

# Experiment 3.1 — Web Applications Using Servlets, JSP, and JDBC

Topic: Web Applications Using Servlets and JSP for User Input Handling and Database Integration

## Part (a): User Login Using Servlet and HTML Form

**Objective:** Develop a Servlet that accepts user credentials from an HTML form and displays a personalized message upon successful login.

**Explanation:** An HTML form posts username and password to a LoginServlet. The servlet reads parameters via `request.getParameter()`, validates credentials (hardcoded here), and returns an HTML response with a welcome or error message.

### HTML (login.html):

```
<!DOCTYPE html>
<html>
<head>
    <title>User Login</title>
</head>
<body style="font-family: Arial;">
    <h2>User Login Form</h2>
    <form action="LoginServlet" method="post">
        Username: <input type="text" name="username" required><br><br>
        Password: <input type="password" name="password" required><br><br>
        <input type="submit" value="Login">
    </form>
</body>
</html>
```

### Servlet (LoginServlet.java):

```
import java.io.*;
import jakarta.servlet.*;
import jakarta.servlet.http.*;

public class LoginServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {

        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

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

        // Hardcoded validation
        if ("admin".equals(user) && "12345".equals(pass)) {
            out.println("<h2>Welcome, " + user + "!</h2>");
            out.println("<p>Login Successful.</p>");
        } else {
            out.println("<h2>Invalid Credentials</h2>");
            out.println("<p>Please try again.</p>");
        }
    }
}
```

### Sample Output:

```
Sample Output (Valid Login):
-----
Welcome, admin!
```

Login Successful.

Sample Output (Invalid Login):

-----

Invalid Credentials

Please try again.

## Part (b): Display Employee Records with JDBC and Servlet Integration

**Objective:** Create a Servlet that connects to a database using JDBC and displays a list of employees; include a search by Employee ID.

**Explanation:** The EmployeeServlet connects to MySQL via JDBC, queries the employee table, and generates an HTML table for all records or a detailed view when an empid parameter is supplied.

### Database Setup:

Database setup (MySQL):

```
-----  
CREATE DATABASE company;  
USE company;
```

```
CREATE TABLE employee (  
    EmpID INT PRIMARY KEY,  
    Name VARCHAR(50),  
    Salary DOUBLE  
);
```

```
INSERT INTO employee VALUES (101, 'Saksham', 55000);  
INSERT INTO employee VALUES (102, 'Riya', 60000);  
INSERT INTO employee VALUES (103, 'Arjun', 50000);
```

### HTML (employee.html):

```
<!DOCTYPE html>  
<html>  
<head><title>Employee Search</title></head>  
<body>  
    <h2>Search Employee by ID</h2>  
    <form action="EmployeeServlet" method="get">  
        Enter Employee ID: <input type="text" name="empid" required>  
        <input type="submit" value="Search">  
    </form>  
    <p>Leave blank to list all employees.</p>  
</body>  
</html>
```

### Servlet (EmployeeServlet.java):

```
import java.io.*;  
import java.sql.*;  
import jakarta.servlet.*;  
import jakarta.servlet.http.*;  
  
public class EmployeeServlet extends HttpServlet {  
    protected void doGet(HttpServletRequest request, HttpServletResponse response)  
        throws ServletException, IOException {  
  
        response.setContentType("text/html");  
        PrintWriter out = response.getWriter();  
        String empid = request.getParameter("empid");  
  
        try {  
            Class.forName("com.mysql.cj.jdbc.Driver");  
            Connection con = DriverManager.getConnection(  
                "jdbc:mysql://localhost:3306/company", "root", "your_password");  
  
            if (empid != null && !empid.isEmpty()) {  
                PreparedStatement ps = con.prepareStatement("SELECT * FROM employee WHERE E  
                ps.setInt(1, Integer.parseInt(empid));  
                ResultSet rs = ps.executeQuery();  
  
                if (rs.next()) {
```

```

        out.println("<h3>Employee Details</h3>");
        out.println("<p>ID: " + rs.getInt("EmpID") + "</p>");
        out.println("<p>Name: " + rs.getString("Name") + "</p>");
        out.println("<p>Salary: " + rs.getDouble("Salary") + "</p>");
    } else {
        out.println("<h3>No employee found with ID: " + empid + "</h3>");
    }
} else {
    Statement stmt = con.createStatement();
    ResultSet rs = stmt.executeQuery("SELECT * FROM employee");

    out.println("<h3>Employee List</h3>");
    out.println("<table border='1'><tr><th>ID</th><th>Name</th><th>Salary</th><th></th></tr>");
    while (rs.next()) {
        out.println("<tr><td>" + rs.getInt("EmpID") + "</td><td>" + rs.getString("Name") + "</td><td>" + rs.getDouble("Salary") + "</td><td>" + "</td></tr>");
    }
    out.println("</table>");
}

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

```

### Sample Output:

Sample Output (All Employees):

```

-----
EmpID | Name      | Salary
101   | Saksham   | 55000.0
102   | Riya      | 60000.0
103   | Arjun     | 50000.0

```

Sample Output (Search empid=102):

```

-----
Employee Details
ID: 102
Name: Riya
Salary: 60000.0

```

## Part (c): Student Attendance Portal Using JSP and Servlet

**Objective:** Build a JSP frontend and a Servlet backend to save attendance records to a database.

**Explanation:** The JSP displays an attendance form that posts to AttendanceServlet. The servlet reads parameters, inserts the record into the attendance table via JDBC, and returns a confirmation.

### Database Setup:

Database setup (MySQL):

```
-----  
CREATE DATABASE college;  
USE college;
```

```
CREATE TABLE attendance (  
    StudentID INT,  
    Date DATE,  
    Status VARCHAR(10)  
);
```

### JSP (attendance.jsp):

```
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>  
<!DOCTYPE html>  
<html>  
<head><title>Student Attendance</title></head>  
<body>  
    <h2>Attendance Submission</h2>  
    <form action="AttendanceServlet" method="post">  
        Student ID: <input type="text" name="sid" required/><br><br>  
        Date: <input type="date" name="date" required/><br><br>  
        Status:  
        <select name="status">  
            <option value="Present">Present</option>  
            <option value="Absent">Absent</option>  
        </select><br><br>  
        <input type="submit" value="Submit Attendance"/>  
    </form>  
</body>  
</html>
```

### Servlet (AttendanceServlet.java):

```
import java.io.*;  
import java.sql.*;  
import jakarta.servlet.*;  
import jakarta.servlet.http.*;  
  
public class AttendanceServlet extends HttpServlet {  
    protected void doPost(HttpServletRequest request, HttpServletResponse response)  
        throws ServletException, IOException {  
  
        response.setContentType("text/html");  
        PrintWriter out = response.getWriter();  
  
        String sid = request.getParameter("sid");  
        String date = request.getParameter("date");  
        String status = request.getParameter("status");  
  
        try {  
            Class.forName("com.mysql.cj.jdbc.Driver");  
            Connection con = DriverManager.getConnection(  
                "jdbc:mysql://localhost:3306/college", "root", "your_password");  
  
            PreparedStatement ps = con.prepareStatement("INSERT INTO attendance (StudentID,  
ps.setInt(1, Integer.parseInt(sid));
```

```

        ps.setString(2, date);
        ps.setString(3, status);
        ps.executeUpdate();

        out.println("<h3>Attendance Recorded Successfully!</h3>");
        out.println("<p>Student ID: " + sid + "</p>");
        out.println("<p>Date: " + date + "</p>");
        out.println("<p>Status: " + status + "</p>");

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

```

### Sample Output:

Sample Output:

-----

Attendance Recorded Successfully!

Student ID: 101

Date: 2025-10-29

Status: Present