Web Application

So I created a Web Application called "**Login Module**", which is a simple non-styled, login-logout web app in which user will enter his/her credentials to enter into his/her account.

Features

- User can Login into his/her account by providing his/her login details like username and password.
- After successful login, user can view embedded videos on a separately made Jsp
- User can visit his Github Profile.
- User can visit his Linkedin Profile.

Security

- Without proper username and password, user can not access the account.
- If user, by any means, knows URLs of secured pages of account, He can't enter those pages by just running those Urls on search bar.
- Proper session management has been done so that if you are login in a browser, you can not login on another browser by just copy pasting the links.
- Proper cookies are being managed so that if user once log out from the account, he can not go back by pressing the back button.

Technologies Used

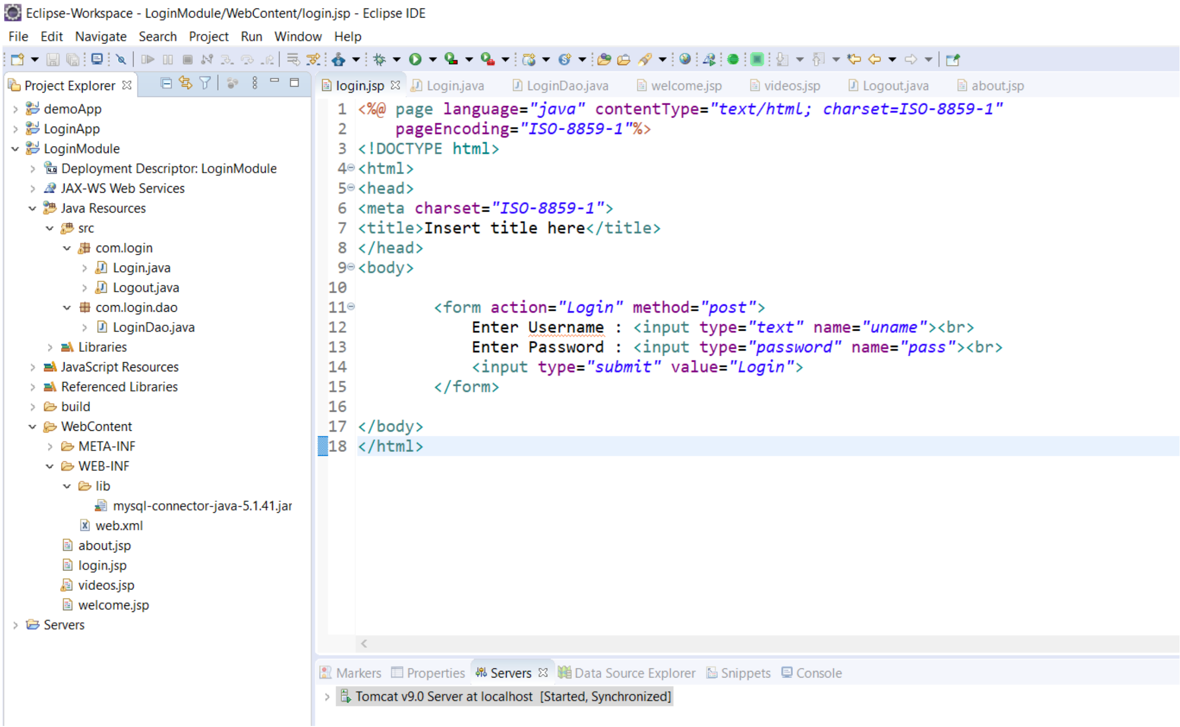
- Java Servlets
- Java Servlet Pages (Jsp)
- HTML 5
- Java Database Connectivity (JDBC)
- MySQL

Softwares Used:

- Eclipse EE
- MySQL Workbench
- Apache Tomcat Server 9.0

Steps

1. First I created three JSP’s i.e. login.jsp, welcome.jsp and videos.jsp.



```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>

        <form action="Login" method="post">
            Enter Username : <input type="text" name="uname"><br>
            Enter Password : <input type="password" name="pass"><br>
            <input type="submit" value="Login">
        </form>

</body>
</html>
```

Tomcat v9.0 Server at localhost [Started, Synchronized]

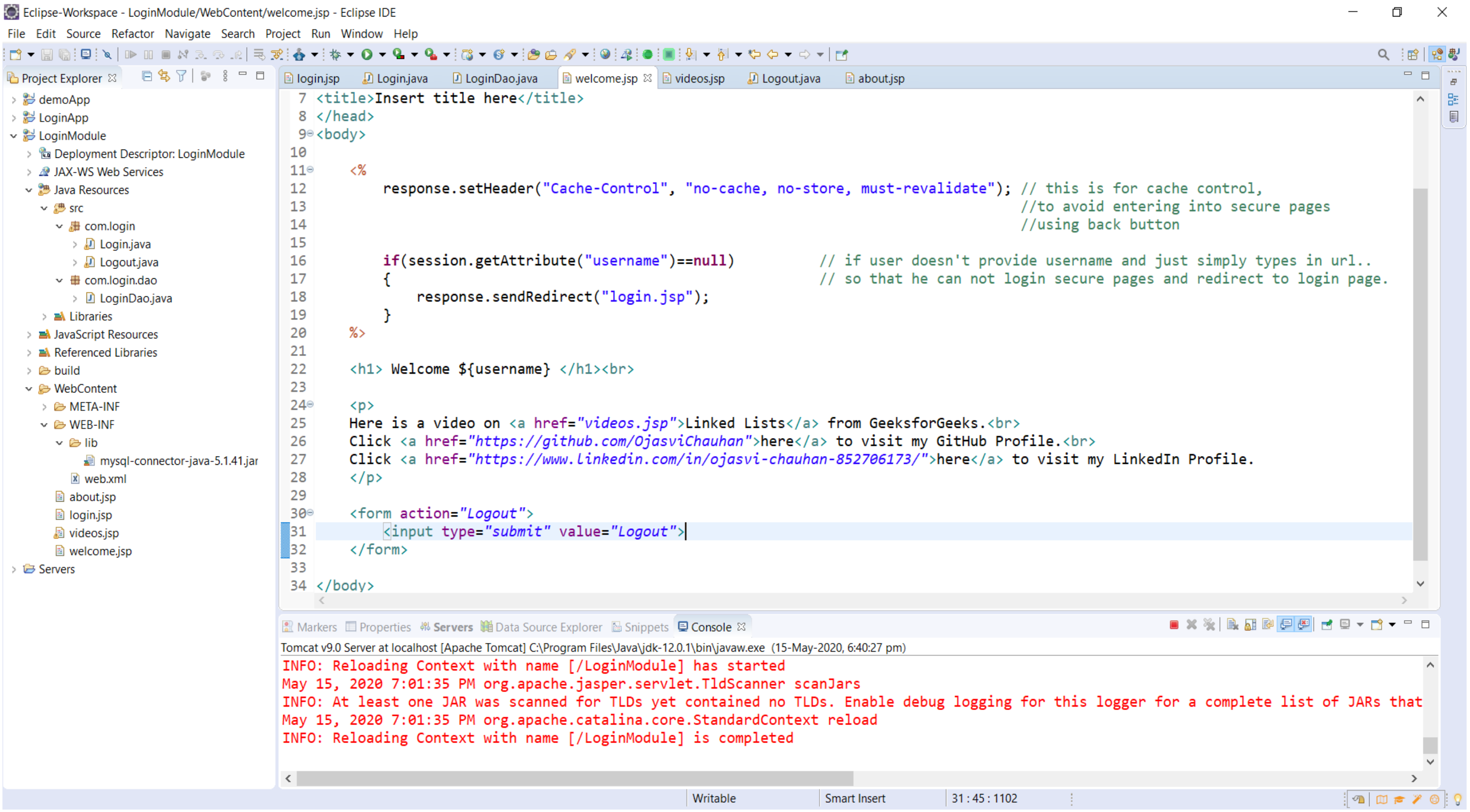
Login.jsp code:

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>

            <form action="Login" method="post">
                  Enter Username : <input type="text" name="uname"><br>
                  Enter Password : <input type="password" name="pass"><br>
                  <input type="submit" value="Login">
            </form>

</body>
</html>
```

Welcome.jsp



```
<title>Insert title here</title>
</head>
<body>

    <%
        response.setHeader("Cache-Control", "no-cache, no-store, must-revalidate"); // this is for cache control,
                                                                                    //to avoid entering into secure pages
                                                                                    //using back button

        if(session.getAttribute("username")==null)         // if user doesn't provide username and just simply types in url..
        {                                                  // so that he can not login secure pages and redirect to login page.
            response.sendRedirect("login.jsp");
        }
    %>

    <h1> Welcome ${username} </h1><br>

    <p>
    Here is a video on <a href="videos.jsp">Linked Lists</a> from GeeksforGeeks.<br>
    Click <a href="https://github.com/OjasviChauhan">here</a> to visit my GitHub Profile.<br>
    Click <a href="https://www.linkedin.com/in/ojasvi-chauhan-852706173/">here</a> to visit my LinkedIn Profile.
    </p>

    <form action="Logout">
        <input type="submit" value="Logout">
    </form>

</body>
```

```
Tomcat v9.0 Server at localhost [Apache Tomcat] C:\Program Files\Java\jdk-12.0.1\bin\javaw.exe  (15-May-2020, 6:40:27 pm)
INFO: Reloading Context with name [/LoginModule] has started
May 15, 2020 7:01:35 PM org.apache.jasper.servlet.TldScanner scanJars
INFO: At least one JAR was scanned for TLDs yet contained no TLDs. Enable debug logging for this logger for a complete list of JARs that
May 15, 2020 7:01:35 PM org.apache.catalina.core.StandardContext reload
INFO: Reloading Context with name [/LoginModule] is completed
```

Code:

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>

      <%
            response.setHeader("Cache-Control", "no-cache, no-store, must-revalidate"); // this is for cache control,
                                                                       //to avoid entering into secure pages
                                                                       //using back button
            if(session.getAttribute("username")==null)                  // if
user doesn't provide username and just simply types in url..
            {
            // so that he can not login secure pages and redirect to login
page.
                  response.sendRedirect("login.jsp");
            }
      %>

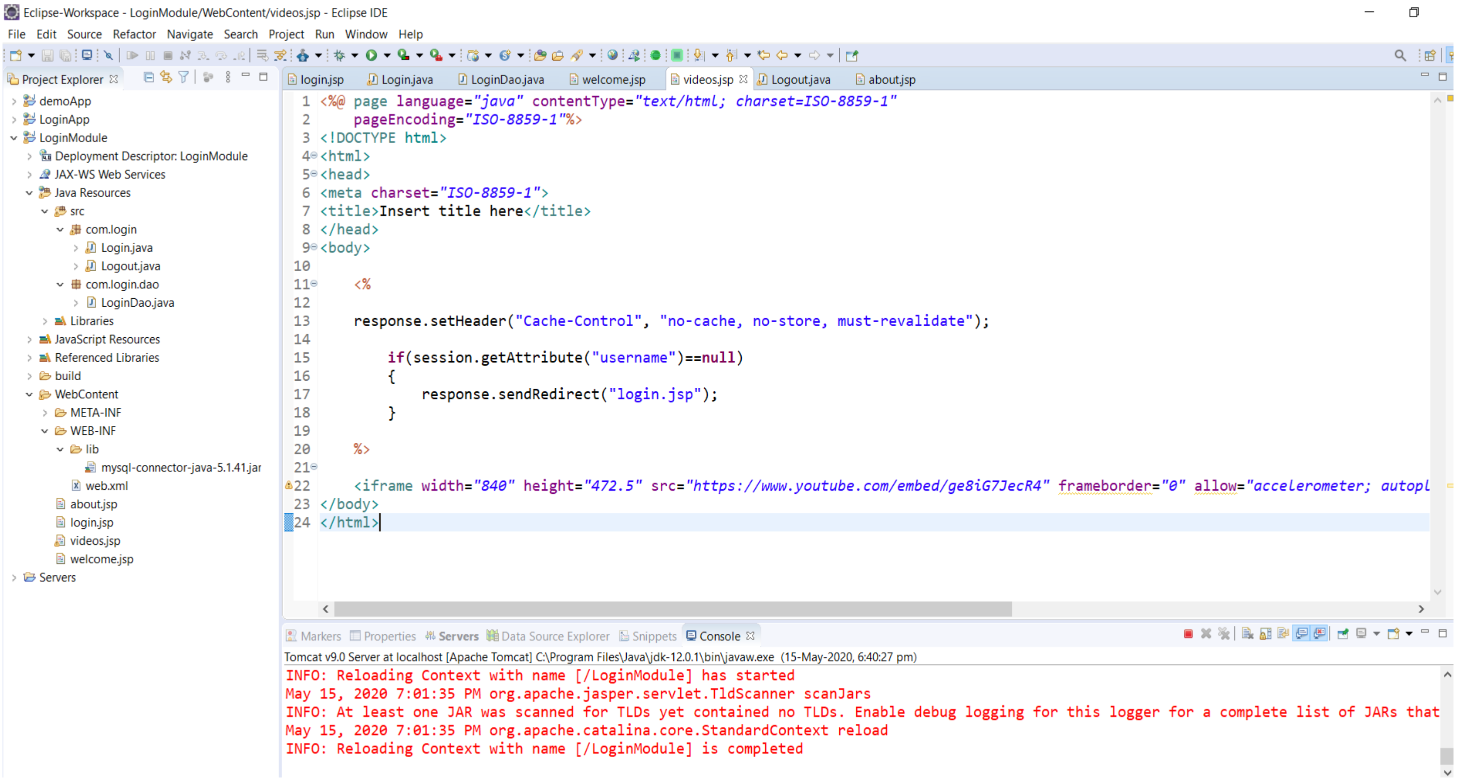
      <h1> Welcome ${username} </h1><br>

      <p>
      Here is a video on <a href="videos.jsp">Linked Lists</a> from
GeeksforGeeks.<br>
      Click <a href="https://github.com/OjasviChauhan">here</a> to visit my
GitHub Profile.<br>
      Click <a href="https://www.linkedin.com/in/ojasvi-chauhan-
852706173/">here</a> to visit my LinkedIn Profile.
      </p>

      <form action="Logout">
            <input type="submit" value="Logout">
      </form>

</body>
</html>
```

Videos.jsp



```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>

    <%

    response.setHeader("Cache-Control", "no-cache, no-store, must-revalidate");

        if(session.getAttribute("username")==null)
        {
            response.sendRedirect("login.jsp");
        }

    %>

    <iframe width="840" height="472.5" src="https://www.youtube.com/embed/ge8iG7JecR4" frameborder="0" allow="accelerometer; autopl
</body>
</html>
```

```
Tomcat v9.0 Server at localhost [Apache Tomcat] C:\Program Files\Java\jdk-12.0.1\bin\javaw.exe  (15-May-2020, 6:40:27 pm)
INFO: Reloading Context with name [/LoginModule] has started
May 15, 2020 7:01:35 PM org.apache.jasper.servlet.TldScanner scanJars
INFO: At least one JAR was scanned for TLDs yet contained no TLDs. Enable debug logging for this logger for a complete list of JARs that
May 15, 2020 7:01:35 PM org.apache.catalina.core.StandardContext reload
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Code:

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>

      <%

      response.setHeader("Cache-Control", "no-cache, no-store, must-
revalidate");

            if(session.getAttribute("username")==null)
            {
                  response.sendRedirect("login.jsp");
            }

      %>

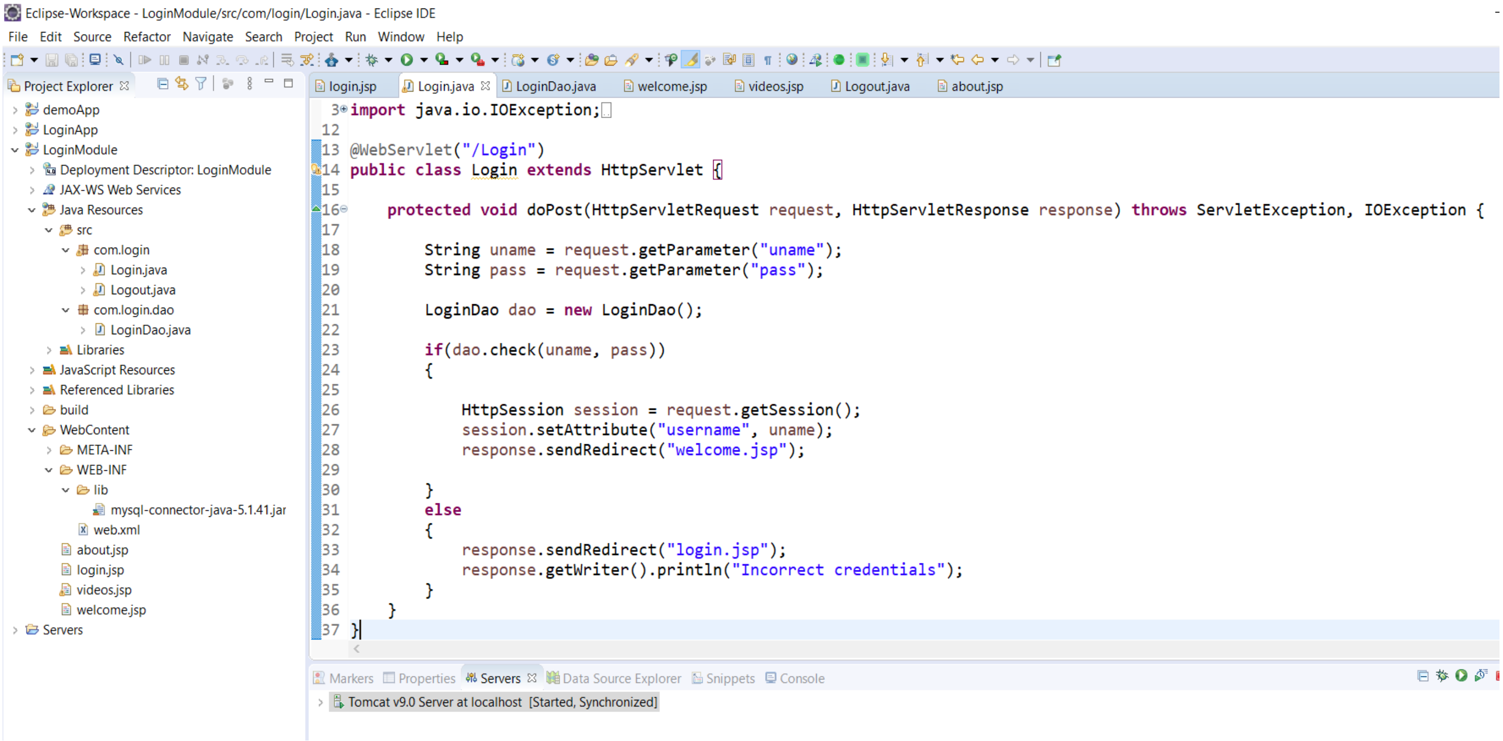
      <iframe width="840" height="472.5"
src="https://www.youtube.com/embed/ge8iG7JecR4" frameborder="0"
allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-
picture" allowfullscreen></iframe>
</body>
</html>
```

- In welcome.jsp, I've used *setHeader* method for cookie management in which default key words are being used. This is done to avoid **back button** security issue.

- And in both welcome.jsp and video.jsp, I've used *session.getattribute* method to check whether user has entered username or it is just null. This is done to avoid **session hijacking.**

- For video embedding, I've just copied the embed link generated by YouTube sharing option.

2. Then I created two Servlets i.e. Login.java & Logout.java.



```
import java.io.IOException;

@WebServlet("/Login")
public class Login extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

        String uname = request.getParameter("uname");
        String pass = request.getParameter("pass");

        LoginDao dao = new LoginDao();

        if(dao.check(uname, pass))
        {

            HttpSession session = request.getSession();
            session.setAttribute("username", uname);
            response.sendRedirect("welcome.jsp");

        }
        else
        {
            response.sendRedirect("login.jsp");
            response.getWriter().println("Incorrect credentials");
        }
    }
}
```

```
Tomcat v9.0 Server at localhost  [Started, Synchronized]
```

Login.java code:

```
package com.login;

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

import com.login.dao.LoginDao;

@WebServlet("/Login")
public class Login extends HttpServlet {

	protected void doPost(HttpServletRequest request, HttpServletResponse 
response) throws ServletException, IOException {

		String uname = request.getParameter("uname");
		String pass = request.getParameter("pass");

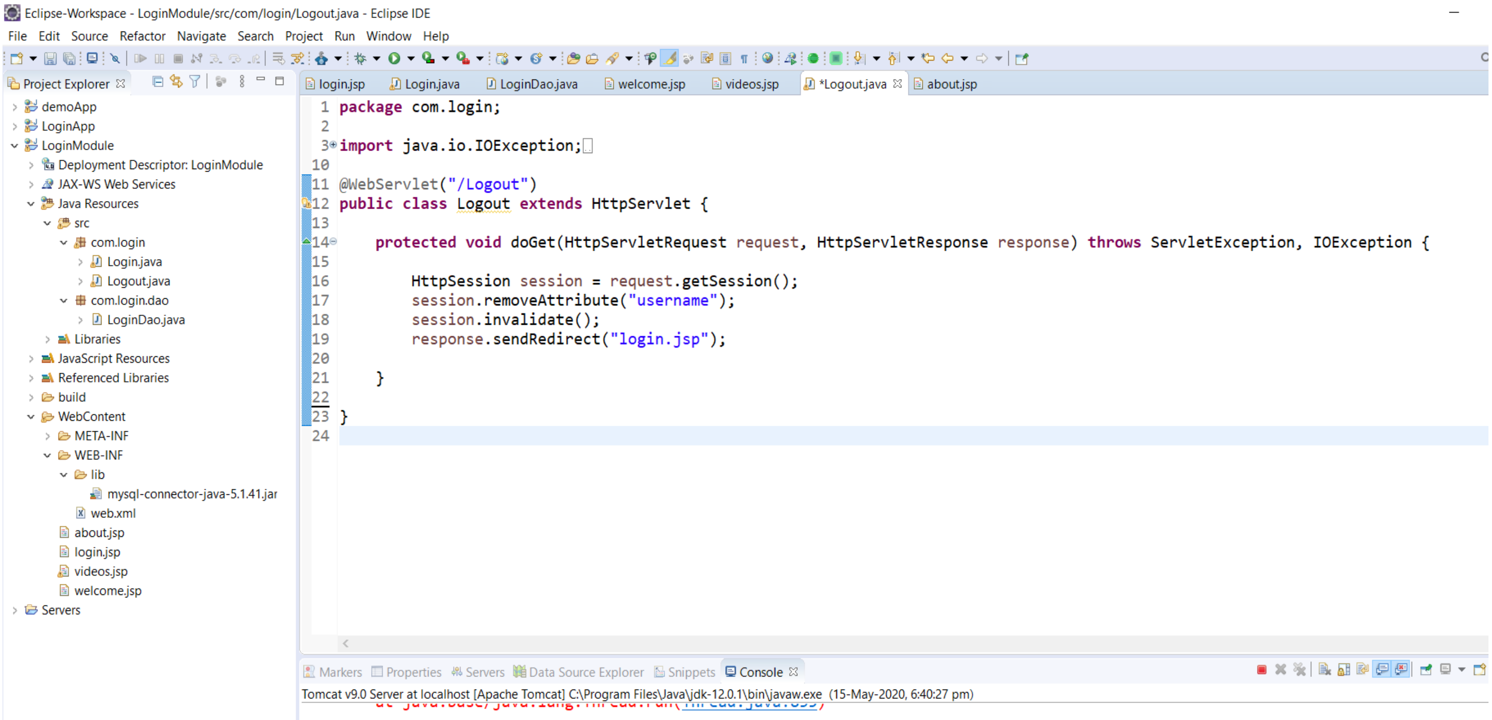
		LoginDao dao = new LoginDao(); // creating object of Database
```

```
        if(dao.check(uname, pass))
        {

            HttpSession session = request.getSession();
            session.setAttribute("username", uname);
            response.sendRedirect("welcome.jsp");

        }
        else
        {
            response.sendRedirect("login.jsp");
            response.getWriter().println("Incorrect credentials");
        }
    }
}
```

Logout.java



```
package com.login;

import java.io.IOException;

@WebServlet("/Logout")
public class Logout extends HttpServlet {

    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

        HttpSession session = request.getSession();
        session.removeAttribute("username");
        session.invalidate();
        response.sendRedirect("login.jsp");

    }

}
```

```
Tomcat v9.0 Server at localhost [Apache Tomcat] C:\Program Files\Java\jdk-12.0.1\bin\javaw.exe  (15-May-2020, 6:40:27 pm)
```

code:

```
package com.login;

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

@WebServlet("/Logout")
public class Logout extends HttpServlet {

      protected void doGet(HttpServletRequest request, HttpServletResponse 
response) throws ServletException, IOException {

            HttpSession session = request.getSession();
            session.removeAttribute("username");
            session.invalidate();
            response.sendRedirect("login.jsp");

      }
}
```

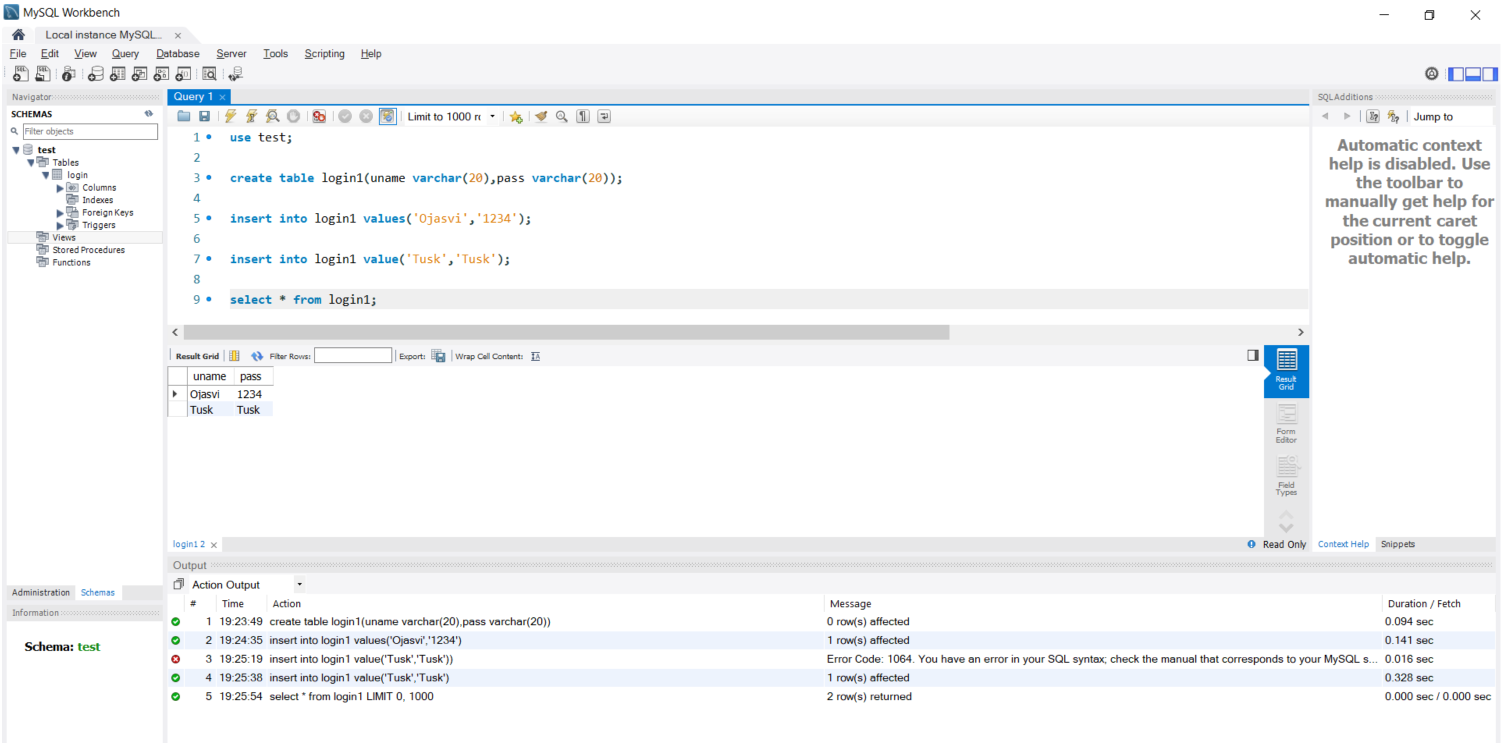
- In Login servlet, I've used Post method to obtain uname and password.
- After that I've created an object for LoginDao database servlet. And then checked login credentials by using *check* function (described later) made in LoginDao servlet in which *HttpSession* attribute is used.
- If credentials are wrong then I redirect it to login.jsp page and printing incorrect credentials.

- In Logout servlet, I've used Get method.
- And then I've just used *session.removeAttribute* to remove session and then invalidate it by using *session.invalidate* attribute.

3. After creating servlets and Jsp, Its time to connect it with database.
   So firstly I created a table on Sql workbench and named it login.

   Commands:

```
> use test;
> create table login(uname varchar(20),pass varchar(20));
> insert into login values('Ojasvi','1234');
> insert into login value('Tusk','Tusk');
> Select * from login.
```



```sql
use test;

create table login1(uname varchar(20),pass varchar(20));

insert into login1 values('Ojasvi','1234');

insert into login1 value('Tusk','Tusk');

select * from login1;
```

uname	pass
Ojasvi	1234
Tusk	Tusk

#	Time	Action	Message	Duration / Fetch
1	19:23:49	create table login1(uname varchar(20),pass varchar(20))	0 row(s) affected	0.094 sec
2	19:24:35	insert into login1 values('Ojasvi','1234')	1 row(s) affected	0.141 sec
3	19:25:19	insert into login1 value('Tusk','Tusk'))	Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds to your MySQL s...	0.016 sec
4	19:25:38	insert into login1 value('Tusk','Tusk')	1 row(s) affected	0.328 sec
5	19:25:54	select * from login1 LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

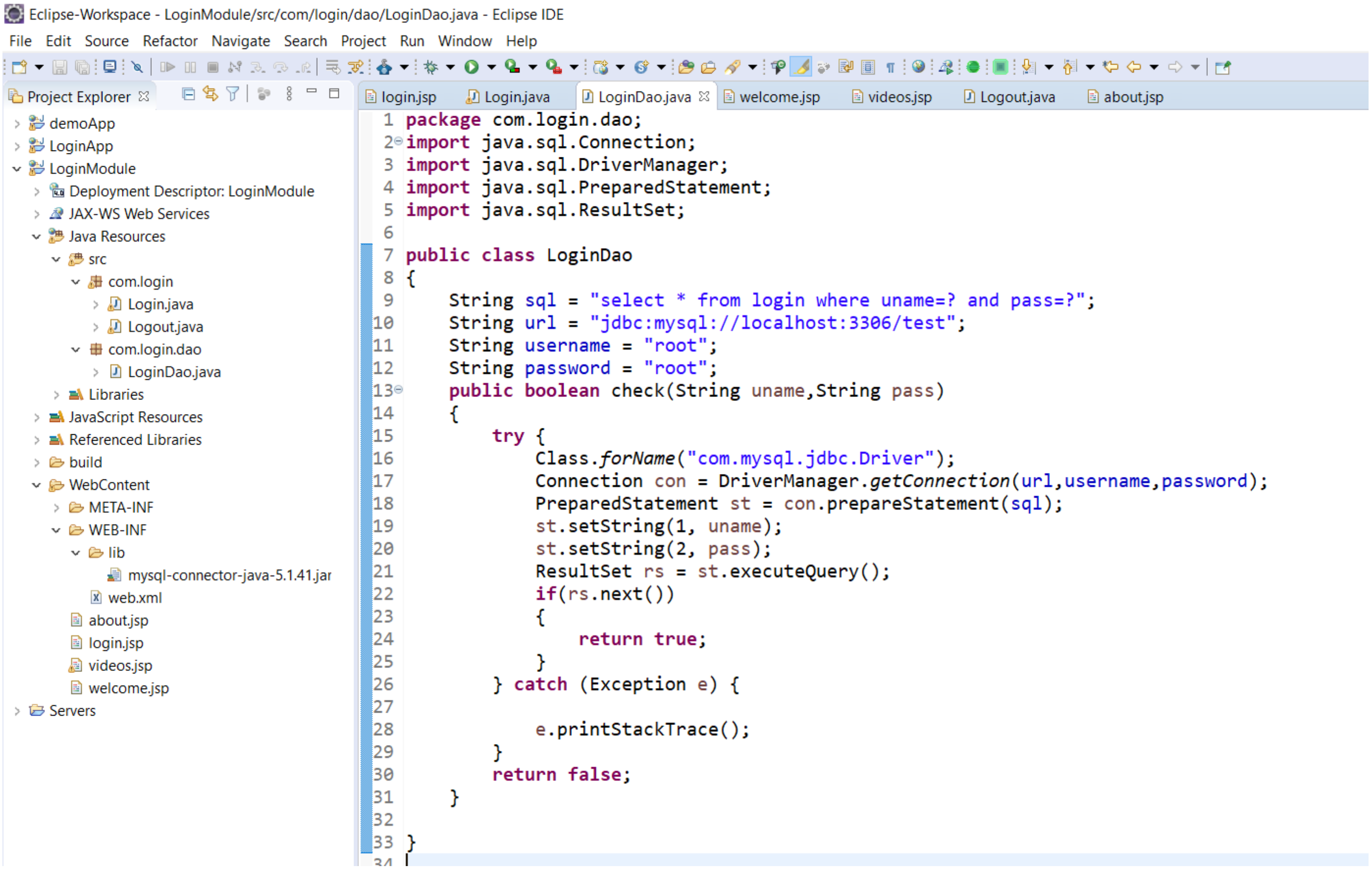
Schema: test

4. Then at last, I created LoginDao.java, which is a separate file for connecting database with servlet.

Code:

```java
package com.login.dao;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;

public class LoginDao
{
	String sql = "select * from login where uname=? and pass=?";
	String url = "jdbc:mysql://localhost:3306/test";
	String username = "root";
	String password = "root";
	public boolean check(String uname,String pass)
	{
		try {
			Class.forName("com.mysql.jdbc.Driver");
			Connection con = 
DriverManager.getConnection(url,username,password);
			PreparedStatement st = con.prepareStatement(sql);
			st.setString(1, uname);
			st.setString(2, pass);
			ResultSet rs = st.executeQuery();
			if(rs.next())
```

```
            {
                return true;
            }
        } catch (Exception e) {

            e.printStackTrace();
        }
        return false;
    }

}
```

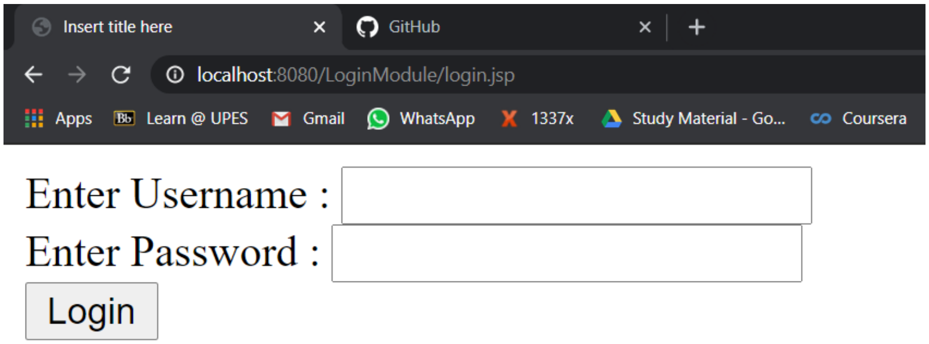


```
package com.login.dao;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;

public class LoginDao
{
    String sql = "select * from login where uname=? and pass=?";
    String url = "jdbc:mysql://localhost:3306/test";
    String username = "root";
    String password = "root";
    public boolean check(String uname,String pass)
    {
        try {
            Class.forName("com.mysql.jdbc.Driver");
            Connection con = DriverManager.getConnection(url,username,password);
            PreparedStatement st = con.prepareStatement(sql);
            st.setString(1, uname);
            st.setString(2, pass);
            ResultSet rs = st.executeQuery();
            if(rs.next())
            {
                return true;
            }
        } catch (Exception e) {

            e.printStackTrace();
        }
        return false;
    }

}
```

- Here I used “`com.mysql.jdbc.Driver`” as a default class name and “`jdbc:mysql://localhost:3306/test`” as a url path for database.

- Then I created a boolean check method which will use a defined sql query to check whether info is present in database or not.

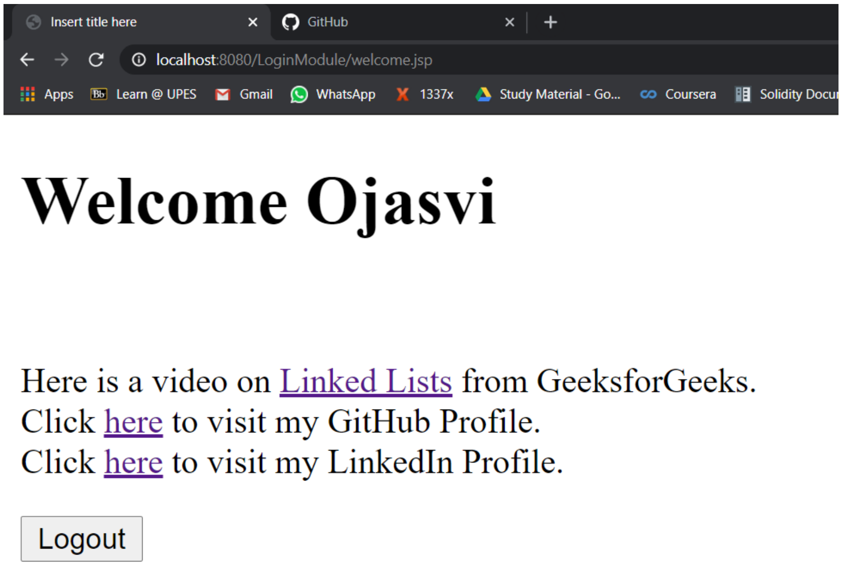
5. In the end, I ran the project on tomcat server and it finally displayed on chrome ☺



Enter Username :

Enter Password :

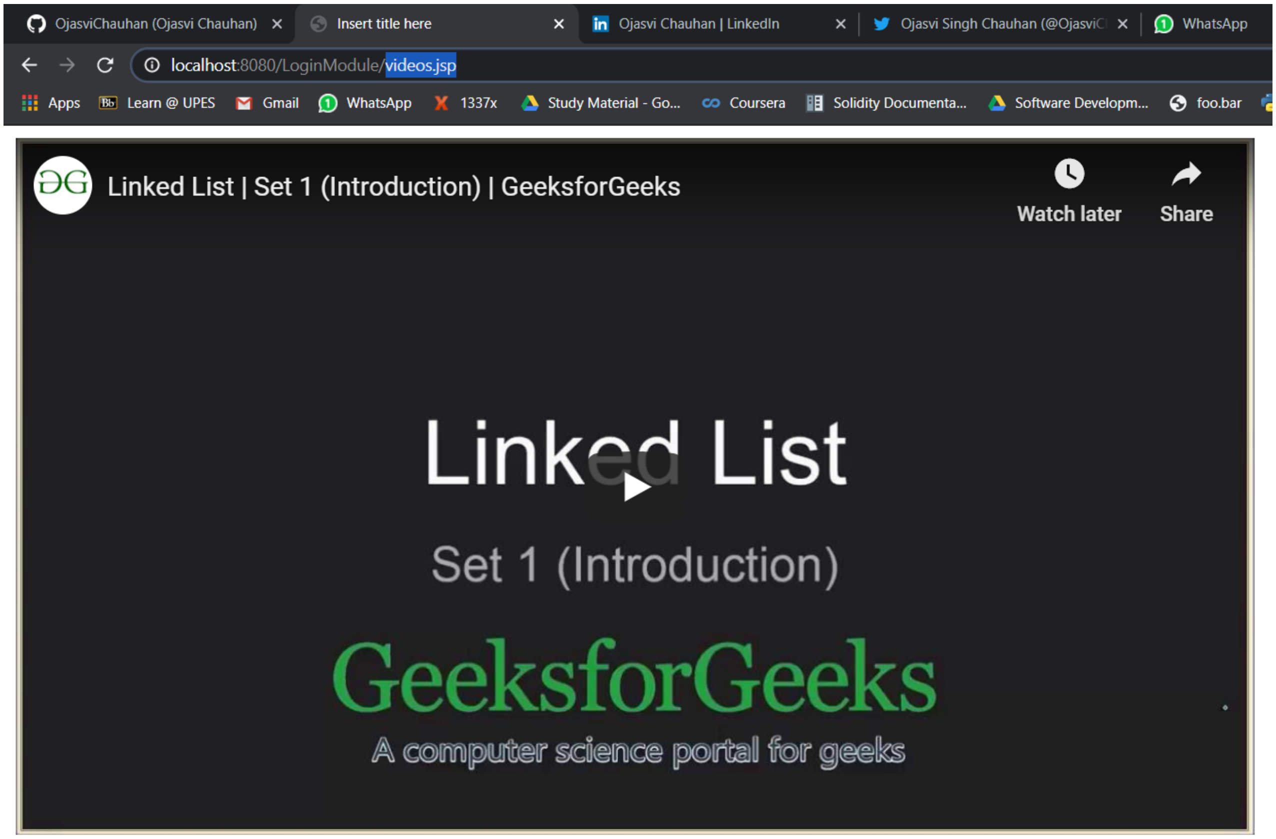
After entering username and password, welcome.jsp page got displayed:



Welcome Ojasvi

Here is a video on Linked Lists from GeeksforGeeks.
Click here to visit my GitHub Profile.
Click here to visit my LinkedIn Profile.

On clicking Linked List link, we will reach to videos.jsp page which has a embedded video.


OjasviChauhan (Ojasvi Chauhan)
Insert title here
Ojasvi Chauhan | LinkedIn
Ojasvi Singh Chauhan (@OjasviC
WhatsApp
localhost:8080/LoginModule/videos.jsp
Apps
Learn @ UPES
Gmail
WhatsApp
1337x
Study Material - Go...
Coursera
Solidity Documenta...
Software Developm...
foo.bar
Linked List | Set 1 (Introduction) | GeeksforGeeks
Watch later
Share
Linked List
Set 1 (Introduction)
GeeksforGeeks
A computer science portal for geeks

Conclusion

So this was the Dynamic Web Application created using Eclipse EE IDE.

The name of the Project is “Login Module”.

Check my files on my GitHub Repository : https://github.com/OjasviChauhan/Servlets/tree/master/LoginModule

Citations

https://www.youtube.com/watch?v=cYc3FjhMMzI&list=PLsyeobzWxl7pUPF2xjjJiG4BKC9x_GY46&index=32

https://www.youtube.com/watch?v=gQLQ0t9B5yk&list=PLsyeobzWxl7pUPF2xjjJiG4BKC9x_GY46&index=33

https://www.youtube.com/watch?v=HYSrsxhyEik&list=PLsyeobzWxl7pUPF2xjjJiG4BKC9x_GY46&index=34