Experiment-8

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Semester: 6th   **Date of Performance:** 03/04/2024
Subject Name: Project based Learning in JAVA   **Subject Code:** 22CSH-359

Easy

1. **Aim:**
   Easy Problem Write a servlet to accept user credentials through an HTML form and display a personalized welcome message if the login is successful.
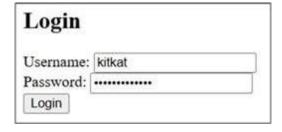
2. **Objective:** Create a servlet that accepts login credentials from an HTML form and displays a personalized welcome message upon successful login.

3. **Implementation/Code:**

LoginServlet.java

```java
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;
public class LoginServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        response.setContentType("text/html");
        String username = request.getParameter("username");
        String password = request.getParameter("password");
        if ("admin".equals(username) && "password123".equals(password)) {
            // Display a personalized welcome message
            PrintWriter out = response.getWriter();
            out.println("<!DOCTYPE html>");
            out.println("<html><head><title>Welcome</title></head><body>");
            out.println("<h1>Welcome, " + username + "!</h1>");
            out.println("<p>Login successful. Enjoy your session!</p>");
            out.println("</body></html>");
        } else {
            // Invalid credentials
            out.println("<!DOCTYPE html>");
            out.println("<html><head><title>Login Failed</title></head><body>");
            out.println("<h1>Invalid username or password!</h1>");
            out.println("<p>Please <a href='index.html'>try again</a>.</p>");
            out.println("</body></html>");
        }
```

```
    }
}
```

index.html

```html
<!DOCTYPE html>
<html>
  <head>
    <title>Login Page</title>
  </head>
  <body>
    <h2>Login</h2>
    <form action="LoginServlet" 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>
```

web.xml

```xml
<web-app>
 <servlet>
  <servlet-name>LoginServlet</servlet-name>
  <servlet-class>LoginServlet</servlet-class>
 </servlet>
 <servlet-mapping>
  <servlet-name>LoginServlet</servlet-name>
  <url-pattern>/login</url-pattern>
 </servlet-mapping>
</web-app>
```

4. **Output:**

5. **Learning Outcome:**

- Learned how to create a basic servlet to handle form data using the POST method.
- Understood how to retrieve request parameters and generate dynamic HTML responses.
- Gained knowledge of basic servlet configuration using web.xml.
- Practiced validating user credentials and displaying personalized messages.

Medium Problem

1. **Aim:** Create a servlet integrated with JDBC to display a list of employees from a database. Include a search form to fetch employee details by ID.

2. **Objective:** To develop a Java servlet that connects to a MySQL database using JDBC, displays a list of employees, and provides a search functionality to retrieve specific employee details by their ID.

3. **Implementation/Code:**

EmployeeServlet.java

```
import java.io.IOException;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
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 java.io.PrintWriter;
import java.sql.Connection;

@WebServlet("/EmployeeServlet")
public class EmployeeServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doGet(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
```

```java
        out.println("<html><body>");
        out.println("<h2>Employee List</h2>");

        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn =
DriverManager.getConnection("jdbc:mysql://localhost:3306/PBLJ", "root", "1234");
            PreparedStatement stmt = conn.prepareStatement("SELECT * FROM
employees");
            ResultSet rs = stmt.executeQuery();

            out.println("<table
border='1'><tr><th>ID</th><th>Name</th><th>Position</th></tr>");
            while (rs.next()) {
                out.println("<tr><td>" + rs.getInt("id") + "</td><td>" +
rs.getString("name") + "</td><td>" + rs.getString("position") + "</td></tr>");
            }
            out.println("</table>");

            out.println("<h2>Search Employee</h2>");
            out.println("<form action='EmployeeServlet' method='post'>");
            out.println("Enter Employee ID: <input type='text' name='empId'>");
            out.println("<input type='submit' value='Search'>");
            out.println("</form>");

            conn.close();
        } catch (Exception e) {
            out.println("Error: " + e.getMessage());
        }

        out.println("</body></html>");
    }

    protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        String empId = request.getParameter("empId");

        out.println("<html><body>");
```

```java
        out.println("<h2>Employee Details</h2>");

        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn =
DriverManager.getConnection("jdbc:mysql://localhost:3306/PBLJ", "root", "1234");
            PreparedStatement stmt = conn.prepareStatement("SELECT * FROM
employees WHERE id = ?");
            stmt.setInt(1, Integer.parseInt(empId));
            ResultSet rs = stmt.executeQuery();

            if (rs.next()) {
                out.println("<p>ID: " + rs.getInt("id") + "</p>");
                out.println("<p>Name: " + rs.getString("name") + "</p>");
                out.println("<p>Position: " + rs.getString("position") +
"</p>");
            } else {
                out.println("<p>No employee found with ID: " + empId + "</p>");
            }

            conn.close();
        } catch (Exception e) {
            out.println("Error: " + e.getMessage());
        }

        out.println("<a href='EmployeeServlet'>Back</a>");
        out.println("</body></html>");
    }
}
```

web.xml

```xml
<web-app
 xmlns="http://java.sun.com/xml/ns/javaee" version="3.0">
 <servlet>
  <servlet-name>EmployeeServlet</servlet-name>
  <servlet-class>EmployeeServlet</servlet-class>
 </servlet>
 <servlet-mapping>
  <servlet-name>EmployeeServlet</servlet-name>
```

```
    <url-pattern>/EmployeeServlet</url-pattern>
   </servlet-mapping>
  </web-app>
```

4. **Output:**

```
+----------+---------------+------+-----+---------+----------------+
| Field    | Type          | Null | Key | Default | Extra          |
+----------+---------------+------+-----+---------+----------------+
| id       | int           | NO   | PRI | NULL    | auto_increment |
| name     | varchar(100)  | NO   |     | NULL    |                |
| position | varchar(100)  | NO   |     | NULL    |                |
+----------+---------------+------+-----+---------+----------------+
3 rows in set (0.00 sec)

+----+---------------+----------------------------+
| id | name          | position                   |
+----+---------------+----------------------------+
|  1 | Arjun Verma   | Software Engineer          |
|  2 | Priya Sharma  | Data Analyst               |
|  3 | Raj Kapoor    | Project Manager            |
|  4 | Simran Kaur   | Quality Assurance Engineer |
|  5 | Anil Mehra    | DevOps Engineer            |
+----+---------------+----------------------------+
5 rows in set (0.00 sec)
```

Employee List

ID	Name	Position
1	Arjun Verma	Software Engineer
2	Priya Sharma	Data Analyst
3	Raj Kapoor	Project Manager
4	Simran Kaur	Quality Assurance Engineer
5	Anil Mehra	DevOps Engineer

Search Employee

Enter Employee ID: 2   [Search]

Employee Details

ID: 2

Name: Priya Sharma

Position: Data Analyst

Back

5. **Learning Outcome:**

- Gained hands-on experience with JDBC integration in a servlet.
- Understood how to fetch and display data dynamically from a database.
- Learned to implement search functionality in a web application.

Hard Problem

1. **Aim:** Problem Develop a JSP-based student portal. Include a form for entering attendance details and save them to the database using a servlet.

2. **Objective:** To build a JSP-based student portal that allows users to submit attendance details, which are then saved into a MySQL database through a servlet.

3. **Implementation/Code:**

AttendanceServlet.java

```java
import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import javax.servlet.ServletException;
```

```java
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@WebServlet("/AttendanceServlet")
public class AttendanceServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        String studentName = request.getParameter("student_name");
        String date = request.getParameter("date");
        String status = request.getParameter("status");

        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection conn =
DriverManager.getConnection("jdbc:mysql://localhost:3306/PBLJ", "root", "1234");

            String query = "INSERT INTO attendance (student_name, date, status)
VALUES (?, ?, ?)";
            PreparedStatement stmt = conn.prepareStatement(query);
            stmt.setString(1, studentName);
            stmt.setString(2, date);
            stmt.setString(3, status);
            stmt.executeUpdate();

            out.println("<html><body>");
            out.println("<h1>Attendance Details Saved Successfully</h1>");
            out.println("<a href='index.jsp'>Back to Home</a>");
            out.println("</body></html>");

            conn.close();
        } catch (Exception e) {
            out.println("<html><body>");
            out.println("<h1>Error: " + e.getMessage() + "</h1>");
```

```
                out.println("<a href='index.jsp'>Back to Home</a>");
                out.println("</body></html>");
            }
        }
    }
```

index.jsp

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
  <title>Student Portal</title>
</head>
<body>
  <h1>Welcome to Student Portal</h1>
  <h2>Enter Attendance Details</h2>
  <form action="AttendanceServlet" method="post">
    Student Name: <input type="text" name="student_name"><br>
    Date: <input type="date" name="date"><br>
    Status:
    <select name="status">
      <option value="Present">Present</option>
      <option value="Absent">Absent</option>
    </select><br>
    <input type="submit" value="Submit">
  </form>
</body>
</html>
```

web.xml

```xml
<web-app
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://xmlns.jcp.org/xml/ns/javaee"
xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
http://xmlns.jcp.org/xml/ns/javaee/web-app_4_0.xsd" id="WebApp_ID"
version="4.0">
 <display-name>EXP_313</display-name>
 <welcome-file-list>
  <welcome-file>index.html</welcome-file>
```

```
      <welcome-file>index.jsp</welcome-file>
      <welcome-file>index.htm</welcome-file>
      <welcome-file>default.html</welcome-file>
      <welcome-file>default.jsp</welcome-file>
      <welcome-file>default.htm</welcome-file>
    </welcome-file-list>
</web-app>
```

4. **Output:**

Welcome to Student Portal

Enter Attendance Details

Student Name: Ankush
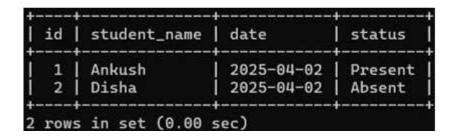Date: 02-04-2025
Status: Present
Submit

Welcome to Student Portal

Enter Attendance Details

Student Name: Disha
Date: 02-04-2025
Status: Absent
Submit

Attendance Details Saved Successfully

Back to Home

```
+------+----------------+------------+----------+
| id   | student_name   | date       | status   |
+------+----------------+------------+----------+
|    1 | Ankush         | 2025-04-02 | Present  |
|    2 | Disha          | 2025-04-02 | Absent   |
+------+----------------+------------+----------+
2 rows in set (0.00 sec)
```

5. **Learning Outcome:**

- Understood the interaction between JSP, servlets, and databases.
- Learned how to process form data and persist it using JDBC.
- Developed a complete dynamic web application using Java EE components.