Problem Statement 1:- Develop a Login application with Servlet API .

**Login.html:**

<!DOCTYPE html>

<html>

<head>

    <title>Login Page</title>

</head>

<body>

    <form action="LoginServlet" method="post">

        <label>Username:</label>

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

        <label>Password:</label>

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

        <input type="submit" value="Login">

    </form>

</body>

</html>

**Loginservlet.java**

import java.io.IOException;

import jakarta.servlet.ServletException;

import jakarta.servlet.http.HttpServlet;

import jakarta.servlet.http.HttpServletRequest;

import jakarta.servlet.http.HttpServletResponse;

import jakarta.servlet.http.HttpSession;

public class LoginServlet extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse response)

        throws ServletException, IOException {

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

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

        LoginBO loginBO = new LoginBO();

        try {

            if (loginBO.validateUser(username, password)) {

                HttpSession session = request.getSession();

                session.setAttribute("username", username);

                response.sendRedirect("welcome.html");

            } else {

                response.sendRedirect("login.html?error=Invalid Username/Password");

            }

        } catch (BusinessException e) {

            response.sendRedirect("login.html?error=" + e.getMessage());

        }

    }

}

**LoginBO.java**

public class LoginBO {

    public boolean validateUser(String username, String password) throws BusinessException {

        if (username == null || username.isEmpty() || password == null || password.isEmpty()) {

            throw new BusinessException("Username and password cannot be empty.");

        }

        LoginDAO loginDAO = new LoginDAO();

        return loginDAO.checkCredentials(username, password);

    }

}

**LoginDAO.java**

import java.util.HashMap;

import java.util.Map;

public class LoginDAO {

    private static Map<String, String> users = new HashMap<>();

    static {

        users.put("admin", "admin123");

        users.put("user1", "password1");

    }

    public boolean checkCredentials(String username, String password) throws BusinessException {

        if (!users.containsKey(username) || !users.get(username).equals(password)) {

            throw new BusinessException("Invalid Username/Password");

        }

        return true;

    }

}

**BusinessException.java**

public class BusinessException extends Exception {

    public BusinessException(String message) {

        super(message);

    }

}

**User.java**

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 void setUsername(String username) { this.username = username; }

    public String getPassword() { return password; }

    public void setPassword(String password) { this.password = password; }

}

**Welcome.html**

<!DOCTYPE html>

<html>

<head>

    <title>Welcome Page</title>

</head>

<body>

    <h1>Welcome User, you have successfully logged in!</h1>

    <a href="LogoffServlet">Logoff</a>