Experiment-8

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Subject Name: PBLJ-Lab
Subject Code: 22CSH-359

1. Aim:

Easy Level:
Write a servlet to accept user credentials through an HTML form and display a personalized welcome message if the login is successful.

Medium Level:
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.

Hard Level:
Develop a JSP-based student portal. Include a form for entering attendance details and save them to the database using a servlet.

2. Objective:

a.) **Understand the Servlet Lifecycle**
Learn how servlets are created, executed, and destroyed in a web application.

b.) **Learn HTTP Servlet and Request-Response Mechanism**
Understand how HTTP requests (GET and POST) work and how servlets handle user inputs and responses.

c.) **Implement Form Handling using Servlets**
Develop a servlet to accept user credentials via an HTML form and display a response.

3. Implementation/Code:

a.) Easy Problem:

1. HTML Code:

```
<!DOCTYPE html>
<html>
<head>
   <title>Login</title>
</head>
```

```
<body>
  <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>
```

1. Login Servlet:

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

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

    if ("admin".equals(username) && "admin123".equals(password)) {
      out.println("<h2>Welcome, " + username + "!</h2>");
    } else {
      out.println("<h2>Invalid Credentials. Try Again.</h2>");
    }
    out.close();
  }
}
```

b. Medium Problem:

Database Schema

```
CREATE DATABASE EmployeeDB;

USE EmployeeDB;


CREATE TABLE employees (
    id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100),
    department VARCHAR(100)
);


INSERT INTO employees (name, department) VALUES
('John Doe', 'IT'),
('Jane Smith', 'HR');
```

ii) Employee Servlet:

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

```
import java.sql.ResultSet;

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("/EmployeeServlet")

public class EmployeeServlet extends HttpServlet {

    protected void doGet(HttpServletRequest request, HttpServletResponse response)

            throws ServletException, IOException {

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();


        try {

            Class.forName("com.mysql.cj.jdbc.Driver");

            Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/EmployeeDB", "root", "password");


            String query = "SELECT * FROM employees";

            PreparedStatement ps = con.prepareStatement(query);
```

```
            ResultSet rs = ps.executeQuery();


            out.println("<h2>Employee List</h2><ul>");
            while (rs.next()) {
                out.println("<li>" + rs.getInt("id") + " - " + rs.getString("name") + " (" +
rs.getString("department") + ")</li>");
            }
            out.println("</ul>");


            con.close();
        } catch (Exception e) {
            out.println("<h3>Error: " + e.getMessage() + "</h3>");
        }
        out.close();
    }
}
```

Web Form:

```
<!DOCTYPE html>
<html>
<head>
    <title>Search Employee</title>
</head>
```

```
<body>
    <form action="EmployeeServlet" method="get">
        Employee ID: <input type="text" name="id" required>
        <input type="submit" value="Search">
    </form>
</body>
</html>
```

c) Hard Problem:

```
CREATE DATABASE StudentDB;
USE StudentDB;

CREATE TABLE attendance (
    id INT AUTO_INCREMENT PRIMARY KEY,
    student_name VARCHAR(100),
    subject VARCHAR(100),
    date DATE
);
<%@ page import="java.sql.*" %>
<!DOCTYPE html>
<html>
<head>
```

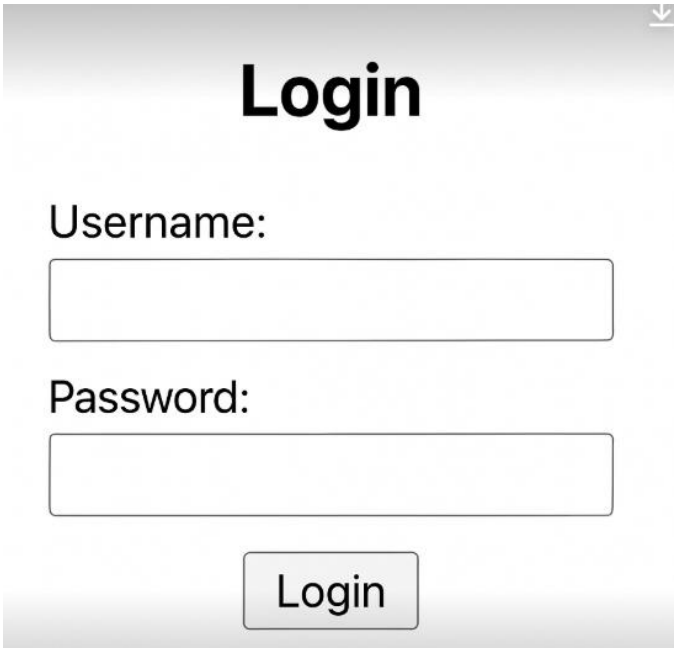
```
    <title>Student Attendance</title>
</head>
<body>
    <form action="SaveAttendanceServlet" method="post">
        Name: <input type="text" name="student_name" required><br>
        Subject: <input type="text" name="subject" required><br>
        Date: <input type="date" name="date" required><br>
        <input type="submit" value="Submit">
    </form>
</body>
</html>

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

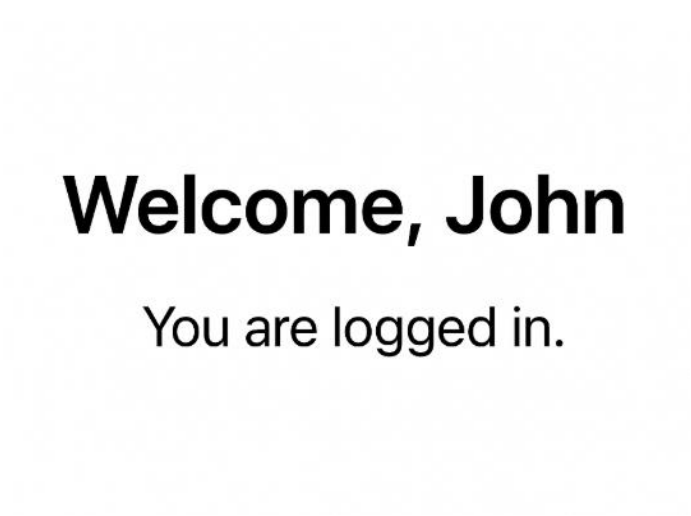
```
@WebServlet("/SaveAttendanceServlet")
public class SaveAttendanceServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        String name = request.getParameter("student_name");
        String subject = request.getParameter("subject");
        String date = request.getParameter("date");

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

            String query = "INSERT INTO attendance (student_name, subject, date) VALUES (?, ?,
?)";
            PreparedStatement ps = con.prepareStatement(query);
            ps.setString(1, name);
            ps.setString(2, subject);
```

```
            ps.setString(3, date);


            int result = ps.executeUpdate();
            if (result > 0) {
                out.println("<h3>Attendance recorded successfully.</h3>");
            } else {
                out.println("<h3>Failed to record attendance.</h3>");
            }
            con.close();
        } catch (Exception e) {
            out.println("<h3>Error: " + e.getMessage() + "</h3>");
        }
        out.close();
    }
}
```

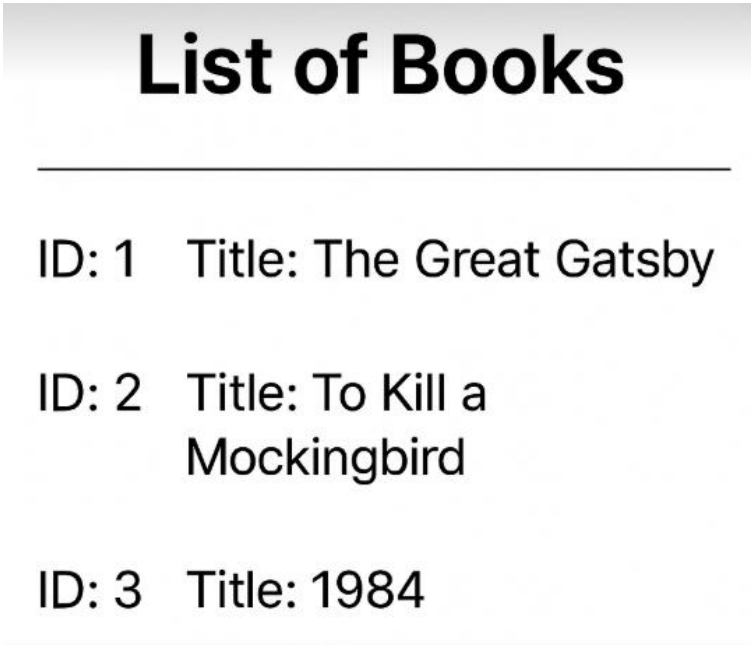
4. Output:

a.)

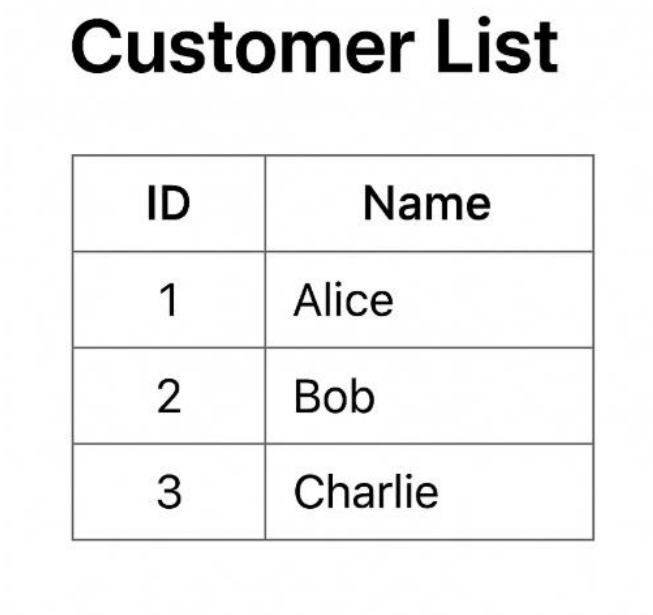

Login
Username:
Password:
Login


Welcome, John
You are logged in.

b.)


List of Books
ID: 1 Title: The Great Gatsby
ID: 2 Title: To Kill a Mockingbird
ID: 3 Title: 1984

c.)


Customer List
ID
Name
1
Alice
2
Bob
3
Charlie

5. Learning Outcome:

1. Understand and Implement Servlets in Web Applications
2. Handle User Input and Process Requests Dynamically
3. Connect a Web Application to a Database using JDBC
4. Develop Dynamic Web Pages using JSP and Servlets
5. Apply Session Management Techniques