

Advanced Server Side Programming (Lab)

Assessment 3 **JSP web application**

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Lab Slot : L21 + L22

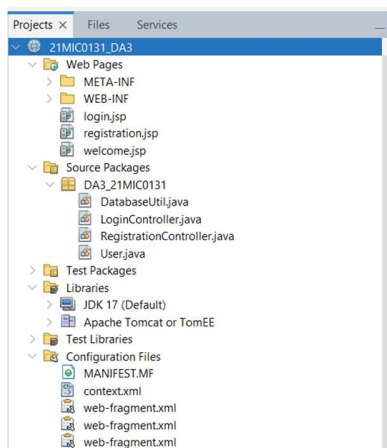
Course code : CSI3023

Problem Statement : “Login credential validation using JSP”

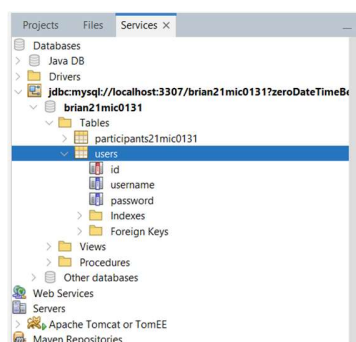
Design and develop a application for login credential validation using JSP. Provide the login page to a user to enter his username and password information. If he/she is a new user, provide the registration form, otherwise he/she can enter his credentials. If the login credential are matched, then display message as Welcome with his username, otherwise display as "Invalid credentials" and navigate to login page. If a user enter invalid credentials for more than three time, you block next attempt by prompting with "You are exceeded the attempt for today, try tomorrow".

IMPLEMENTATION

Project Structure



Services – Database(MySQL) and Server integration(TomCat)



Programs - Codes

Client side

1. login.jsp

```
<%@ page contentType="text/html; charset=UTF-8" language="java" %>
<html>
<head>
    <title>Login</title>
</head>
<body>
    <h2>Login</h2>

    <%
        Integer loginAttempts = (Integer) session.getAttribute("loginAttempts");
        if (loginAttempts != null && loginAttempts >= 3) {
    %>
        <p style="color: red;">You have exceeded the maximum login attempts.
Please try again tomorrow.</p>
    <%
        return; // Stop further rendering of the page
    }

    if (request.getParameter("error") != null) {
    %>
        <p style="color: red;">Invalid credentials. Please try again.</p>
    <%
        }
    %>
    <form action="DA3_21MIC0131.LoginController" method="post">
```

```
Username: <input type="text" name="username" required><br>
Password: <input type="password" name="password" required><br>
<input type="submit" value="Login">
</form>
```

```
</body>
```

```
</html>
```

2. Registration.jsp

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
```

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
    <meta charset="UTF-8">
```

```
    <title>Registration Page</title>
```

```
</head>
```

```
<body>
```

```
    <h2>Registration Page</h2>
```

```
    <form method="post" action="DA3_21MIC0131.RegistrationController">
```

```
        <label for="username">Username:</label>
```

```
        <input type="text" name="username" required><br>
```

```
        <label for="password">Password:</label>
```

```
        <input type="password" name="password" required><br>
```

```
        <input type="submit" value="Register">
```

</form>

<p>Already have an account? Login here</p>

</body>

</html>

3. welcome.jsp

```
<%@ page contentType="text/html; charset=UTF-8" language="java" %>
```

```
<html>
```

```
<head>
```

```
    <title>Welcome</title>
```

```
</head>
```

```
<body>
```

```
    <h2>Welcome, <%= session.getAttribute("username") %>!</h2>
```

```
</body>
```

```
</html>
```

Server Side

1. LoginController.java

```
package DA3_21MIC0131;
```

```
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("/DA3_21MIC0131.LoginController")
public class LoginController extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        String username = request.getParameter("username");
        String password = request.getParameter("password");

        // Check if user exceeded login attempts
        HttpSession session = request.getSession();
        Integer loginAttempts = (Integer) session.getAttribute("loginAttempts");
        if (loginAttempts == null) {
            loginAttempts = 0;
        }

        if (loginAttempts >= 3) {
            response.getWriter().write("You have exceeded the maximum login
attempts. Please try again tomorrow.");
            return;
        }

        // Validate credentials
        if (DatabaseUtil.validateCredentials(username, password)) {
            session.setAttribute("username", username);
            session.removeAttribute("loginAttempts"); // Reset login attempts on
successful login
            response.sendRedirect("welcome.jsp");
        } else {
            // Increment login attempts
            session.setAttribute("loginAttempts", loginAttempts + 1);
        }
    }
}

```

```

        response.sendRedirect("login.jsp?error=true");
    }
}
}

```

2. RegistrationController.java

```
package DA3_21MIC0131;
```

```

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;

```

```

@WebServlet("/DA3_21MIC0131.RegistrationController")
public class RegistrationController extends HttpServlet {

```

```

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

```

```

        String username = request.getParameter("username");
        String password = request.getParameter("password");

```

```

        User newUser = new User(username, password);

```

```

        if (DatabaseUtil.registerUser(newUser)) {
            response.sendRedirect("login.jsp");
        } else {

```

```

            response.getWriter().write("Registration failed. Please try again.");

```

```
    }  
    }  
}
```

3. User.Java

```
package DA3_21MIC0131;
```

```
public class User {  
    private String username;  
    private String password;  
  
    public User(String username, String password) {  
        this.username = username;  
        this.password = password;  
    }  
  
    public String getUsername() {  
        return username;  
    }  
  
    public String getPassword() {  
        return password;  
    }  
}
```


Database side

1. DatabaseUtil.java

```
package DA3_21MIC0131;
```

```
import java.sql.Connection;
```

```
import java.sql.DriverManager;
```

```
import java.sql.PreparedStatement;
```

```
import java.sql.ResultSet;
```

```
import java.sql.SQLException;
```

```
public class DatabaseUtil {
```

```
    private static final String JDBC_URL =  
    "jdbc:mysql://localhost:3307/brian21mic0131";
```

```
    private static final String DB_USER = "root";
```

```
    private static final String DB_PASSWORD = "0704101798";
```

```
    public static boolean validateCredentials(String username, String password) {  
        try (Connection connection = DriverManager.getConnection(JDBC_URL,  
DB_USER, DB_PASSWORD)) {
```

```
            String sql = "SELECT * FROM users WHERE username = ? AND password =  
?";
```

```
            try (PreparedStatement preparedStatement =  
connection.prepareStatement(sql)) {
```

```
                preparedStatement.setString(1, username);
```

```
                preparedStatement.setString(2, password);
```

```
                try (ResultSet resultSet = preparedStatement.executeQuery()) {
```

```
                    return resultSet.next(); // Return true if the user with given credentials  
exists
```

```
                }
```

```

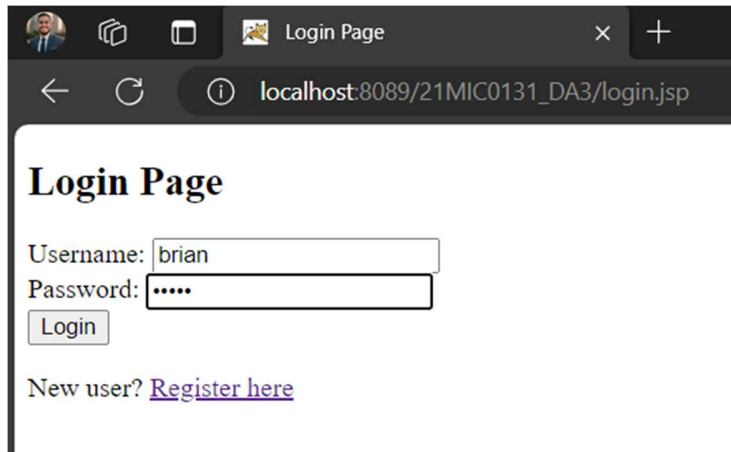
    }
} catch (SQLException e) {
    e.printStackTrace(); // Handle the exception appropriately
}
return false;
}

public static boolean registerUser(User user) {
    try (Connection connection = DriverManager.getConnection(JDBC_URL,
DB_USER, DB_PASSWORD)) {
        String sql = "INSERT INTO users (username, password) VALUES (?, ?)";
        try (PreparedStatement preparedStatement =
connection.prepareStatement(sql)) {
            preparedStatement.setString(1, user.getUsername());
            preparedStatement.setString(2, user.getPassword());
            int rowsAffected = preparedStatement.executeUpdate();
            return rowsAffected > 0; // Return true if registration is successful
        }
    } catch (SQLException e) {
        e.printStackTrace(); // Handle the exception appropriately
    }
    return false;
}
}

```

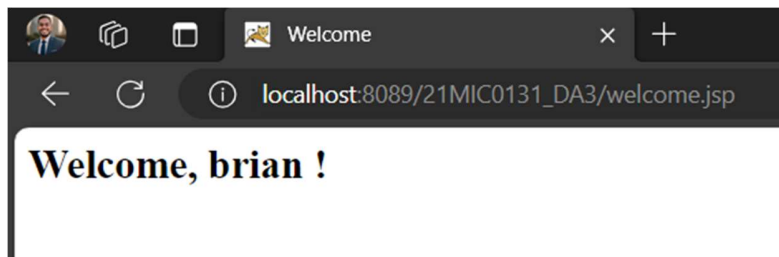
Output – Screenshots

Login page



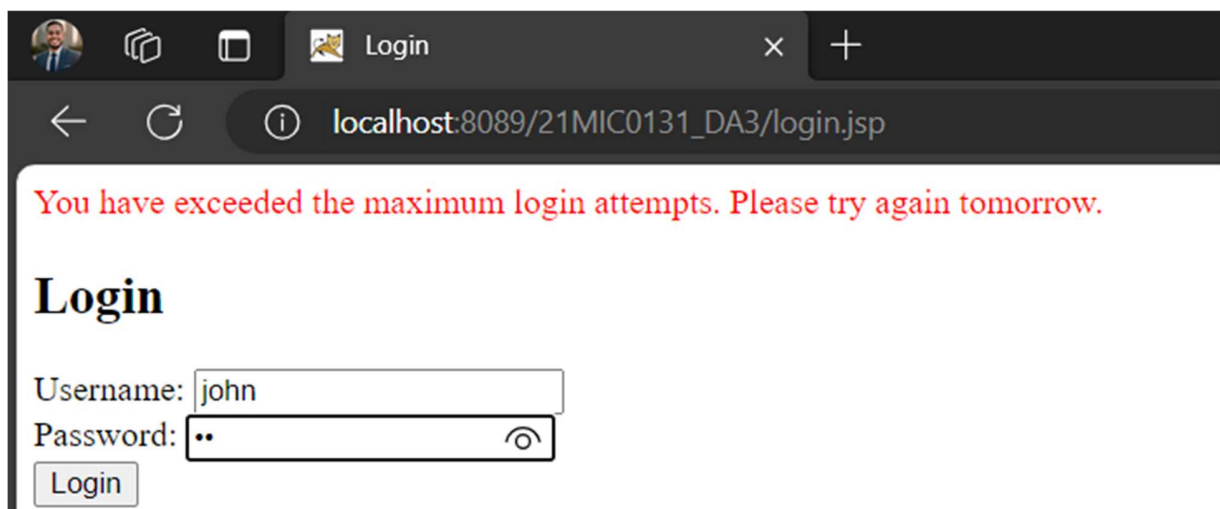
A screenshot of a web browser showing the 'Login Page'. The browser's address bar displays 'localhost:8089/21MIC0131_DA3/login.jsp'. The page has a dark header with a profile icon, a 'Login Page' tab, and navigation icons. The main content area is white and contains the title 'Login Page' in bold. Below the title are two input fields: 'Username:' with the value 'brian' and 'Password:' with masked characters '.....'. A 'Login' button is positioned below the password field. At the bottom, there is a link that says 'New user? [Register here](#)'.

Welcome Page upon successfully logging in



A screenshot of a web browser showing the 'Welcome' page. The browser's address bar displays 'localhost:8089/21MIC0131_DA3/welcome.jsp'. The page has a dark header with a profile icon, a 'Welcome' tab, and navigation icons. The main content area is white and displays the text 'Welcome, brian !' in a large, bold font.

Invalid Credentials – try again tomorrow



A screenshot of a web browser showing the 'Login' page. The browser's address bar displays 'localhost:8089/21MIC0131_DA3/login.jsp'. The page has a dark header with a profile icon, a 'Login' tab, and navigation icons. The main content area is white and displays a red error message: 'You have exceeded the maximum login attempts. Please try again tomorrow.' Below the message is the title 'Login' in bold. There are two input fields: 'Username:' with the value 'john' and 'Password:' with masked characters '..'. A 'Login' button is positioned below the password field. A toggle icon for password visibility is located to the right of the password field.

Registration Page

Login here'." data-bbox="113 154 612 376"/>

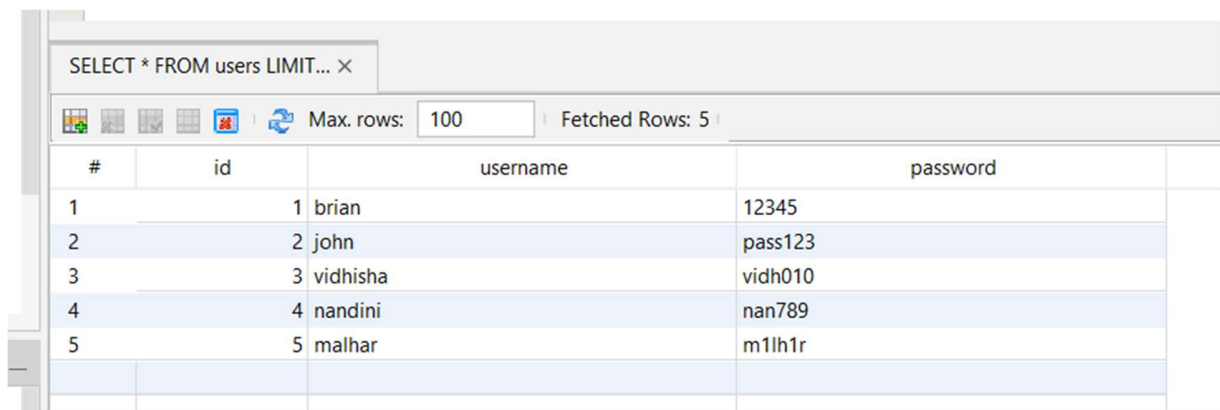
Registration Page

Username:

Password:

Already have an account? [Login here](#)

Table – user credentials registered



| # | id | username | password |
|---|----|----------|----------|
| 1 | 1 | brian | 12345 |
| 2 | 2 | john | pass123 |
| 3 | 3 | vidhisha | vidh010 |
| 4 | 4 | nandini | nan789 |
| 5 | 5 | malhar | m1lh1r |
