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Div : Java – 3 (y)

Semester : 5

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ASSIGNMENT – 3

1. Take one Integer variable counter and print the following Message

"This Servlet has been accessed N times". (using init parameter method)

Code:

```java
import java.io.IOException;
import javax.servlet.ServletConfig;
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;


@WebServlet("/AccessCounterServlet")
public class AccessCounterServlet extends HttpServlet {
    private int counter;

    // Servlet initialization
    public void init(ServletConfig config) throws ServletException {
        super.init(config);
        // Initialize the counter to 0
        counter = 0;
    }

    // Handle GET requests
    protected void doGet(HttpServletRequest request,
HttpServletResponse response) throws ServletException, IOException {
        // Increment the counter each time the servlet is accessed
```
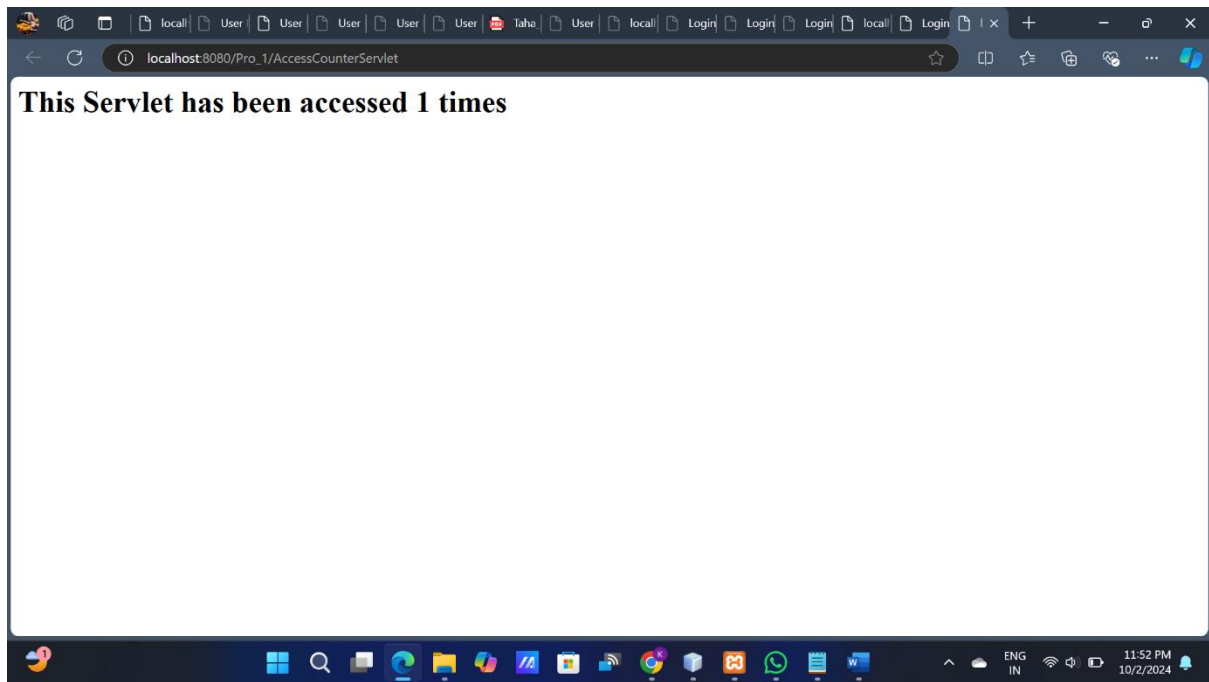
```java
        counter++;

        // Set the response content type
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        // Print the message with access count
        out.println("<html><body>");
        out.println("<h1>This Servlet has been accessed " + counter + "
times</h1>");
        out.println("</body></html>");
    }

    // Optional: Clean-up resources when the servlet is destroyed
    public void destroy() {
        // You can log or handle resources clean-up here
    }
}
```

Output:

This Servlet has been accessed 1 times

2). Create a servlet file and do the connectivity with the MySQL and Print all the records of the Customers table in tabular format in web browser.

Code:

```
import java.io.IOException;

import java.io.PrintWriter;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.ResultSet;

import java.sql.Statement;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;
```

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

    // Database connection details
    private static final String JDBC_DRIVER = "com.mysql.cj.jdbc.Driver";
    private static final String DB_URL =
"jdbc:mysql://localhost:3306/test?useSSL=false&serverTimezone=UTC";
    private static final String USER = "root"; // Update MySQL username
    private static final String PASS = ""; // Update MySQL password

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

        try {
            // Register JDBC driver
            Class.forName("com.mysql.jdbc.Driver");

            // Open a connection
            Connection conn =
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root",""
);

            // Execute SQL query
            stmt = conn.createStatement();
```

```java
String sql = "SELECT id, name, Address, city FROM Customers";
ResultSet rs = stmt.executeQuery(sql);


// Display the records in an HTML table
out.println("<html><body>");
out.println("<h1>Customer Records</h1>");
out.println("<table border='1'><tr><th>ID</th><th>Name</th><th>Email</th><th>City</th></tr>");


// Extract data from result set
while (rs.next()) {
    int id = rs.getInt("id");
    String name = rs.getString("name");
    String Address = rs.getString("Address");
    String city = rs.getString("city");


    // Print each row of the table
    out.println("<tr><td>" + id + "</td><td>" + name + "</td><td>" + Address + "</td><td>" + city + "</td></tr>");
}


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


// Clean up the environment
rs.close();
stmt.close();
```
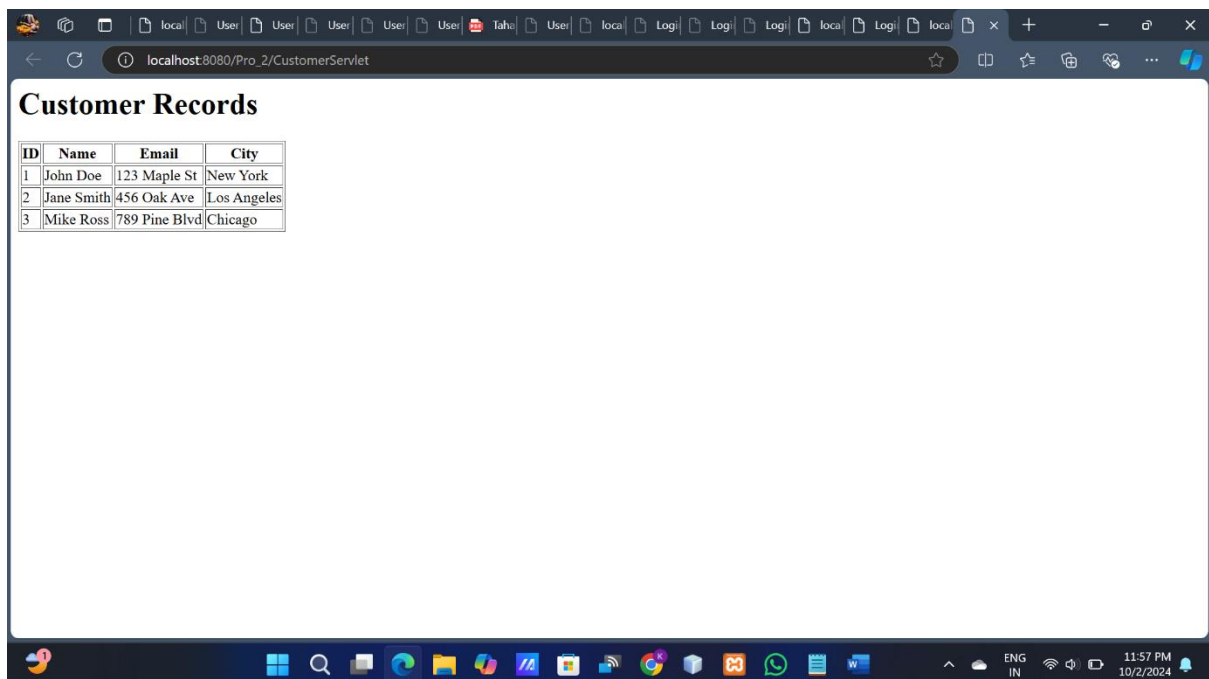
```
            conn.close();
        } catch (Exception e) {
            e.printStackTrace();
            out.println("Error: " + e.getMessage());
        } finally {
            try {
//              if (stmt != null) stmt.close();
//              if (conn != null) conn.close();
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    }
}
```

Output:

Customer Records

ID	Name	Email	City
1	John Doe	123 Maple St	New York
2	Jane Smith	456 Oak Ave	Los Angeles
3	Mike Ross	789 Pine Blvd	Chicago

3). Do as given: a. Accept name of the user in to the index.html page. b. When user submits the page it will call First_Servlet.java. c. First_Servlet.java has a button named Retrieve Cookie. This will print welcome <username> and also store that user d. name into cookie. e. When user clicks on button, it will call Second_Servlet.java. f. Second_servlet will retrieve cookie's value and display Hello <username>.

Code:

First_Servlet.java

```java
import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.Cookie;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;


@WebServlet("/FirstServlet")

public class First_Servlet extends HttpServlet {

    private static final long serialVersionUID = 1L;


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

        // Set the response content type to HTML

        response.setContentType("text/html");
```

```java
        PrintWriter out = response.getWriter();

        // Retrieve the username from the request
        String username = request.getParameter("username");

        // Create a cookie to store the username
        Cookie userCookie = new Cookie("username", username);
        userCookie.setMaxAge(60 * 60);  // Set cookie to expire in 1 hour
        response.addCookie(userCookie);

        // Display welcome message and button to retrieve the cookie
        out.println("<html><body>");
        out.println("<h2>Welcome, " + username + "</h2>");
        out.println("<form action='Second_Servlet' method='post'>");
        out.println("<input type='submit' value='Retrieve Cookie'>");
        out.println("</form>");
        out.println("</body></html>");

        out.close();
    }
}
```

Second_Servlet.java

```java
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
```

```java
import javax.servlet.http.Cookie;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;


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


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


        // Retrieve cookies from the request
        Cookie[] cookies = request.getCookies();
        String username = null;


        // Loop through cookies to find the one with the username
        if (cookies != null) {
            for (Cookie cookie : cookies) {
                if (cookie.getName().equals("username")) {
                    username = cookie.getValue();
                }
            }
        }
```
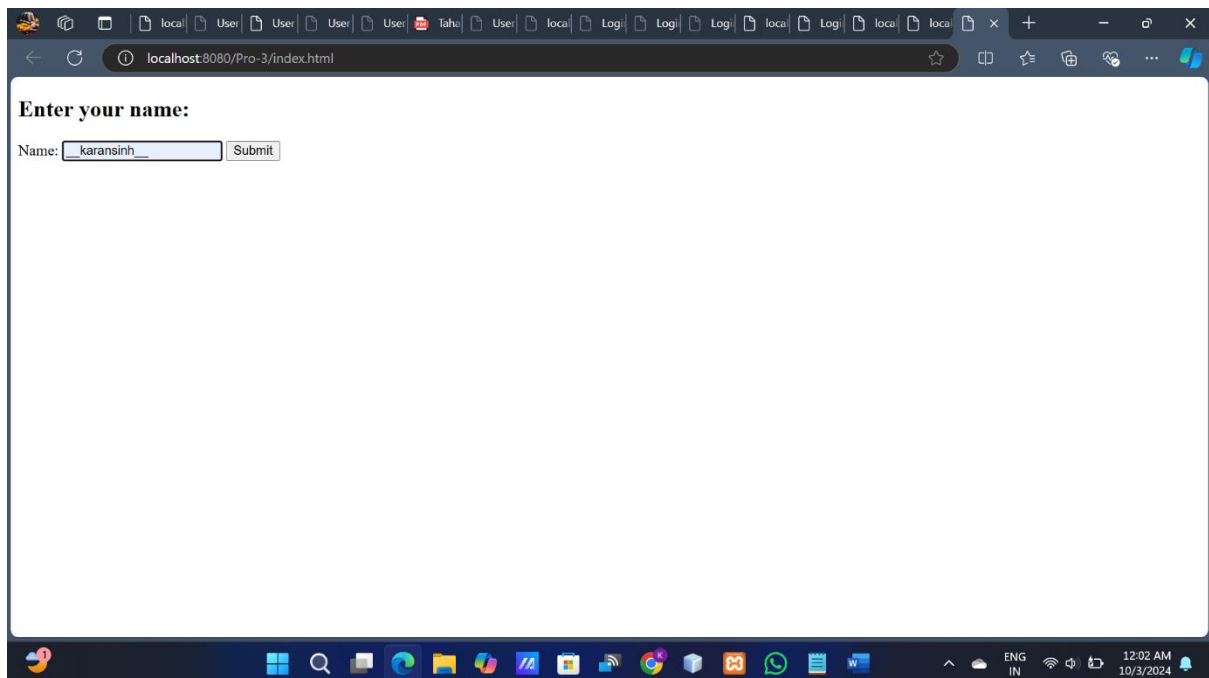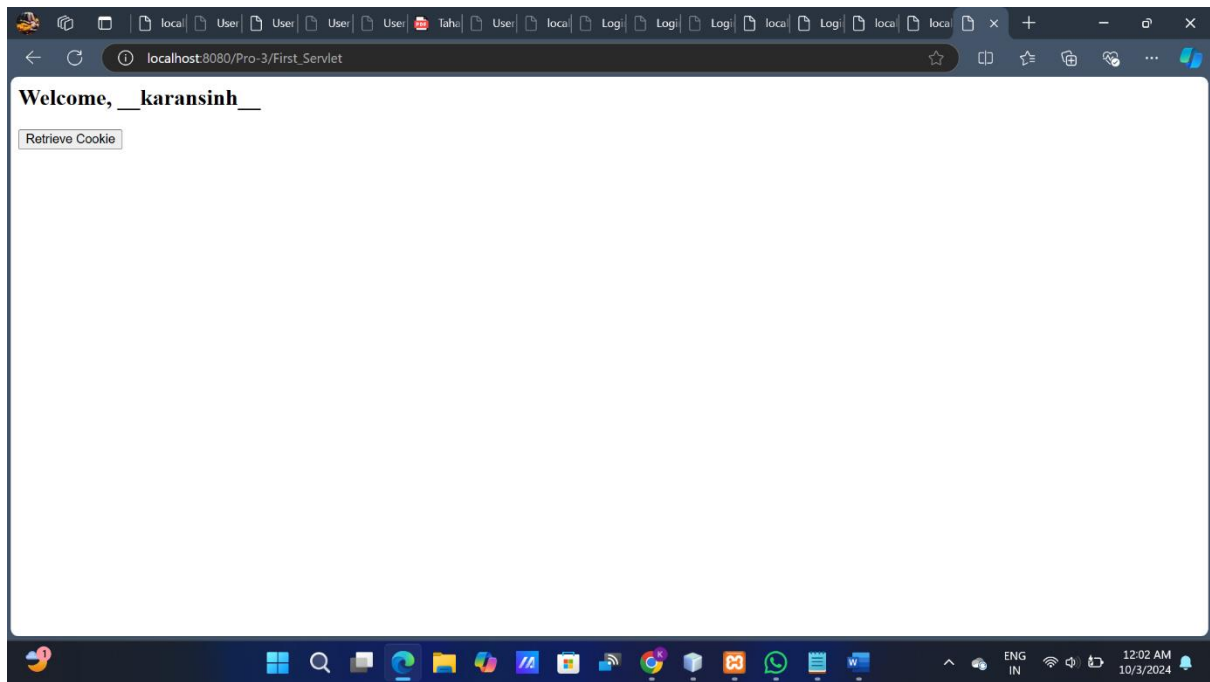
```java
        // Display message based on whether the cookie was found
        out.println("<html><body>");
        if (username != null) {
            out.println("<h2>Hello, " + username + "</h2>");
        } else {
            out.println("<h2>No cookie found with username.</h2>");
        }
        out.println("</body></html>");
        out.close();
    }
}
```
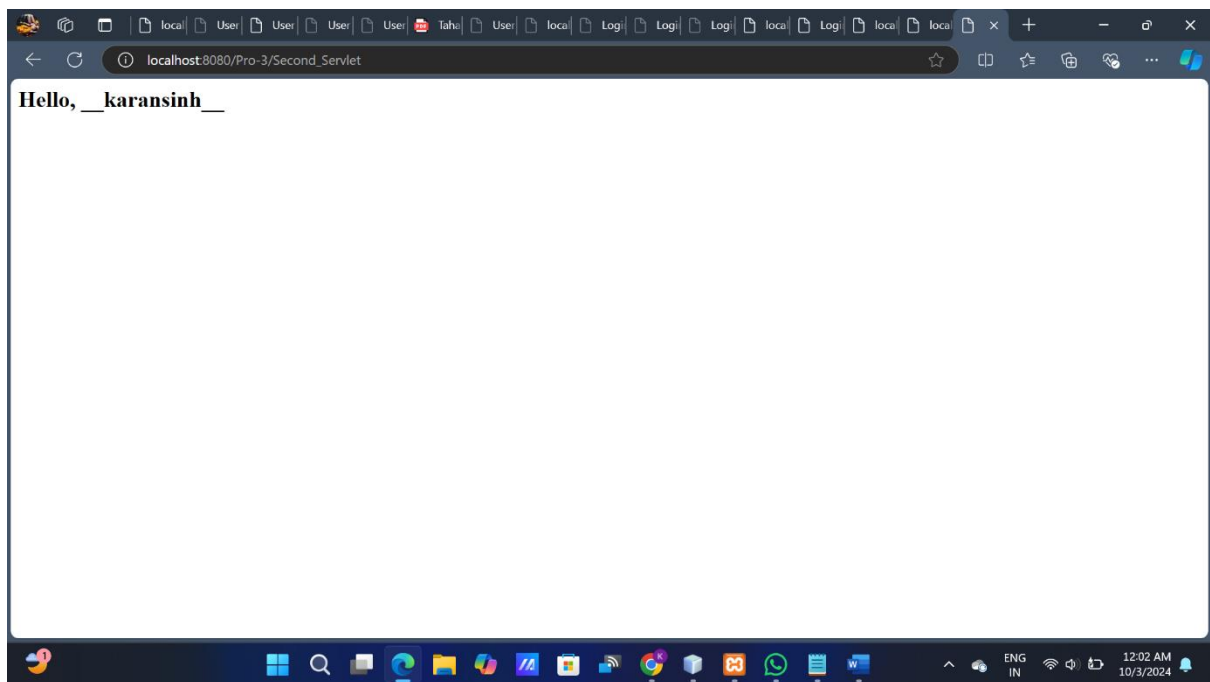
Output:

Index.html

First_Servlet.java

Second_Servlet.java

4). Rewrite above example using Session API instead of cookie.

Code:

First_Servlet.java

```java
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;
import javax.servlet.http.HttpSession;

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

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

        // Retrieve the username from the request
        String username = request.getParameter("username");

        // Create a session and store the username in it
        HttpSession session = request.getSession();
        session.setAttribute("username", username);
```

```java
        // Display welcome message and button to retrieve the username
from session

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

        out.println("<h2>Welcome, " + username + "</h2>");

        out.println("<form action='Second_Servlet' method='post'>");

        out.println("<input type='submit' value='Retrieve Username'>");

        out.println("</form>");

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


        out.close();

    }

}
```

Second_Servlet.java

```java
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;

import javax.servlet.http.HttpSession;


@WebServlet("/SecondServlet")

public class Second_Servlet extends HttpServlet {

    private static final long serialVersionUID = 1L;


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

```java
        // Set the response content type to HTML
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();


        // Retrieve the session
        HttpSession session = request.getSession();
        String username = (String) session.getAttribute("username");


        // Display message based on whether the username was found in
the session
        out.println("<html><body>");
        if (username != null) {
            out.println("<h2>Hello, " + username + "</h2>");
        } else {
            out.println("<h2>No username found in session.</h2>");
        }
        out.println("</body></html>");

        out.close();
    }
}
```
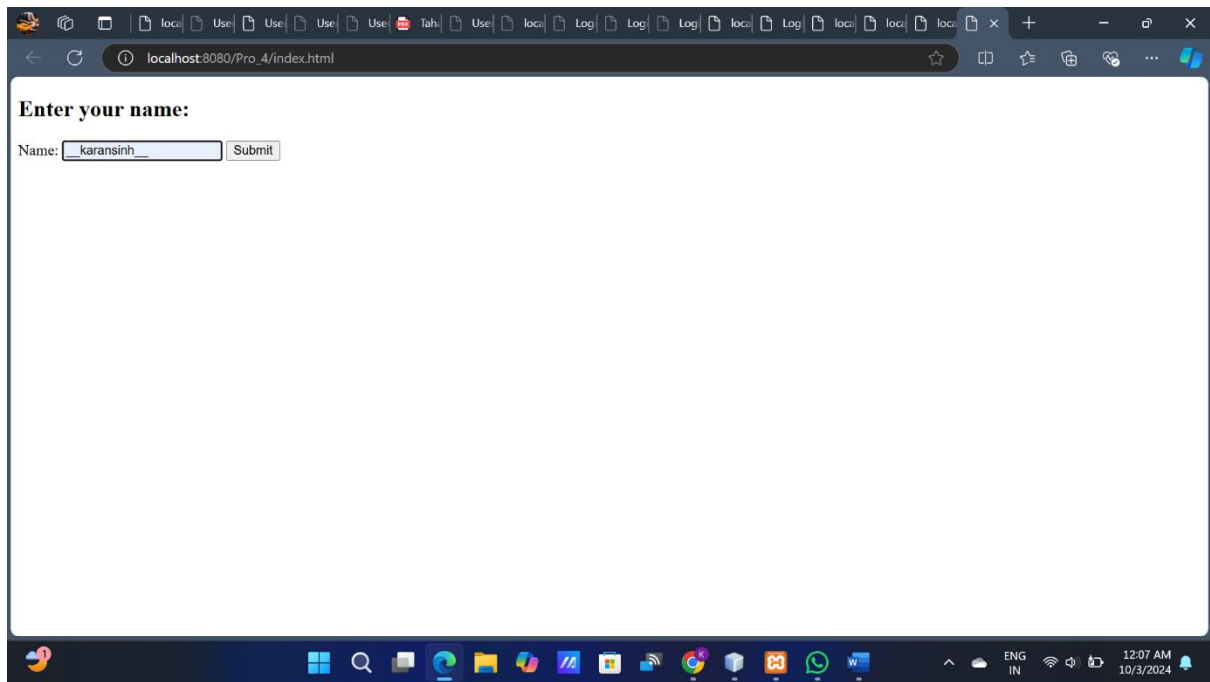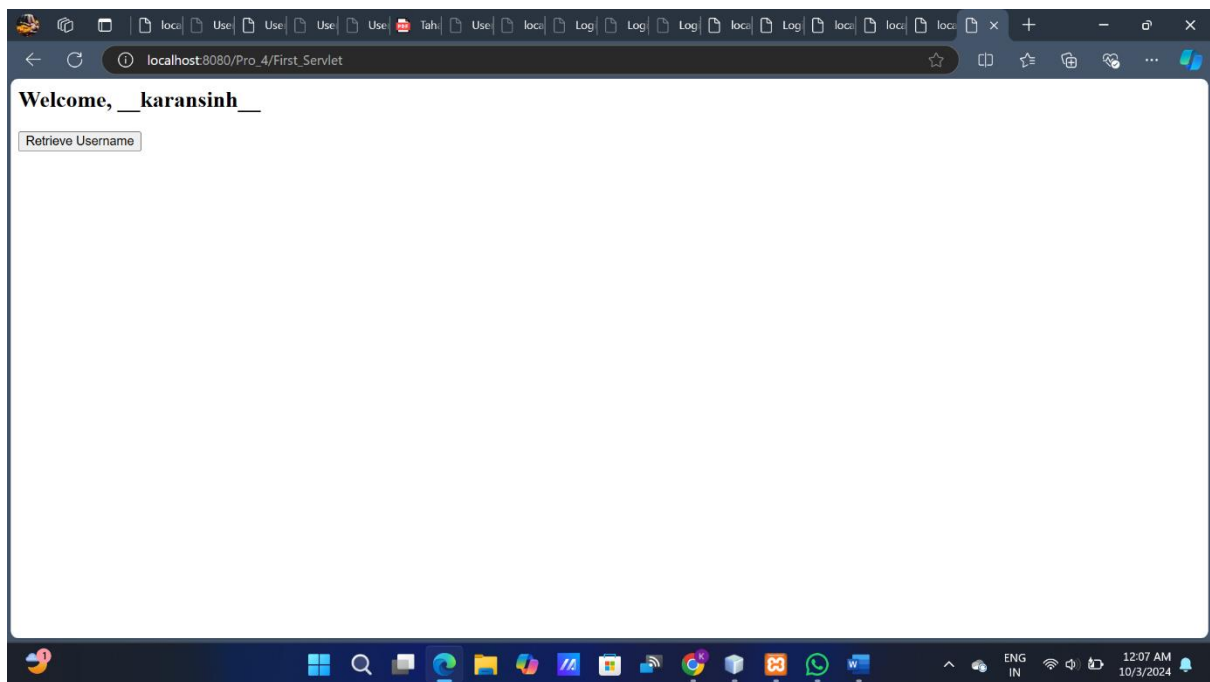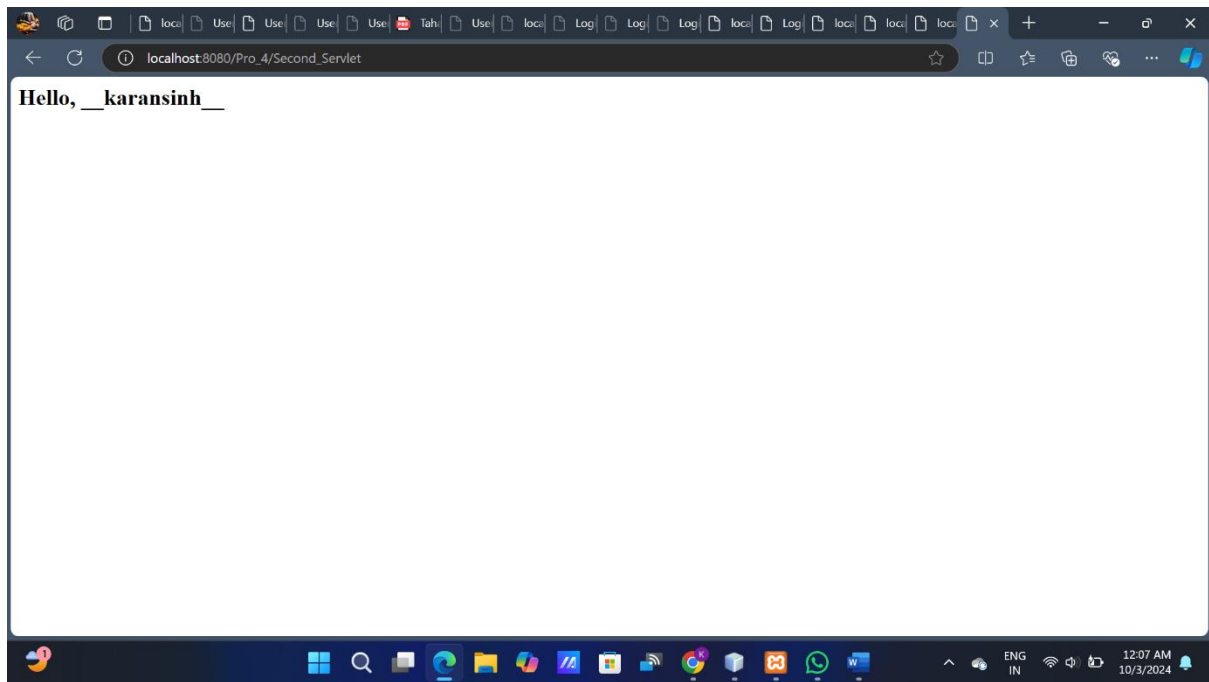
Output:

Index.html

First_Servlet.java

Second_Servlet.java

Hello, __karansinh__

5). Create Index.html to get username and password from the user, Validate Servlet will validate username and password in database entered by the user, if the user is valid, then he will be forwarded to Welcome Servlet else the user will stay on the index.html page and an error message will be displayed.

Code:

Validate.java

```
import java.io.*;

import java.sql.*;

import javax.servlet.*;

import javax.servlet.http.*;


public class Validate extends HttpServlet {
```

```java
    public void doPost(HttpServletRequest request,
HttpServletResponse response) throws ServletException,
IOException {

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();


        // Get the username and password from the request

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

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


        // Database connection parameters

        String dbURL = "jdbc:mysql://localhost:3306/test"; //
Update with your database name

        String dbUser = "root"; // Update with your MySQL
username

        String dbPassword = ""; // Update with your MySQL
password


        try {
            // Load MySQL driver
            Class.forName("com.mysql.cj.jdbc.Driver");


            // Connect to the database and validate user
            Connection con =
DriverManager.getConnection(dbURL, dbUser, dbPassword);
            String query = "SELECT * FROM users WHERE
username = ? AND password = ?";
```

```java
        PreparedStatement stmt =
con.prepareStatement(query);

        stmt.setString(1, username);

        stmt.setString(2, password);

        ResultSet rs = stmt.executeQuery();


        if (rs.next()) {

            // User is valid, forward to welcome page

            RequestDispatcher rd =
request.getRequestDispatcher("Welcome");

            rd.forward(request, response);

        } else {

            // User is invalid, show error message

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

            out.println("<p style='color:red;'>Invalid username or
password. Please try again.</p>");

            RequestDispatcher rd =
request.getRequestDispatcher("index.html");

            rd.include(request, response);

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

        }


        // Clean up resources

        stmt.close();

        con.close();

    } catch (Exception e) {
```

```java
            out.println("Database connection error: " +
e.getMessage());
        }
        out.close();
    }
}
```

Welcome.java

```java
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("/Welcome")
public class Welcome 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();


        out.println("<html><body>");
```
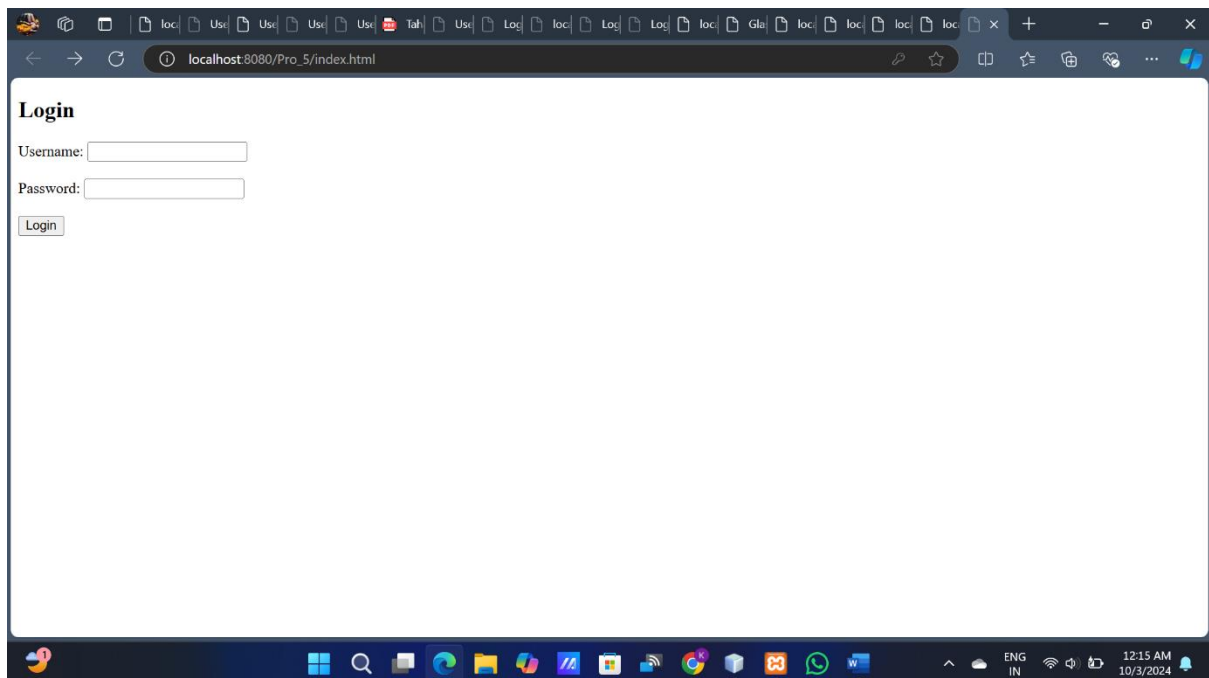
```
        out.println("<h1>Welcome to the User Dashboard!</h1>");
        out.println("</body></html>");


        out.close();
    }
}
```
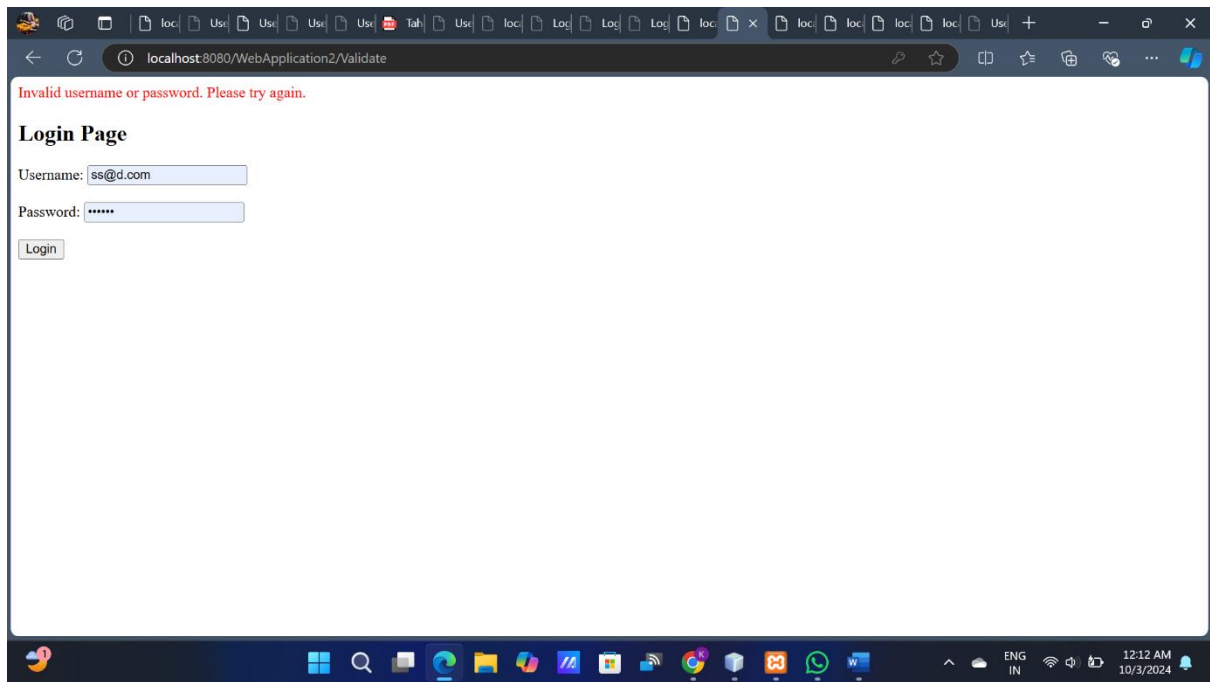
Output:

Index.html

Index.html (with error)

Invalid username or password. Please try again.

Login Page

Username: ss@d.com

Password: ●●●●●●

Login

Welcome.java

Welcome to the User Dashboard!