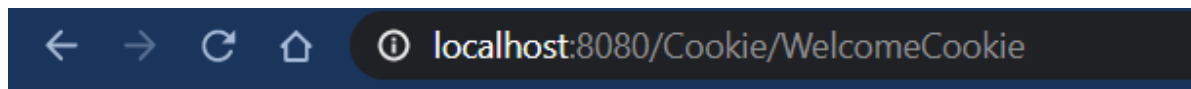
Output:

Username: Dipen [Submit]

Cookies stored in browser

Cookie was created with the cookie name as Dipen
Welcome Dipen

9. Write a JSP program to demonstrate login, logout and secure admin page.

⇨

Program
LoginForm.jsp

```jsp
<%@page contentType="text/html" pageEncoding="UTF-8"%>

<%
    String error ="";
      if(request.getMethod().equalsIgnoreCase("POST"))
        {
            String username = request.getParameter("username");
            String password = request.getParameter("password");
            if (username.equals("admin") && password.equals("admin"))
            {
                session.setAttribute("username", username);
                response.sendRedirect("admin.jsp");
            }
            else
            {
                error = "Invalid Username or Password!!";
            }
        }
%>
<!DOCTYPE html>
<html>
    <head>
        <title>Login Form</title>
    </head>
    <body>
        <h1>User Login Form.</h1>
        <form action ="" method="POST">
            Username: <input type="text" name="username"><br><br>
            Password:<input type="password" name="password"><br><br>
            <p style= color:red;><%= error %></p>
            <input type="Submit" value="Submit">
    </body>
</html>
```

admin.jsp

```jsp
<%--
    Document    : admin.jsp
    Created on  : Jun 28, 2020, 11:27:32 AM
    Author      : dipen
--%>

<%
        String username = (String)session.getAttribute("username");
        if(username == null || username.equals(""))
        {
            response.sendRedirect("LoginForm.jsp");
        }
%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
charset=UTF-8">
        <title>Admin Page.</title>
    </head>
    <body>
        <h1 style="color:green">Welcome to the Admin Page!</h1>
        <a href="logout.jsp">Logout</a>
    </body>
</html>
```
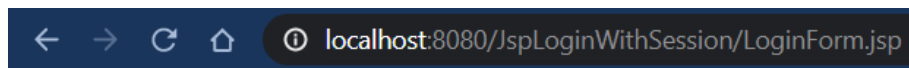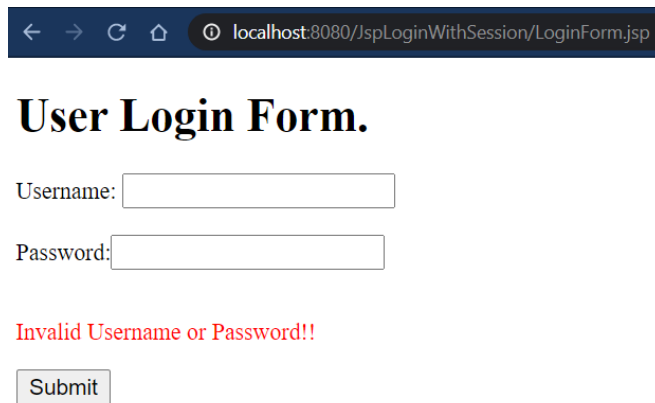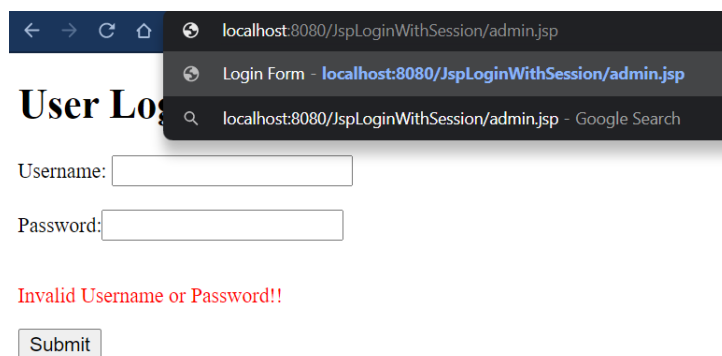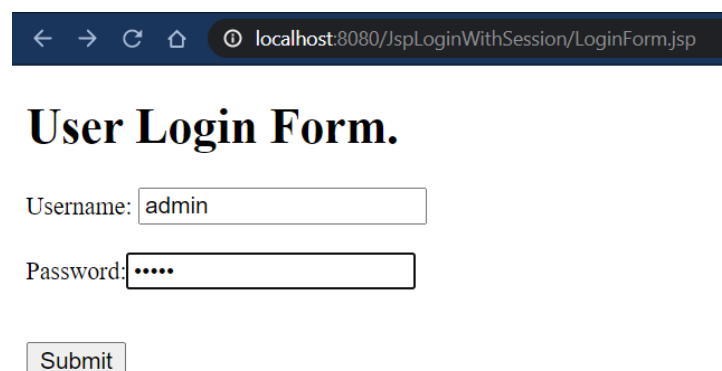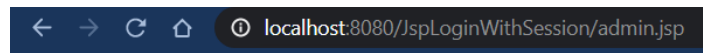
logout.jsp

```jsp
<%--
    Document    : logout
    Created on  : Jun 28, 2020, 11:24:39 AM
    Author      : dipen
--%>

 <% session.invalidate(); %>
 <% response.sendRedirect("LoginForm.jsp"); %>
```

Output:

User Login Form.

Username: Client

Password: ••••••

Submit

Username and password with 'admin' is only valid.

If we type in url to directly access admin.jsp page then it will redirect to LoginForm.jsp if authenticated user hasn't logged in before.

Username and Password with 'admin' is the authenticated one.

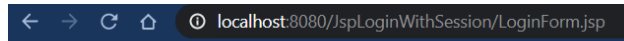Welcome to the Admin Page!

Logout

After logout is pressed

User Login Form.

Username: [   ]

Password: [   ]

Submit

10. Write a JSP program to show how to use custom error page.
   ⇨

   Program
   Index.jsp

```
<%@page errorPage="error.jsp" %>
<!DOCTYPE html>
<html>
<head>
 <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Error Demo</title>
</head>
    <body>
        <h1>Division</h1>
        <%
            if(true)
                throw new RuntimeException("Hello error page!");
        %>
    </body>
</html>
```
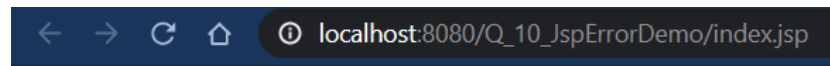
error.jsp

```
<%@page isErrorPage="true" %>
<!DOCTYPE html>
<html>
<head>
 <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>Error</title>
</head>
    <body>
        <h1>Error</h1>
        <p><%= exception.getMessage() %></p>
    </body>
</html>
```