**Practical: 1**

**Aim: Create Chat application using either TCP or UDP protocol.**

**TCP Connection:**

**Server:**

import java.net.\*;  
import java.io.\*;  
  
public class Server {  
 public static void main(String[] args) throws IOException {  
 ServerSocket serverSocket = new ServerSocket(8080);  
 System.*out*.println("Server started...");  
  
 Socket clientSocket = serverSocket.accept();  
 System.*out*.println("Client connected");  
  
 BufferedReader input = new BufferedReader(new InputStreamReader(clientSocket.getInputStream()));  
 PrintWriter output = new PrintWriter(clientSocket.getOutputStream(), true);  
  
 System.*out*.println("Type 'exit' to stop.");  
  
 while (true) {  
 String clientMessage = input.readLine();  
  
 if (clientMessage.equalsIgnoreCase("exit")) {  
 System.*out*.println("Client disconnected.");  
 break;  
 }  
 System.*out*.println("Client: " + clientMessage);  
  
 System.*out*.print("Server: ");  
  
 String response = new BufferedReader(new InputStreamReader(System.*in*)).readLine();  
 output.println(response);  
  
 if (response.equalsIgnoreCase("exit")) {  
 System.*out*.println("Chat ended by the server.");  
 break;  
 }  
 }  
  
 input.close();  
 output.close();

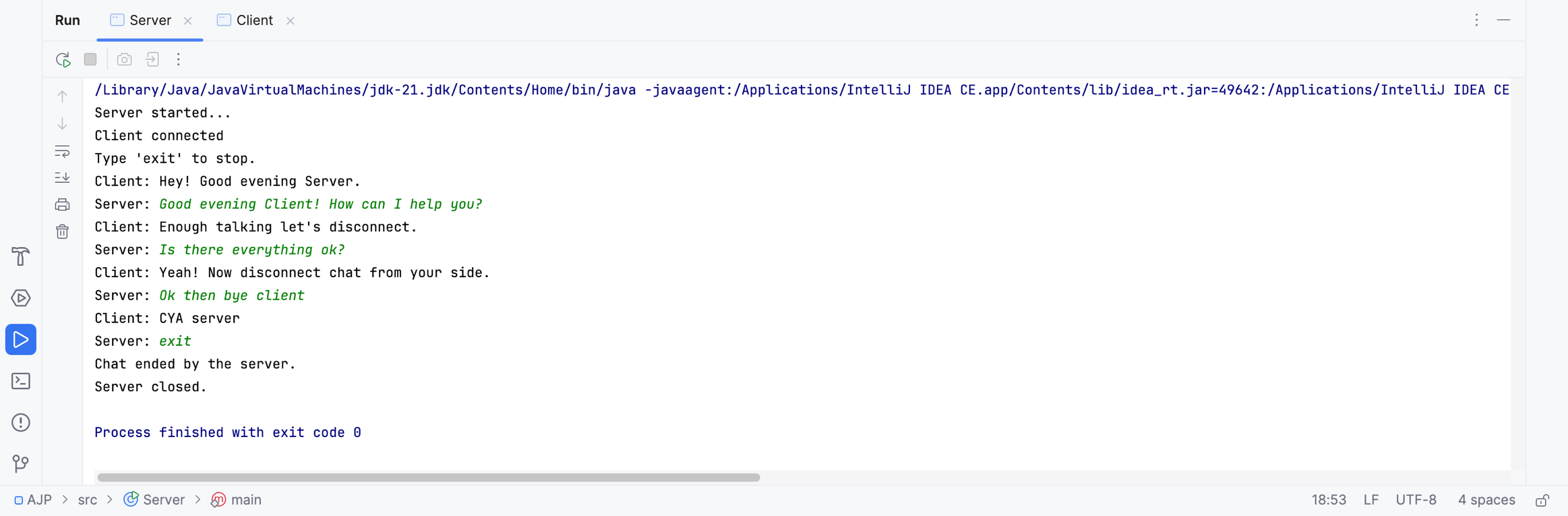
clientSocket.close();  
 serverSocket.close();  
 System.*out*.println("Server closed.");  
  
 }  
}

**Client:**

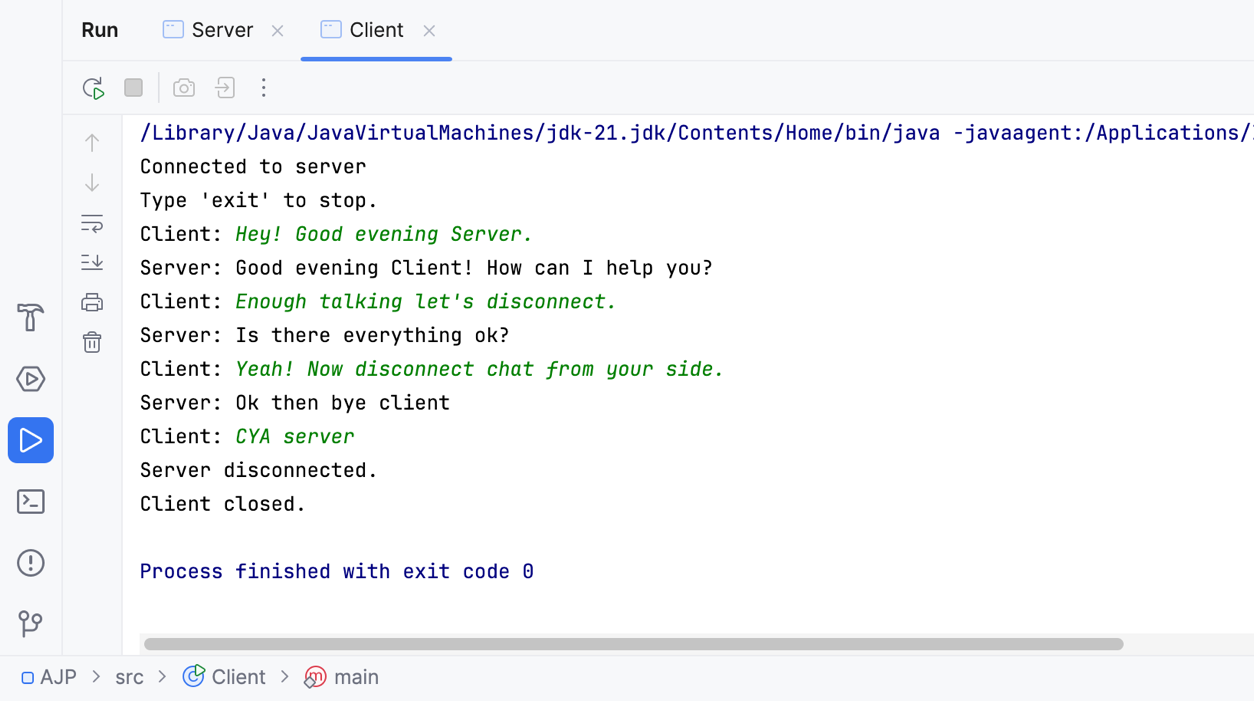
import java.io.\*;  
import java.net.\*;  
import java.util.Scanner;  
  
public class Client {  
 public static void main(String[] args) throws IOException {  
 Socket socket = new Socket("localhost", 8080);  
 System.*out*.println("Connected to server");  
  
 PrintWriter output = new PrintWriter(socket.getOutputStream(), true);  
 BufferedReader input = new BufferedReader(new InputStreamReader(socket.getInputStream()));  
  
 Scanner obj = new Scanner(System.*in*);  
 System.*out*.println("Type 'exit' to stop.");  
  
 while(true) {  
 System.*out*.print("Client: ");  
 String msg = obj.nextLine();  
 output.println(msg);  
  
 if (msg.equalsIgnoreCase("exit")) {  
 System.*out*.println("Chat ended by the client.");  
 break;  
 }  
  
 String serverResponse = input.readLine();  
  
 if (serverResponse.equalsIgnoreCase("exit")) {  
 System.*out*.println("Server disconnected.");  
 break;  
 }  
  
 System.*out*.println("Server: " + serverResponse);  
 }  
  
 input.close();  
 output.close();  
 socket.close();  
 System.*out*.println("Client closed.");  
 }  
}

**Output:**

Server side chat…



Client side chat…



**UDP Connection:**

**Server:**

import java.net.\*;  
import java.io.\*;  
  
public class UServer {  
 public static void main(String[] args) throws IOException {  
 DatagramSocket serverSocket = new DatagramSocket(8080);  
 byte[] receiveData = new byte[1024];  
 System.*out*.println("Server started...");  
 System.*out*.println("Type 'exit' to stop.");  
  
 while (true) {  
 DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);  
 serverSocket.receive(receivePacket);  
  
 String clientMessage = new String(receivePacket.getData(), 0, receivePacket.getLength());  
 InetAddress clientAddress = receivePacket.getAddress();  
 int clientPort = receivePacket.getPort();  
  
 if (clientMessage.equalsIgnoreCase("exit")) {  
 System.*out*.println("Client disconnected.");  
 break;  
 }  
  
 System.*out*.println("Client: " + clientMessage);

System.*out*.print("Server: ");  
 BufferedReader consoleInput = new BufferedReader(new InputStreamReader(System.*in*));  
 String response = consoleInput.readLine();  
 byte[] sendData = response.getBytes();  
  
 DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, clientAddress, clientPort);  
 serverSocket.send(sendPacket);  
  
 if (response.equalsIgnoreCase("exit")) {  
 System.*out*.println("Chat ended by the server.");  
 break;  
 }  
 }  
  
 serverSocket.close();  
 System.*out*.println("Server closed.");  
 }  
}

**Client:**

import java.io.\*;  
import java.net.\*;  
import java.util.Scanner;  
  
public class UClient {  
 public static void main(String[] args) throws IOException {  
 DatagramSocket socket = new DatagramSocket();  
 InetAddress serverAddress = InetAddress.*getByName*("localhost");  
 Scanner obj = new Scanner(System.*in*);  
  
 System.*out*.println("Connected to server");  
 System.*out*.println("Type 'exit' to stop.");  
  
 while (true) {  
 System.*out*.print("Client: ");  
 String msg = obj.nextLine();  
 byte[] sendData = msg.getBytes();  
  
 DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, serverAddress, 8080);  
 socket.send(sendPacket);  
  
 if (msg.equalsIgnoreCase("exit")) {  
 System.*out*.println("Chat ended by the client.");  
 break;  
 }  
  
 byte[] receiveData = new byte[1024];  
 DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);  
 socket.receive(receivePacket);  
  
 String serverResponse = new String(receivePacket.getData(), 0, receivePacket.getLength());  
  
 if (serverResponse.equalsIgnoreCase("exit")) {  
 System.*out*.println("Server disconnected.");  
 break;  
 }  
  
 System.*out*.println("Server: " + serverResponse);  
 }  
  
 socket.close();  
 System.*out*.println("Client closed.");  
 }  
}

**Output:**

Server side chat…

****

Client side chat:



**Practical: 2**

**Aim: Write a program to Create Simple JDBC Application to insert and retrieve records from Access Database (statement).**

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

import java.sql.Statement;

public class Prac3 {

public static void main(String[] args) {

String url = "jdbc:mysql://localhost:3306/emp\_data";

String username = "root";

String password = "";

Connection connection = null;

try {

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

connection = DriverManager.getConnection(url, username, password);

System.out.println("Connected to database");

Statement stat = connection.createStatement();

int result = stat.executeUpdate("CREATE TABLE emp (id INT(10), name

VARCHAR(20), age INT(10))");

System.out.println("Table is created");

String insertQuery = "INSERT INTO emp (`id`, `name`, `age`) VALUES (?, ?, ?)";

PreparedStatement insertStmt = connection.prepareStatement(insertQuery);

insertStmt.setInt(1, 3);

insertStmt.setString(2, "Kevin");

insertStmt.setInt(3, 8);

insertStmt.executeUpdate();

String UpdateQuery = "UPDATE emp SET name='Sahil' WHERE id=2";

PreparedStatement updateStmt = connection.prepareStatement(UpdateQuery);

updateStmt.executeUpdate();

System.out.println("Query Updated");

String DeleteQuery = "DELETE FROM emp WHERE id=3";

PreparedStatement deleteStmt = connection.prepareStatement(DeleteQuery);

deleteStmt.executeUpdate();

System.out.println("Selected data Deleted!");

String selectQuery = "SELECT \* FROM emp";

PreparedStatement selectStmt = connection.prepareStatement(selectQuery);

ResultSet resultSet = selectStmt.executeQuery();

while (resultSet.next()) {

System.out.println("ID: " + resultSet.getInt("id"));

System.out.println("NAME: " + resultSet.getString("name"));

System.out.println("AGE: " + resultSet.getInt("age"));

}

} catch (Exception e) {

e.printStackTrace();

} finally {

try {

if (connection != null) {

connection.close();

System.out.println("Connection closed.");

}

} catch (Exception e) {

e.printStackTrace();

}

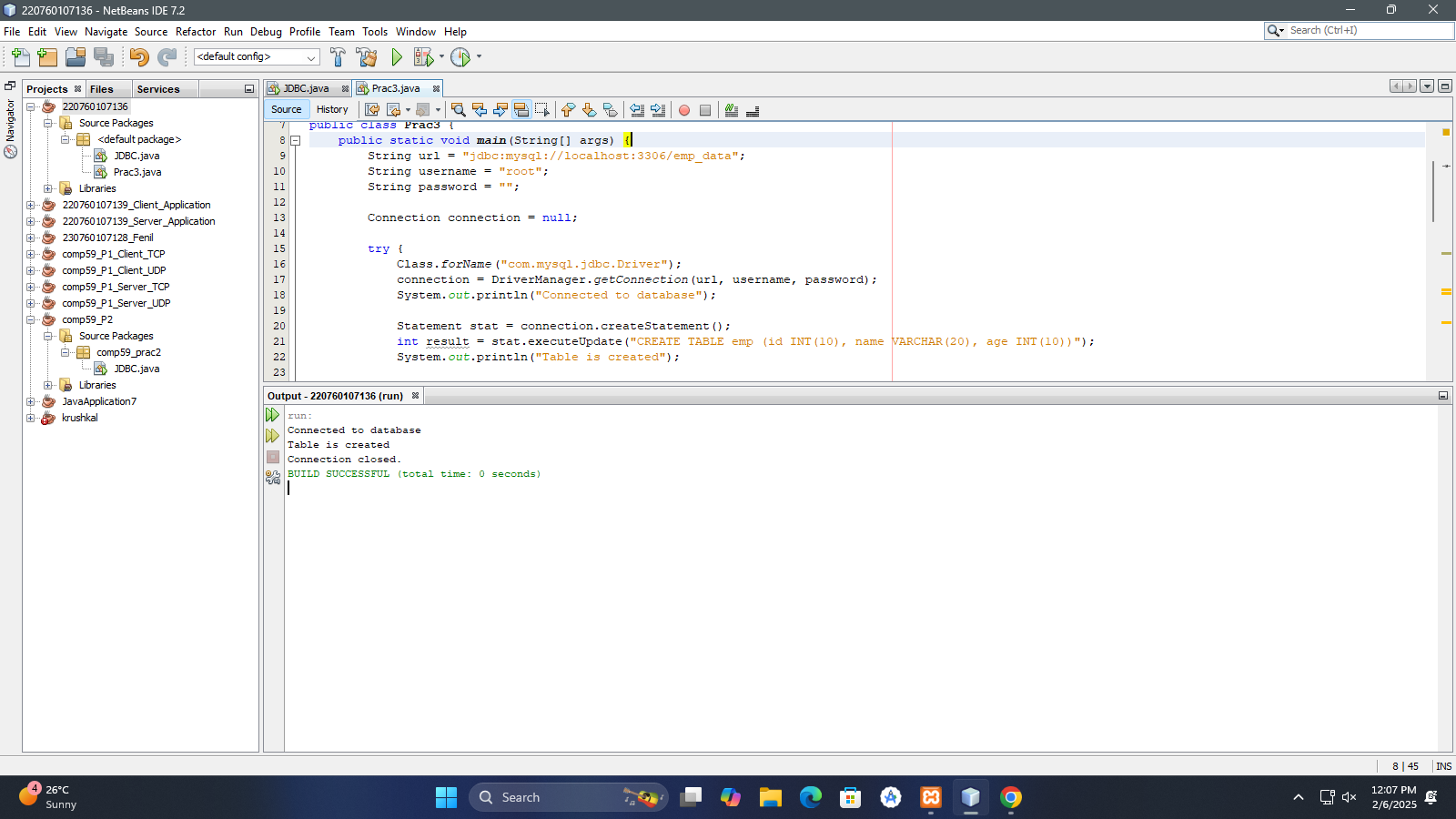
}

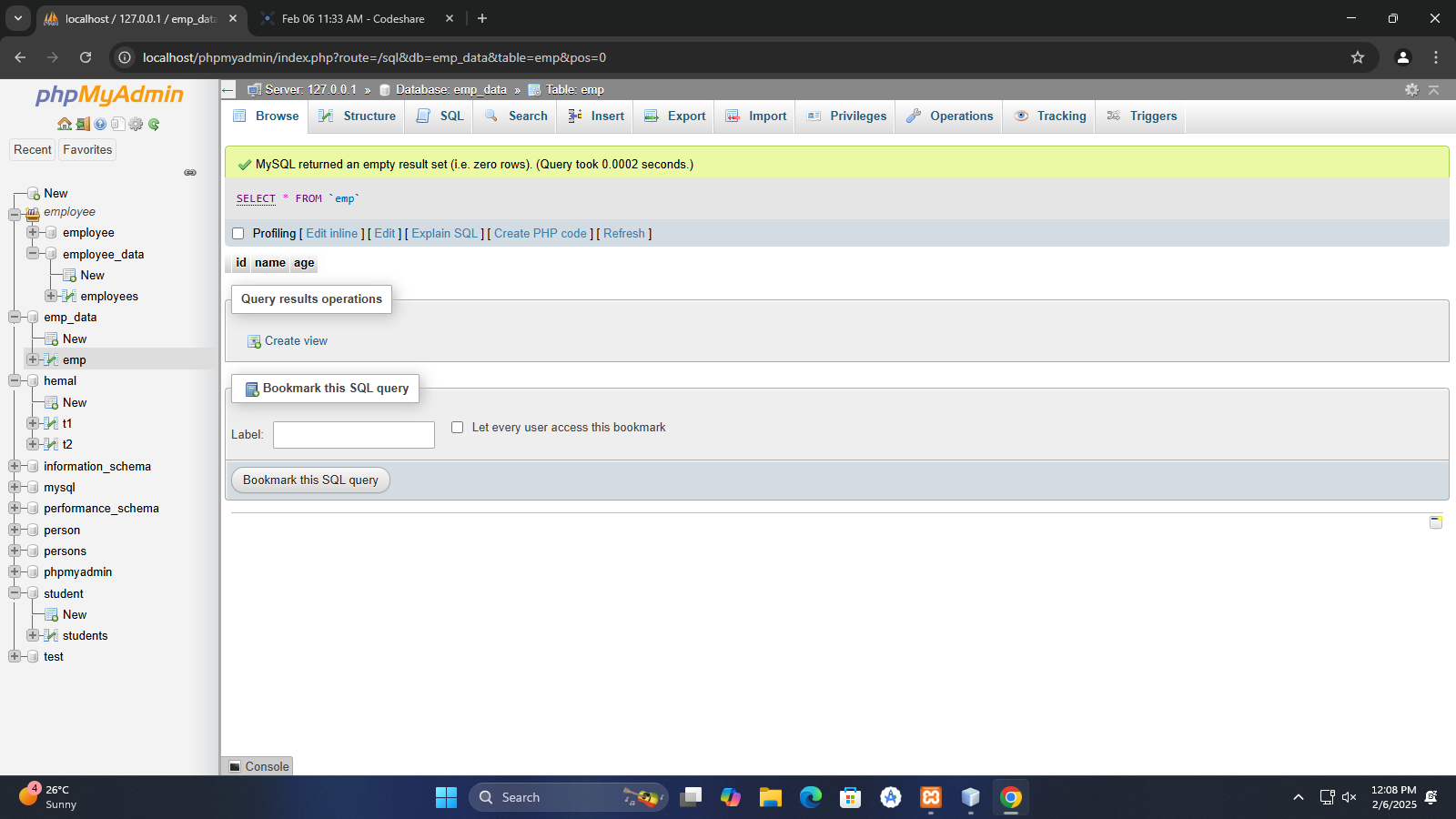
}

}

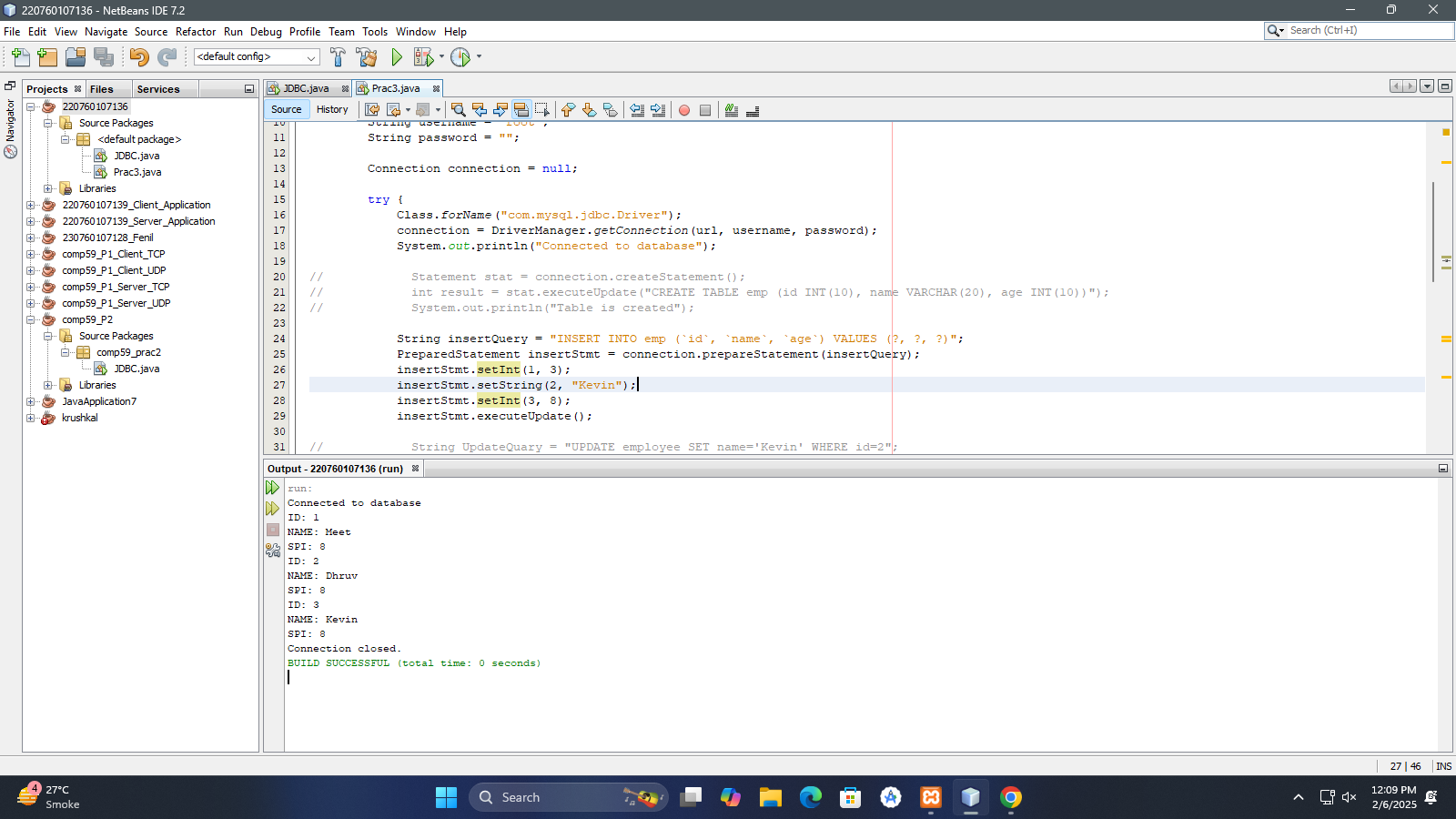
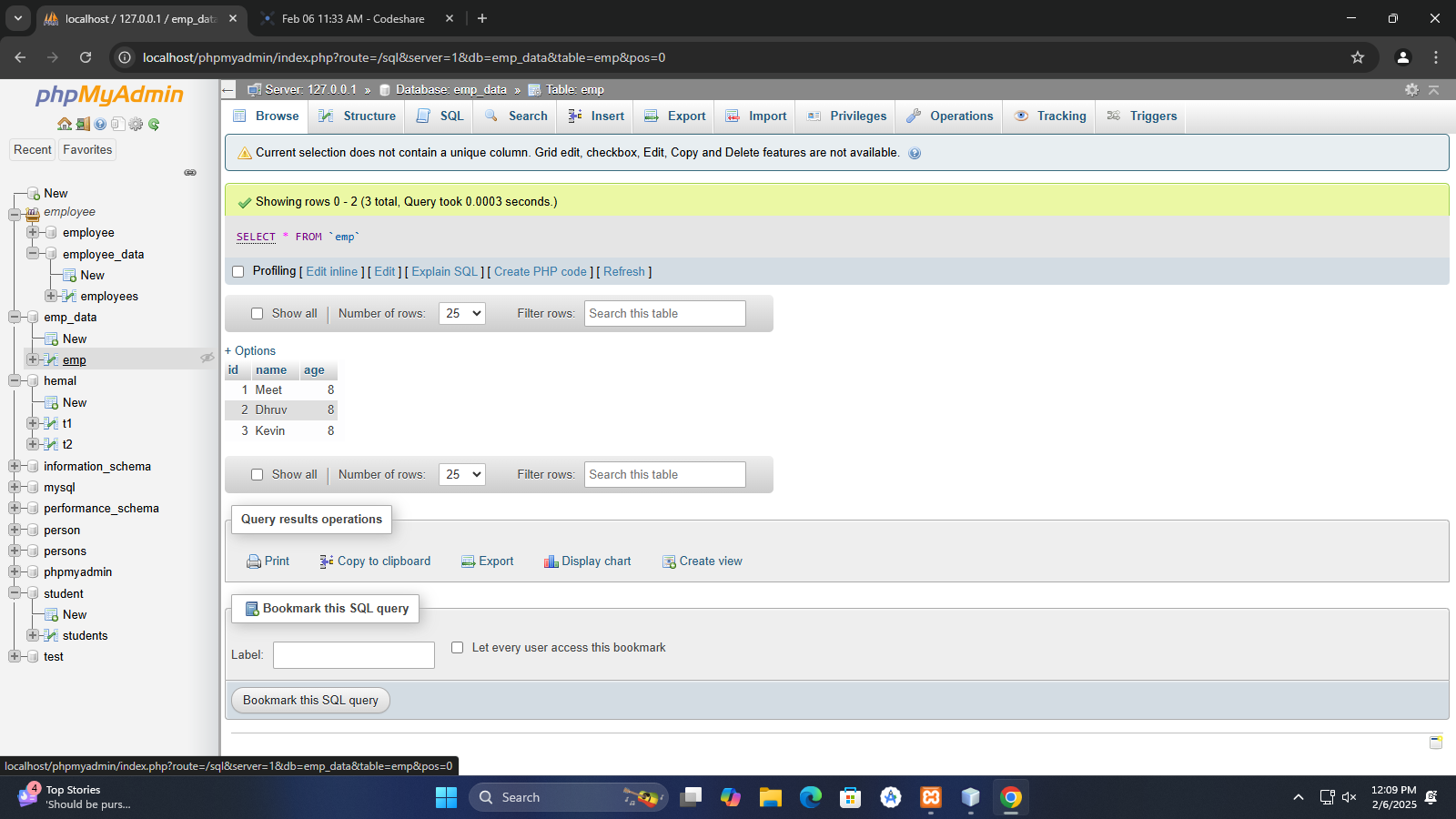
**Output:**

Table Created…

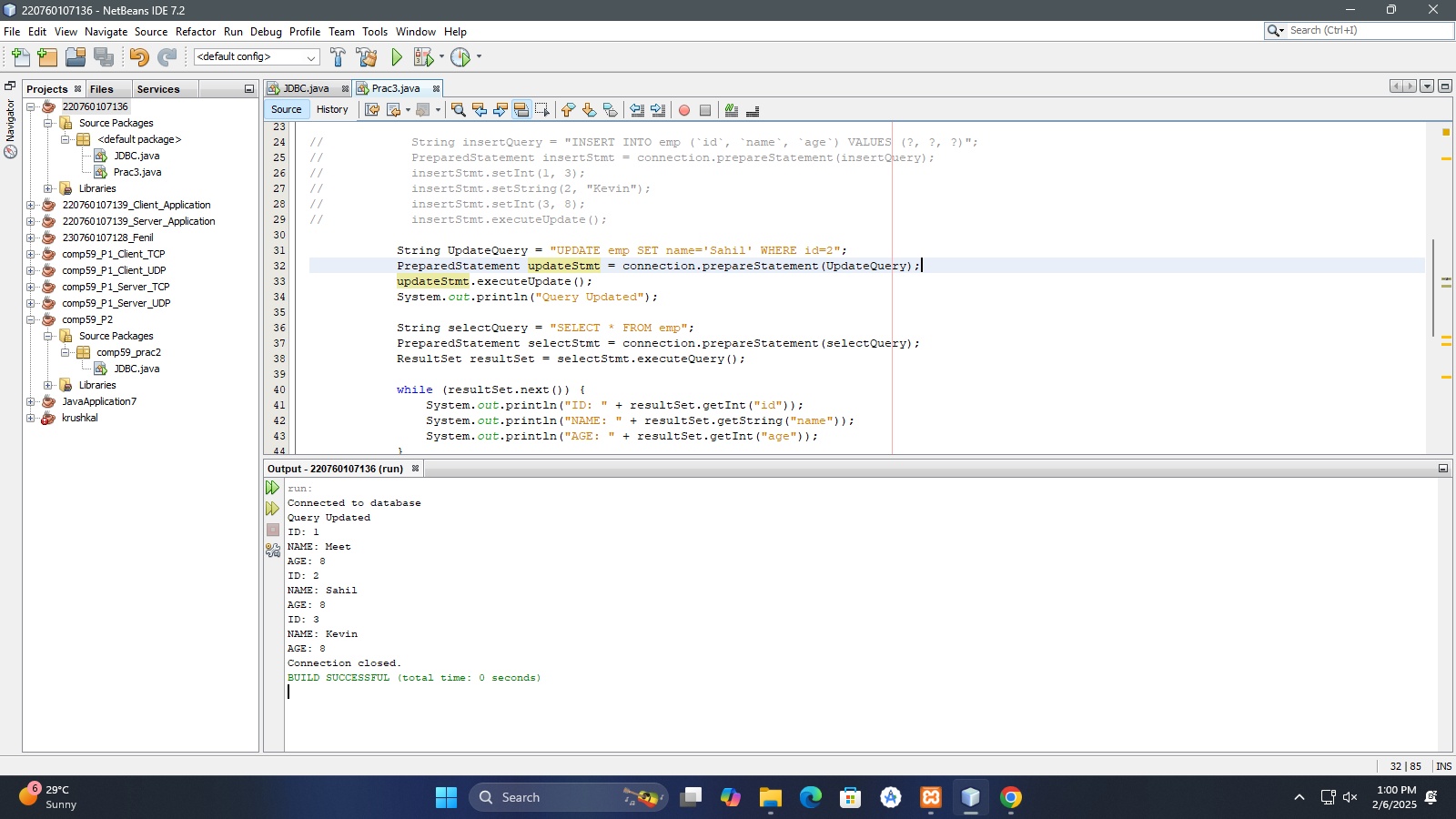
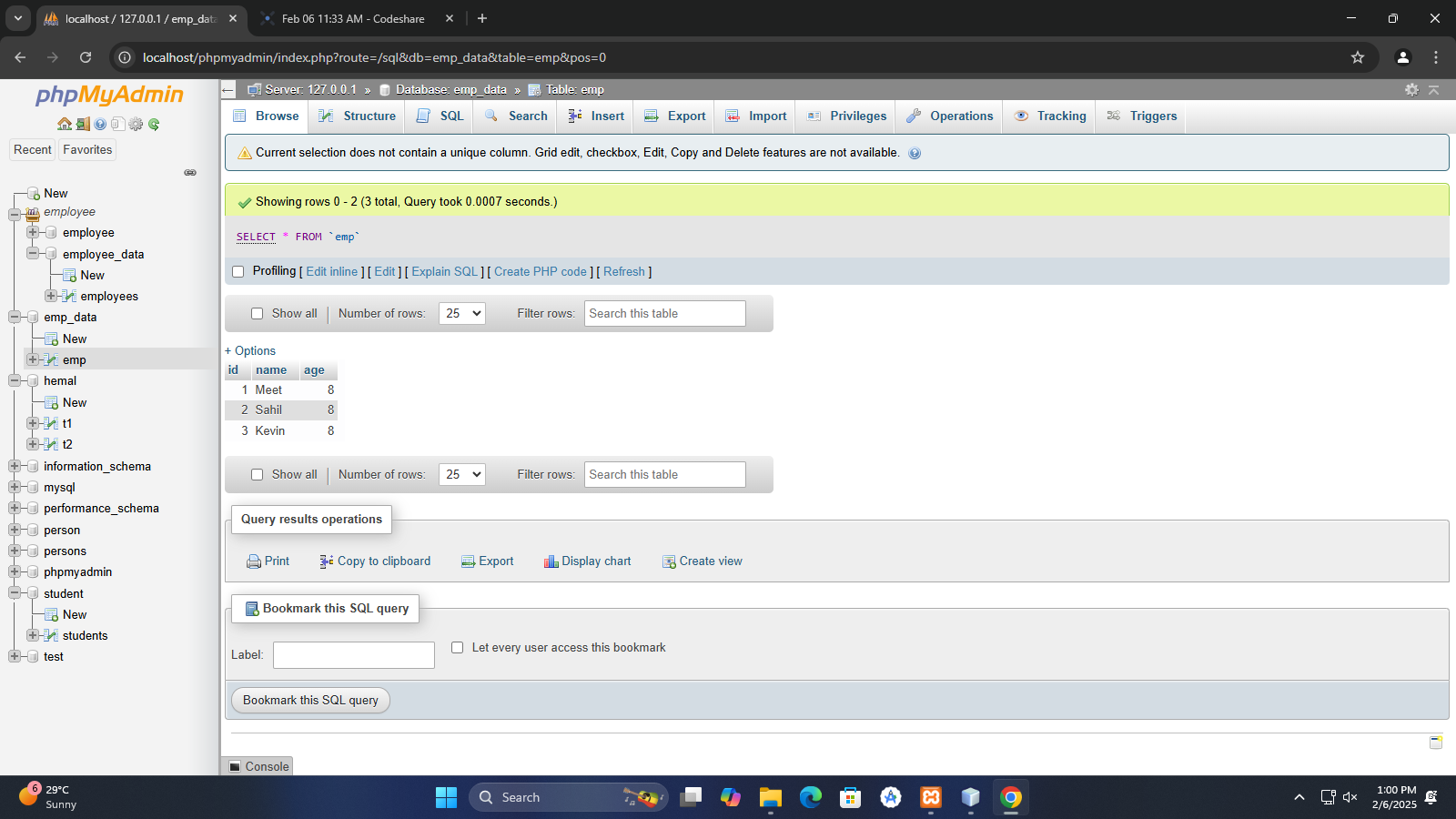




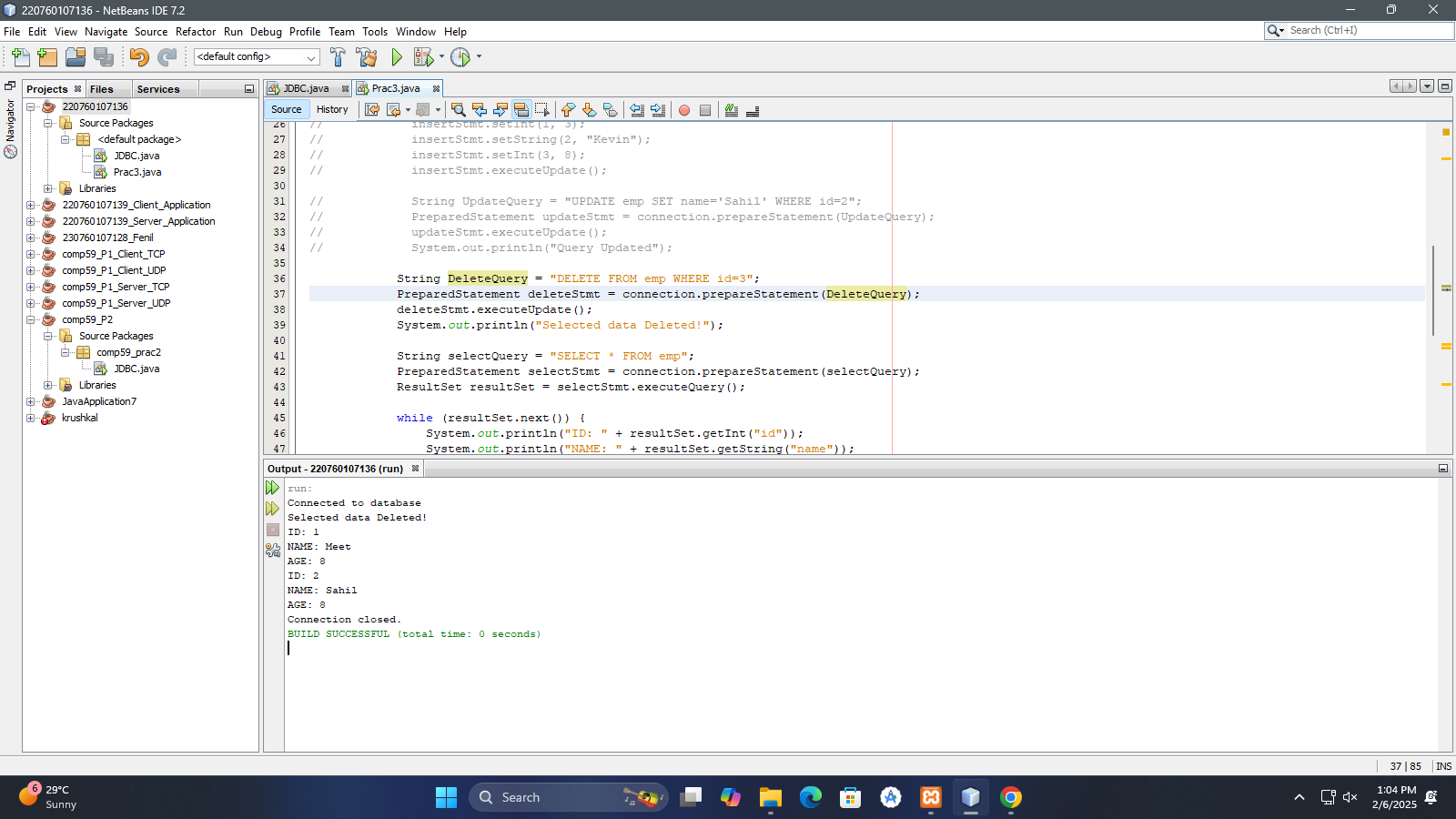
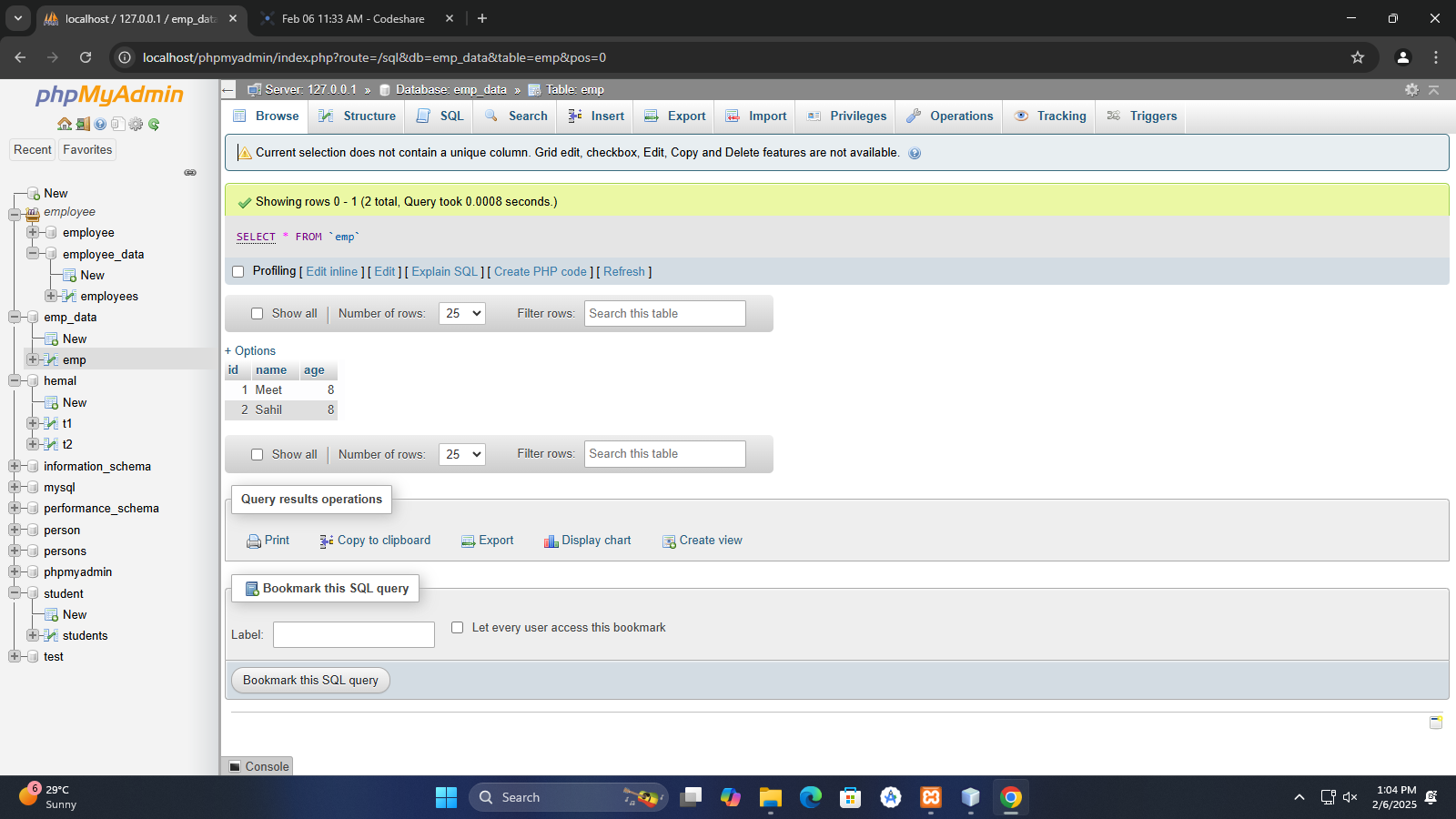
Insert Query…

Update Query…

Delete Query…

**Practical: 6**

**Aim: Write a JSP page that displays the user from containing the two fields user name and city.**

**HTML file:**

<html>

<head>

<title>Practical 6: User Word</title>

</head>

<body>

<h2>User Details:</h2>

<form action="index.jsp" method="post">

<label for="username">Username:</label>

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

<label for="city">City:</label>

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

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

</form>

</body>

</html>

**JSP File:**

<html>

<head>

<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">

<title>Practical 6: JSP Page</title>

</head>

<body>

<%

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

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

if (username != null && city != null) {

%>

<h3>User Information:</h3>

<p><strong>Username:</strong> <%= username %></p>

<p><strong>City:</strong> <%= city %></p>

<%

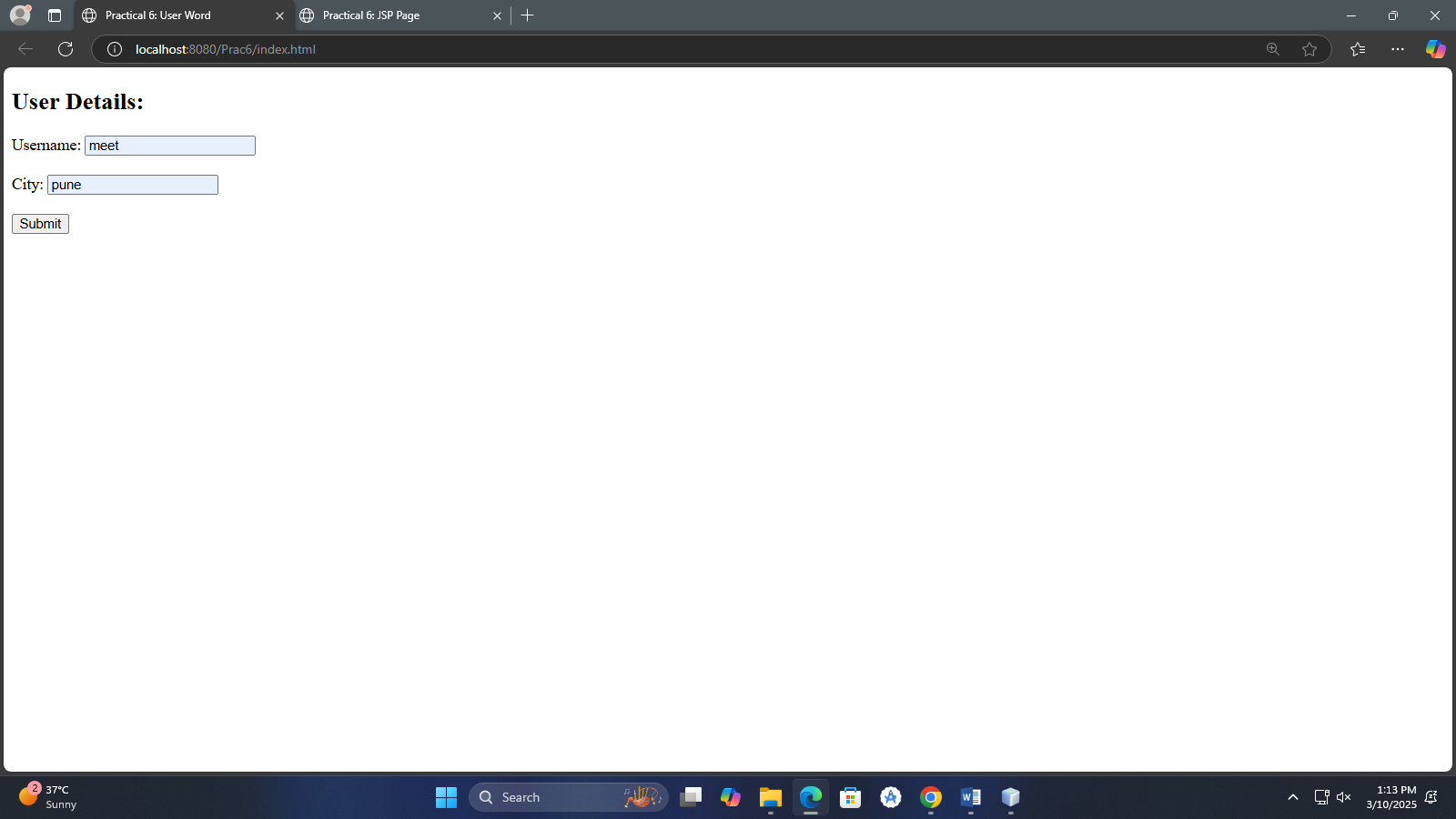
}

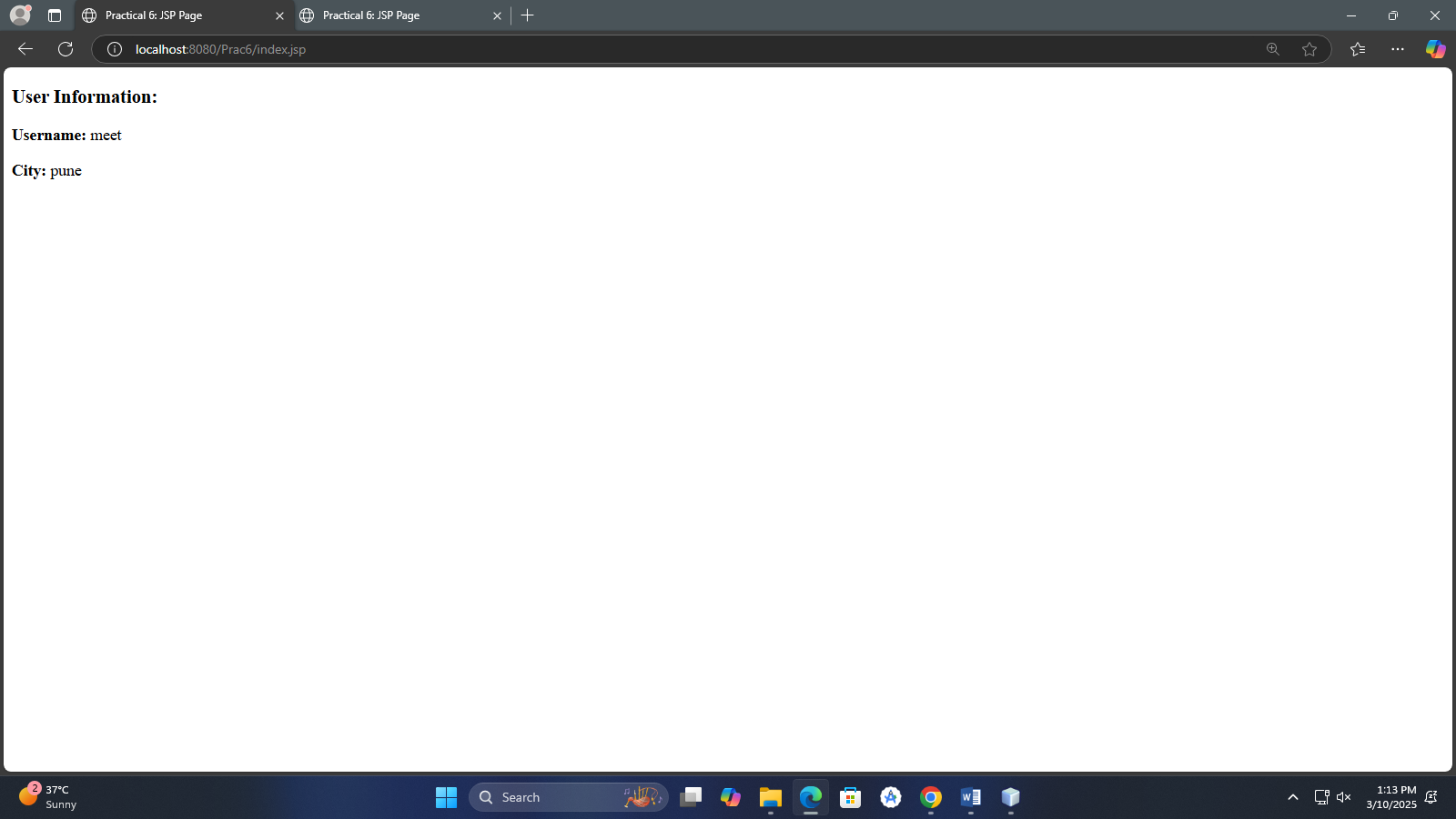
%>

</body>

</html>

**Output:**

****

****

**Practical: 7**

**Aim: Write a JSP page to implement Cookie. Create an html file to read the values from the user. Create the cookie, Read the created cookie and delete the cookie using JSP.**

**Welcome Page:**

<html>

<head>

<title>Welcome</title>

</head>

<body style="background-color: #E8E8E8">

<form action="createCookie.jsp">

<fieldset>

<legend>Student Details : </legend>

<label for="UserName">UserName: </label>

<input type="text" name="UserName"><br><br>

<label for="City">City : </label>

<input type="text" name="City"><br><br>

<button type="sumbit" value="submit">Submit</button>

</fieldset>

</form>

</body>

</html>

**Create Cookie:**

<html>

<head>

<title>Create Cookie Page</title>

</head>

<%

Cookie Name = new Cookie("UserName", request.getParameter("UserName"));

Cookie City = new Cookie("City", request.getParameter("City"));

Name.setMaxAge(60\*60\*24);

City.setMaxAge(60\*60\*24);

response.addCookie(Name);

response.addCookie(City);

%>

<body style="background-color: #E8E8E8">

<a href="readCookie.jsp">Read Cookie</a>

</body>

</html>

**Delete Cookie:**

<html>

<head>

<title>Delete Cookie Page</title>

</head>

<body style="background-color: #E8E8E8">

<%

Cookie cookie = null;

Cookie[]

cookies = null;

cookies = request.getCookies();

if(cookies != null) {

for(int i = 0; i < cookies.length; i++) {

cookie = cookies[i];

cookie.setMaxAge(0);

response.addCookie(cookie);

}

} else {

out.println("<h2>No cookies founds<h2>");

}

%>

<h1>All the Cookie Deleted</h1>

<a href="readCookie.jsp">Read Cookies</a>

</body>

</html>

**Read Cookie:**

<html>

<head>

<title>Reading Cookie Page</title>

</head>

<body style="background-color: #E8E8E8">

<center>

<h1>Reading Cookies</h1>

</center>

<% Cookie cookie=null;

Cookie[]

cookies=null;

cookies=request.getCookies();

if(cookies != null) {

out.println("<h2>Found Cookies Name and Value</h2>");

for(int i = 0; i < cookies.length; i++) {

cookie = cookies[i];

out.print("Name : " + cookie.getName() + " , ");

out.print("Value: " + cookie.getValue() + " <br>");

}

} else {

out.println("<h2>No cookies founds</h2>");

}

%>

<form action="deleteCookie.jsp">

<br>

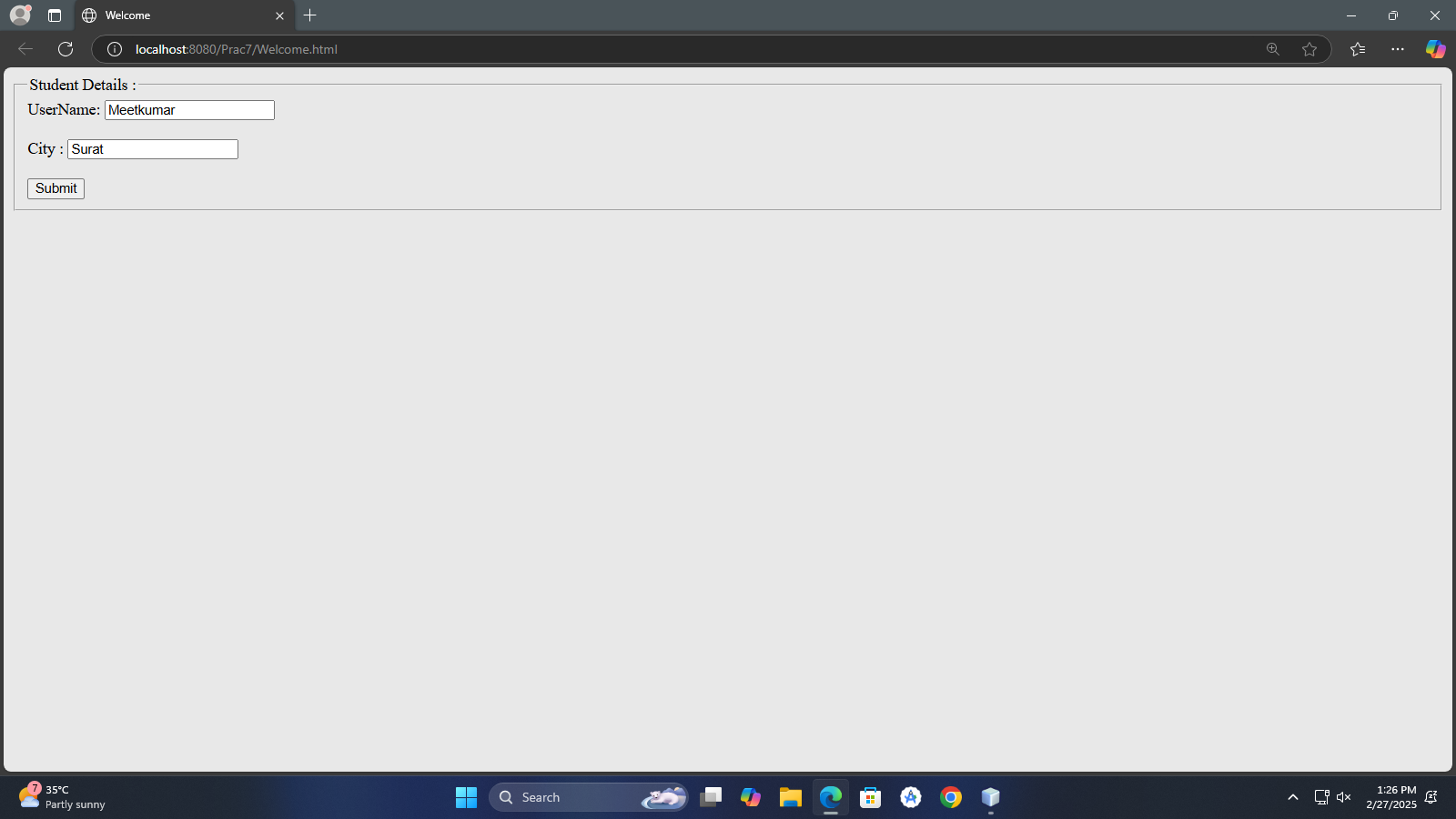
<button type="submit" value="sumbit">Delete Cookie</button>

</form>

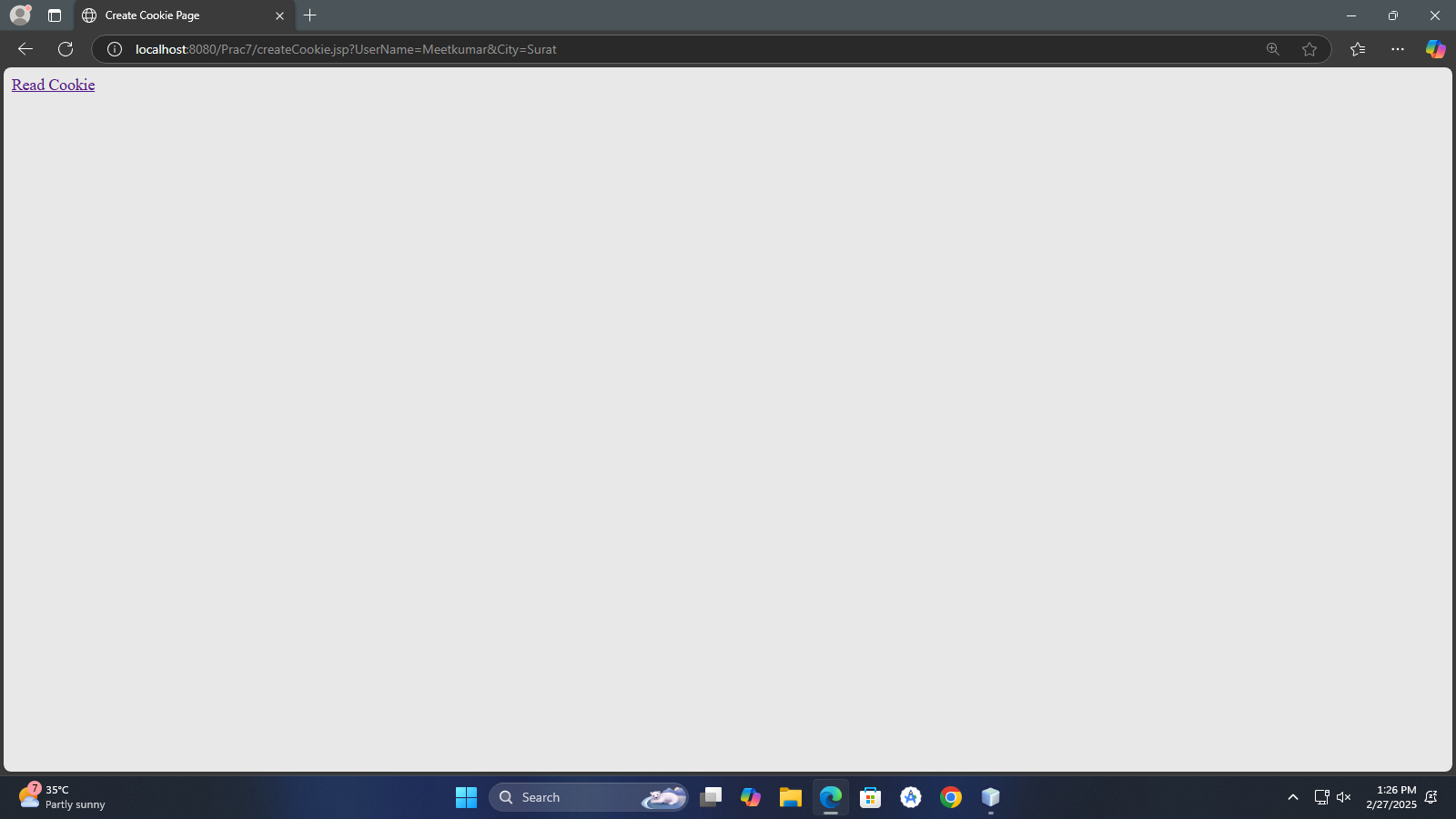
</body>

</html>

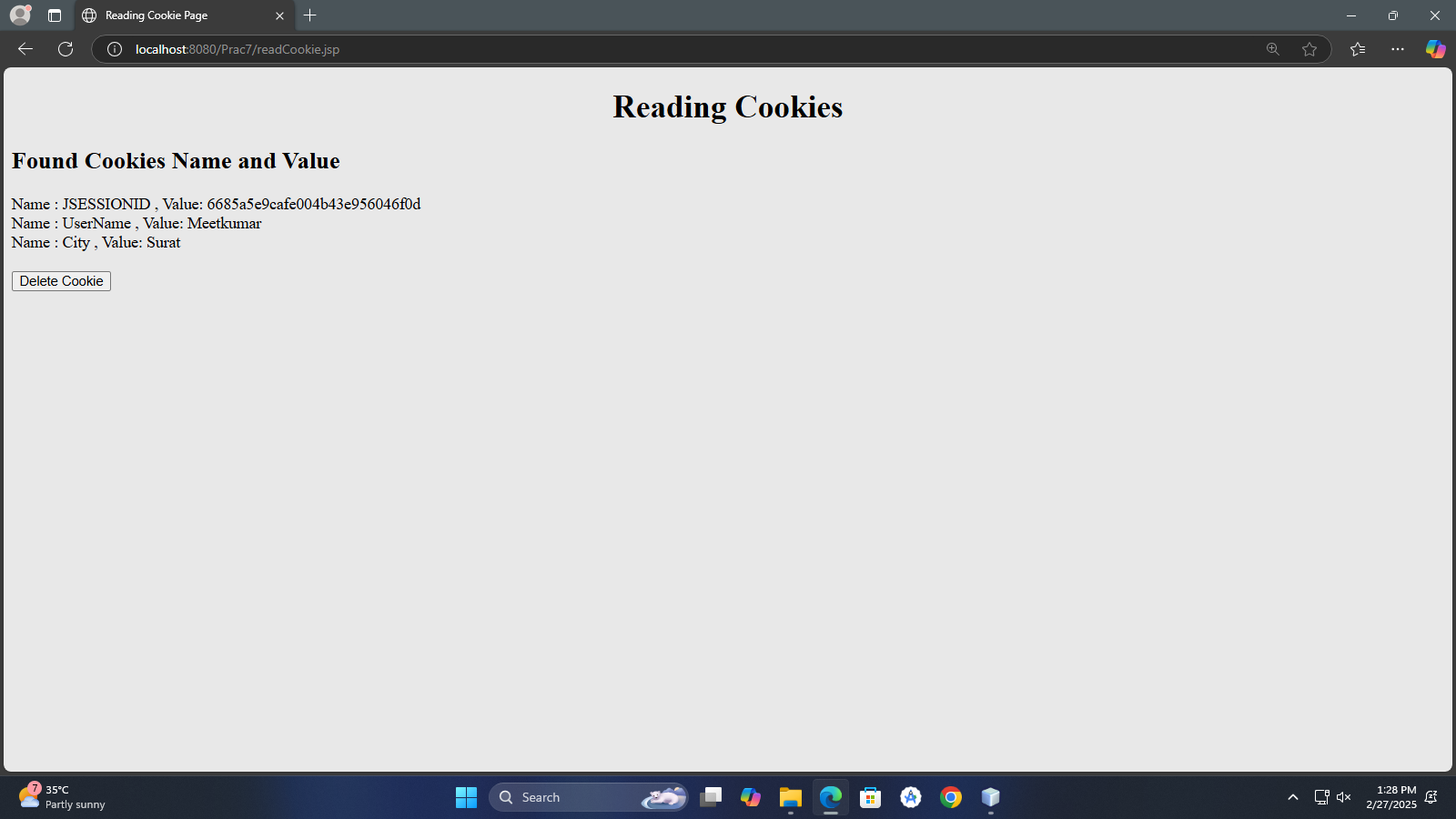
**Output:**

****

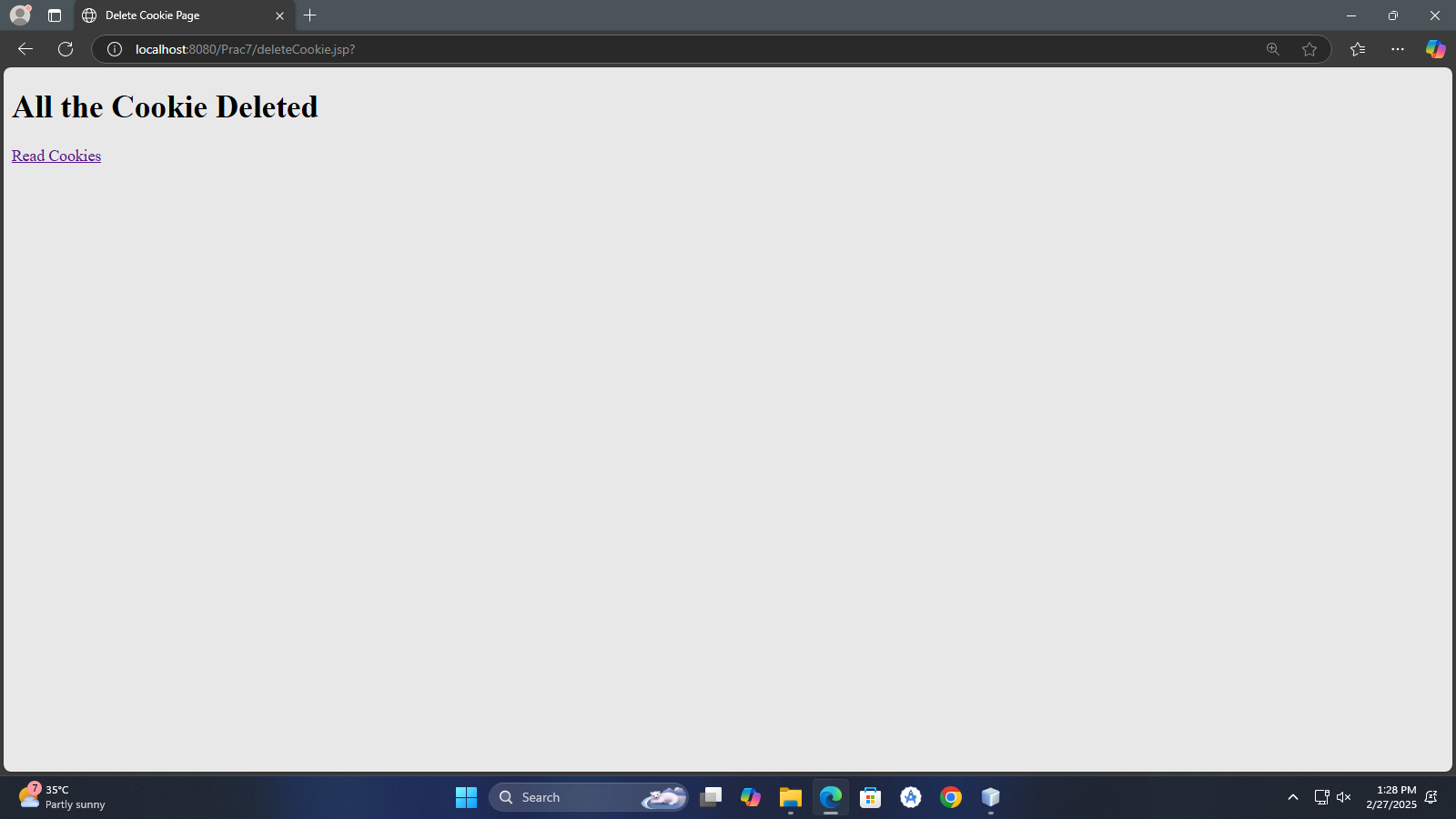
Cookie Created…

****

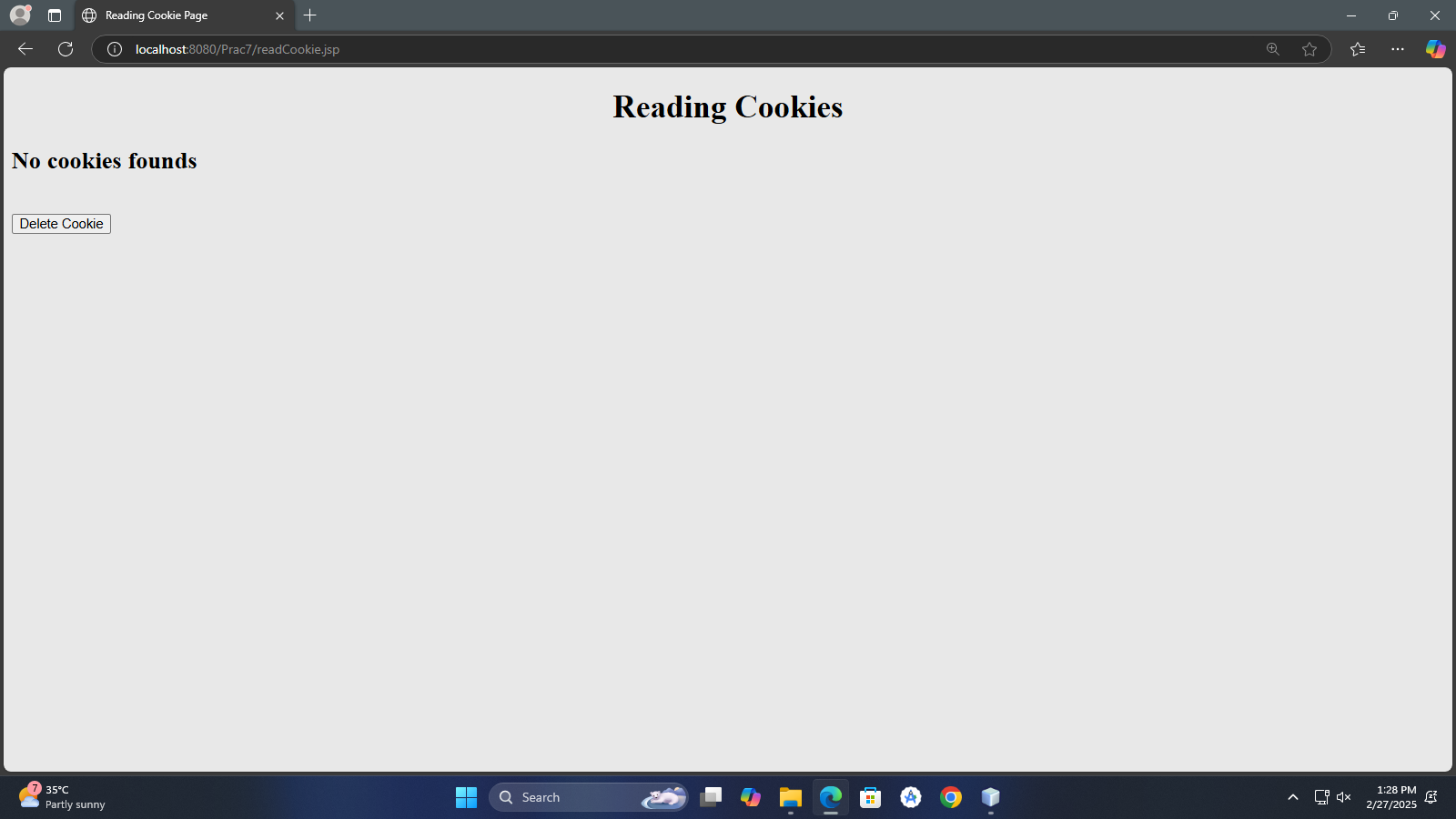
Reading Cookie…

****

Deleting Cookies…

****

No Cookies Found After Deleting Cookies…

****

**Practical: 9**

**Aim: Design a web page that takes the Username from user and if it is a valid username prints "Welcome Username". Use JSF to implement.**

**admin.xhtml:**

<?xml version="1.0" encoding="UTF-8"?>

<html xmlns="http://www.w3.org/1999/xhtml" xmlns:h="http://java.sun.com/jsf/html">

<h:head>

<title>Facelet Title</title>

</h:head>

<h:body>

<h1>Welcome, <h:outputLabel value="#{model.username}"></h:outputLabel></h1>

</h:body>

</html>

**fail.xhtml:**

<?xml version='1.0' encoding='UTF-8'?>

<html xmlns="http://www.w3.org/1999/xhtml" xmlns:h="http://java.sun.com/jsf/html">

<h:head>

<title>Facelet Title</title>

</h:head>

<h:body>

<h1>Invalid Username or Password!!</h1>

</h:body>

</html>

**index.xhtml:**

<?xml version='1.0' encoding='UTF-8'?>

<html xmlns="http://www.w3.org/1999/xhtml" xmlns:h="http://java.sun.com/jsf/html">

<h:head>

<title>Facelet Title</title>

</h:head>

<h:body>

<h:form>

<h:outputLabel value="Enter the username:"></h:outputLabel>

<h:inputText value="#{model.username}"></h:inputText>

<br/><br/>

<h:outputLabel value="Enter the password:"></h:outputLabel>

<h:inputSecret value="#{model.password}"></h:inputSecret>

<br/><br/>

<h:commandButton value="Next" action="#{model.login}"></h:commandButton>

</h:form>

</h:body>

</html>

**model.java:**

import javax.faces.bean.ManagedBean;

import javax.faces.bean.RequestScoped;

@ManagedBean

@RequestScoped

public class Model {

private String username;

private String password;

public String login() {

if ("Meet".equals(username) && "1234".equals(password)) {

return "admin";

} else {

return "fail";

}

}

public String getUsername() {

return username;

}

public void setUsername(String username) {

this.username = username;

}

public String getPassword() {

return password;

}

public void setPassword(String password) {

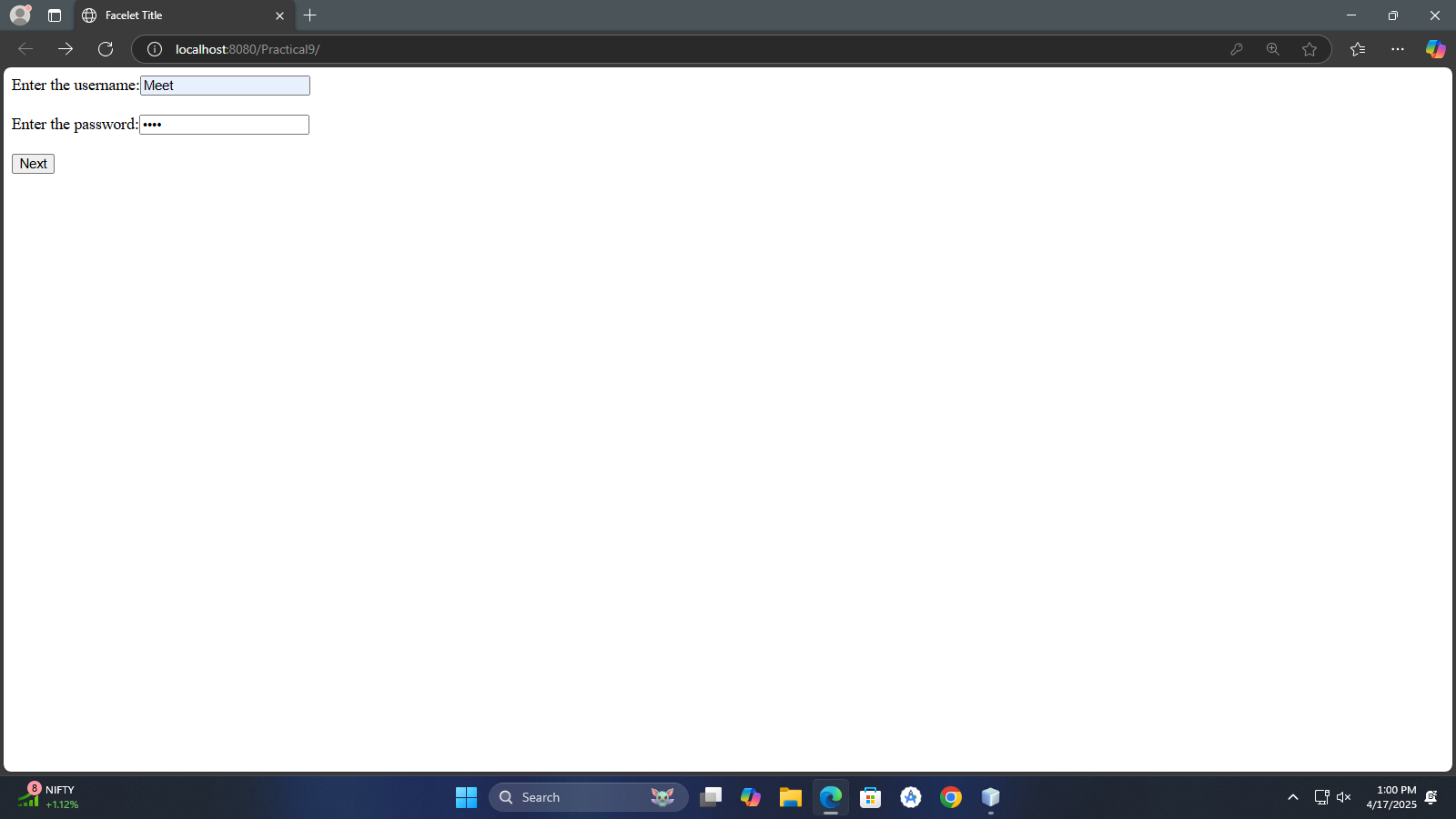
this.password = password;

}

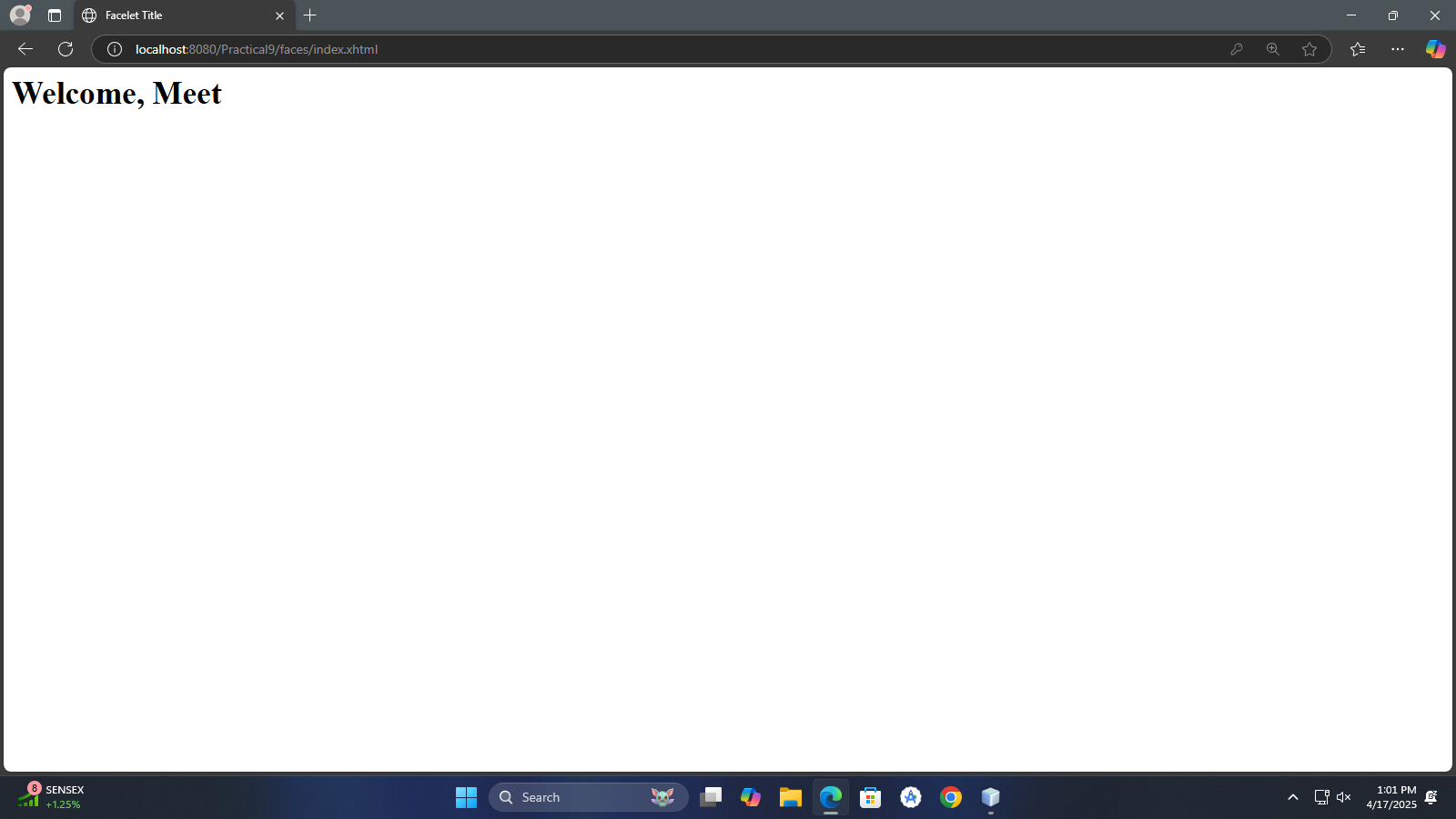
}

**Output:**

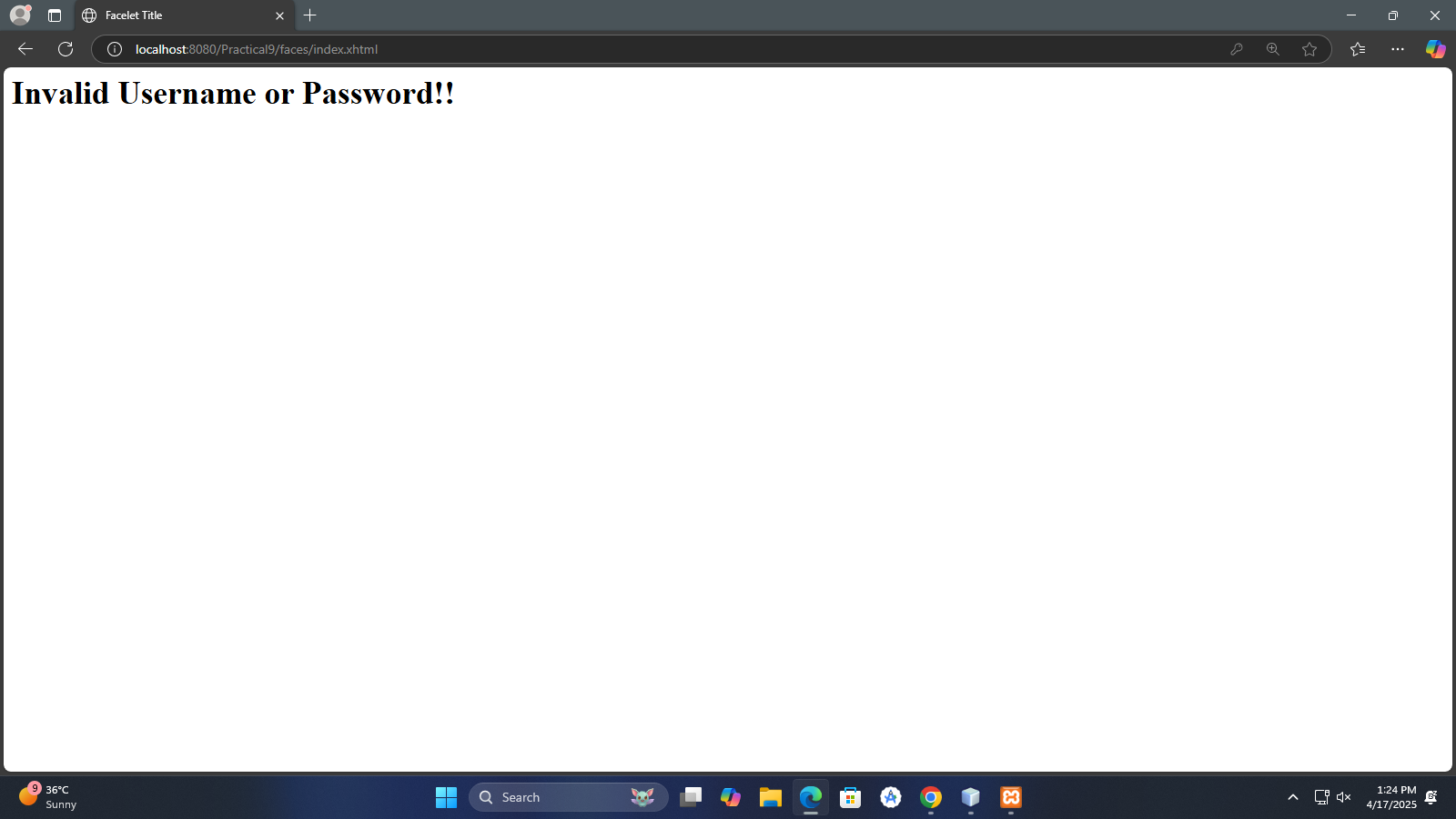
Entering the username and password..



If both are correct then this will be shown..



If one of them is incorrect hten this will be shown..



**Practical: 3**

**Aim: Write an HTML page which takes inputs for below mentioned fields and invokes a java servlet program which enters the fields in the database table. 1. EMP\_ID, 2. EMP\_NAME, 3. DEPT, 4. CITY.**

**form.html:**

<!DOCTYPE html>

<html>

<head>

<title>Practical 3: Employee Form</title>

</head>

<body>

<h2>Employee Entry Form</h2>

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

<label>Employee ID:</label><br>

<input type="text" name="emp\_id" required><br><br>

<label>Employee Name:</label><br>

<input type="text" name="emp\_name" required><br><br>

<label>Department:</label><br>

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

<label>City:</label><br>

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

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

</form>

</body>

</html>

**EmpServlet.java**

import java.io.\*;

import java.sql.\*;

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(name = "EmpServlet", urlPatterns = {"/EmpServlet"})

public class EmpServlet extends HttpServlet {

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

String empId = request.getParameter("emp\_id");

String empName = request.getParameter("emp\_name");

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

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

String url = "jdbc:mysql://localhost:3306/employee";

String username = "root";

String password = "";

Connection conn = null;

Statement stmt = null;

try {

Class.forName("com.mysql.jdbc.Driver"); // Ensure MySQL driver is loaded

conn = DriverManager.getConnection(url, username, password);

stmt = conn.createStatement();

String sql = "INSERT INTO emp (emp\_id, emp\_name, dept, city) VALUES ('"

+ empId + "', '" + empName + "', '" + dept + "', '" + city + "')";

int rowsInserted = stmt.executeUpdate(sql);

response.setContentType("text/html");

PrintWriter out = response.getWriter();

if (rowsInserted > 0) {

out.println("<h2>Employee record inserted successfully!</h2>");

} else {

out.println("<h2>Failed to insert the record.</h2>");

}

} catch (Exception e) {

throw new ServletException("DB Error: " + e.getMessage(), e);

} finally {

try {

if (stmt != null) {

stmt.close();

}

if (conn != null) {

conn.close();

}

} catch (Exception ex) {

ex.printStackTrace();

}

}

}

@Override

protected void doGet(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

processRequest(request, response);

}

@Override

protected void doPost(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

processRequest(request, response);

}

@Override

public String getServletInfo() {

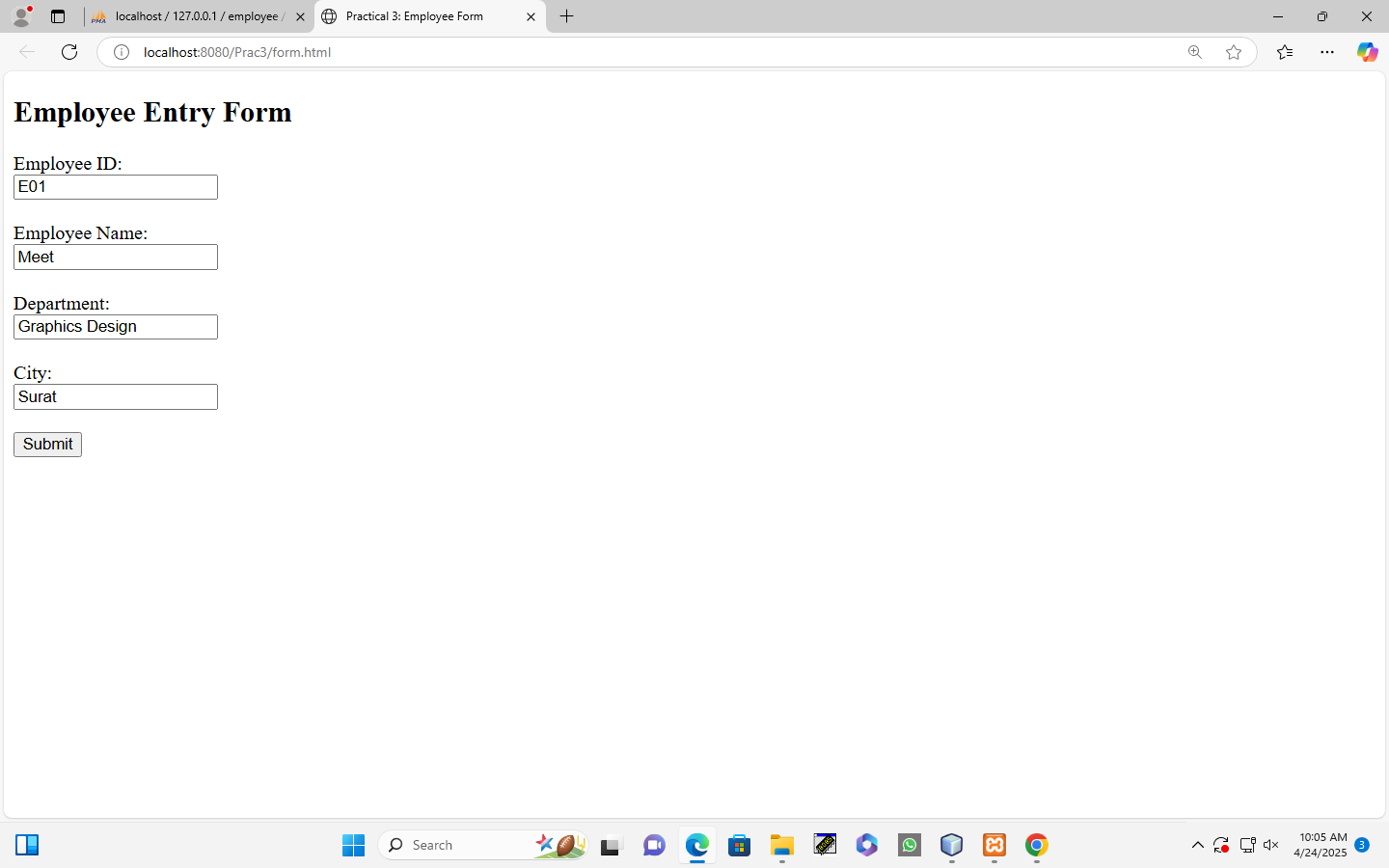
return "Short description";

}

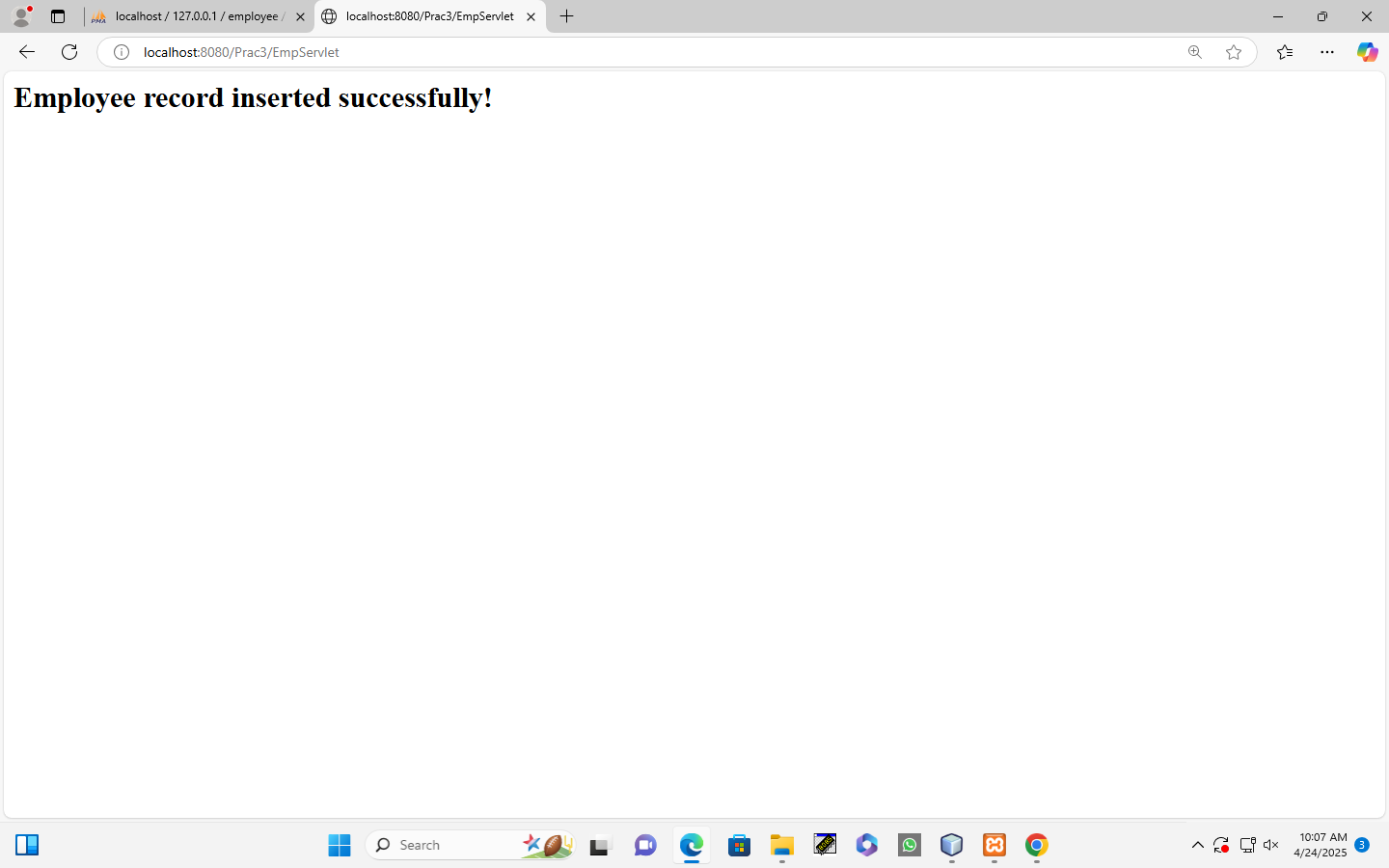
}

**Output:**

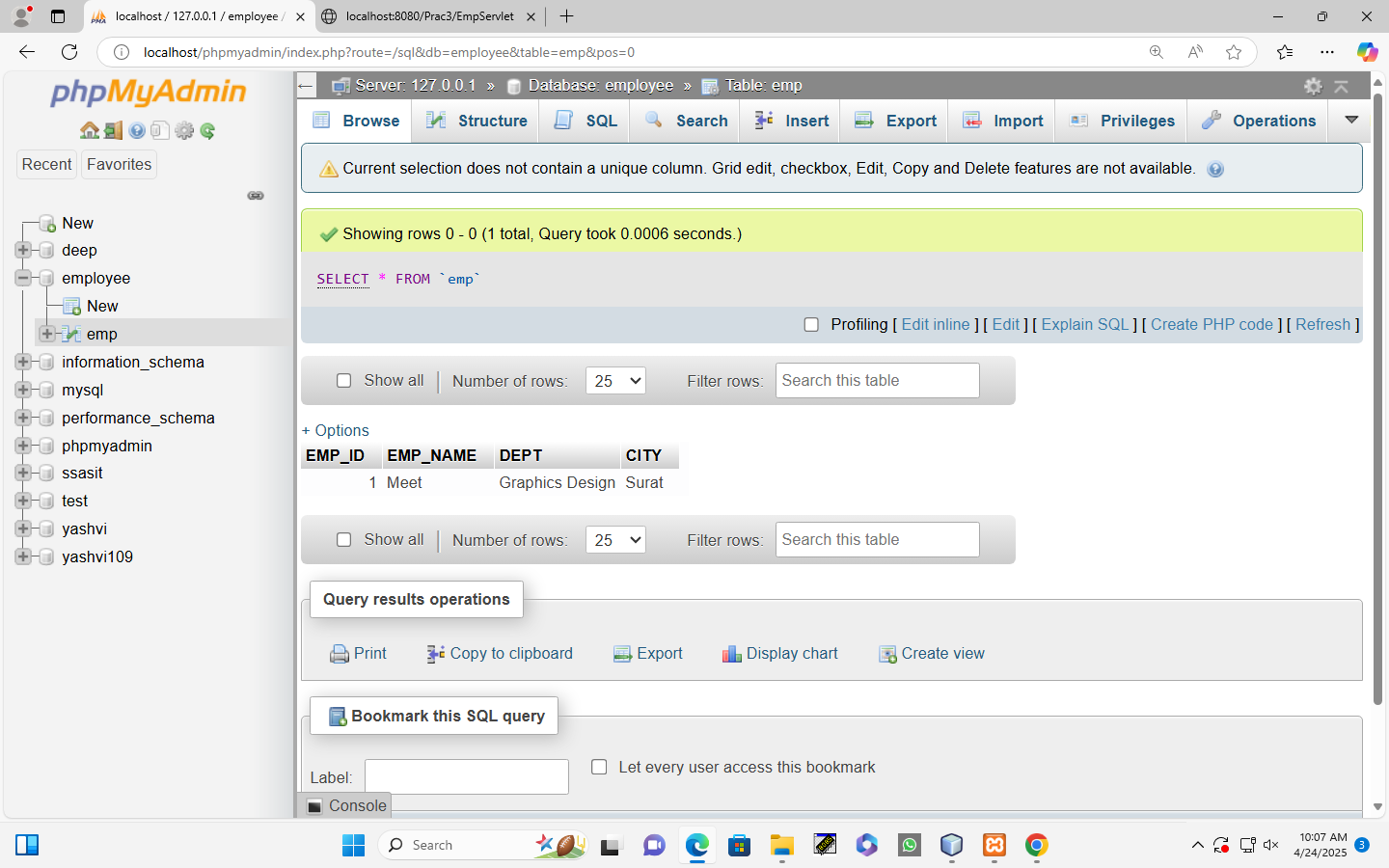
Employee Entry Form..



Record inserted successfully..



Data updated at database..



**Practical: 4**

**Aim: Write a HTML page which inputs the below mentioned fields and invoke the java Servlet program which enters the fields in Access Database using Prepared Statement. 1. ENROLMENT, 2. STUDENT\_NAME, 3. BRANCH, 4. YEAR.**

**formStudent.html:**

<!DOCTYPE html>

<html>

<head>

<title>Practical 4: Student entry Form</title>

</head>

<body>

<h2>Student Entry Form</h2>

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

<label>Enrollment:</label><br>

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

<label>Name:</label><br>

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

<label>Branch:</label><br>

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

<label>Year:</label><br>

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

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

</form>

</body>

</html>

**StudServlet.java**

import java.io.\*;

import java.sql.\*;

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(name = "StudServlet", urlPatterns = {"/StudServlet"})

public class StudServlet extends HttpServlet {

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

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

String name = request.getParameter("studname");

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

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

String url = "jdbc:mysql://localhost:3306/students";

String username = "root";

String password = "";

String sql = "INSERT INTO stud (ENROLLMENT, NAME, BRANCH, YEAR) ........VALUES (?, ?, ?, ?)";

Connection conn = null;

PreparedStatement stmt = null;

try {

Class.forName("com.mysql.jdbc.Driver"); // Ensure MySQL driver is loaded

conn = DriverManager.getConnection(url, username, password);

sql = "INSERT INTO stud (ENROLLMENT, NAME, BRANCH, YEAR) VALUES ........ ...(?, ?, ?, ?)";

stmt = conn.prepareStatement(sql);

stmt.setString(1, request.getParameter("enroll"));

stmt.setString(2, request.getParameter("studname"));

stmt.setString(3, request.getParameter("branch"));

stmt.setString(4, request.getParameter("year"));

int rowsInserted = stmt.executeUpdate();

response.setContentType("text/html");

PrintWriter out = response.getWriter();

if (rowsInserted > 0) {

out.println("<h2>Student record inserted successfully!</h2>");

} else {

out.println("<h2>Failed to insert the record.</h2>");

}

} catch (Exception e) {

throw new ServletException("DB Error: " + e.getMessage(), e);

} finally {

try {

if (stmt != null) {

stmt.close();

}

if (conn != null) {

conn.close();

}

} catch (Exception ex) {

ex.printStackTrace();

}

}

}

@Override

protected void doGet(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

processRequest(request, response);

}

@Override

protected void doPost(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

processRequest(request, response);

}

@Override

public String getServletInfo() {

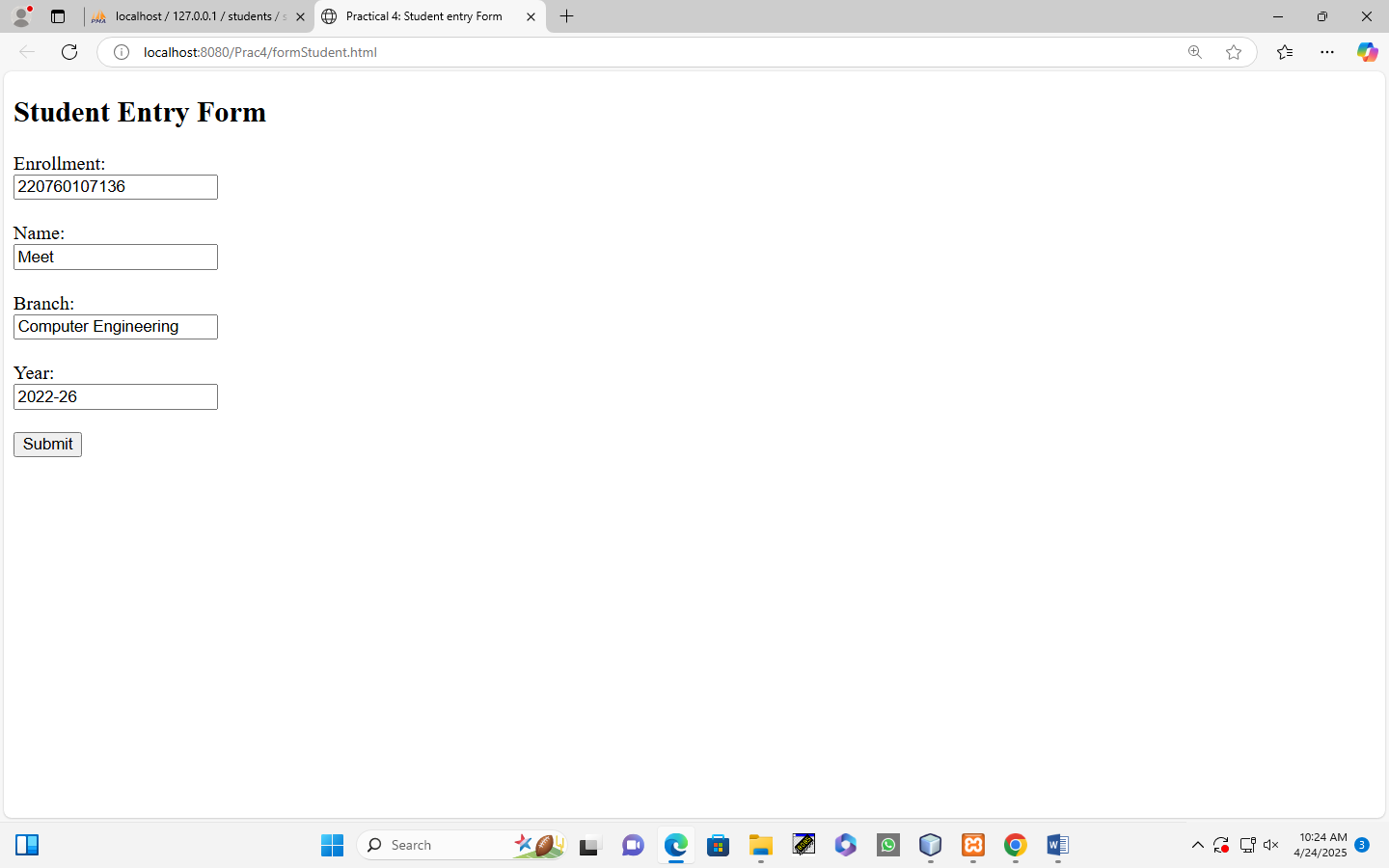
return "Short description";

}

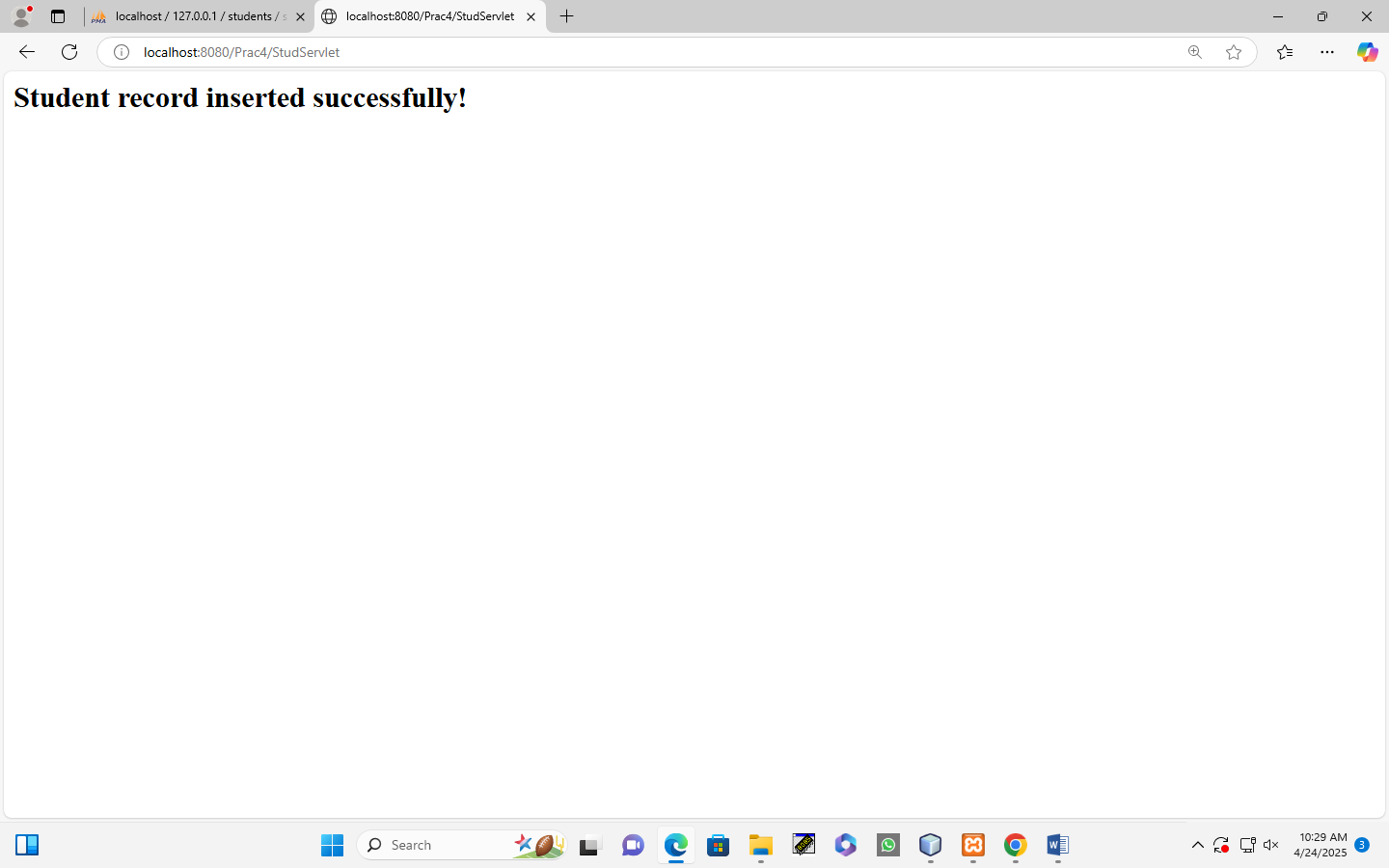
}

**Output:**

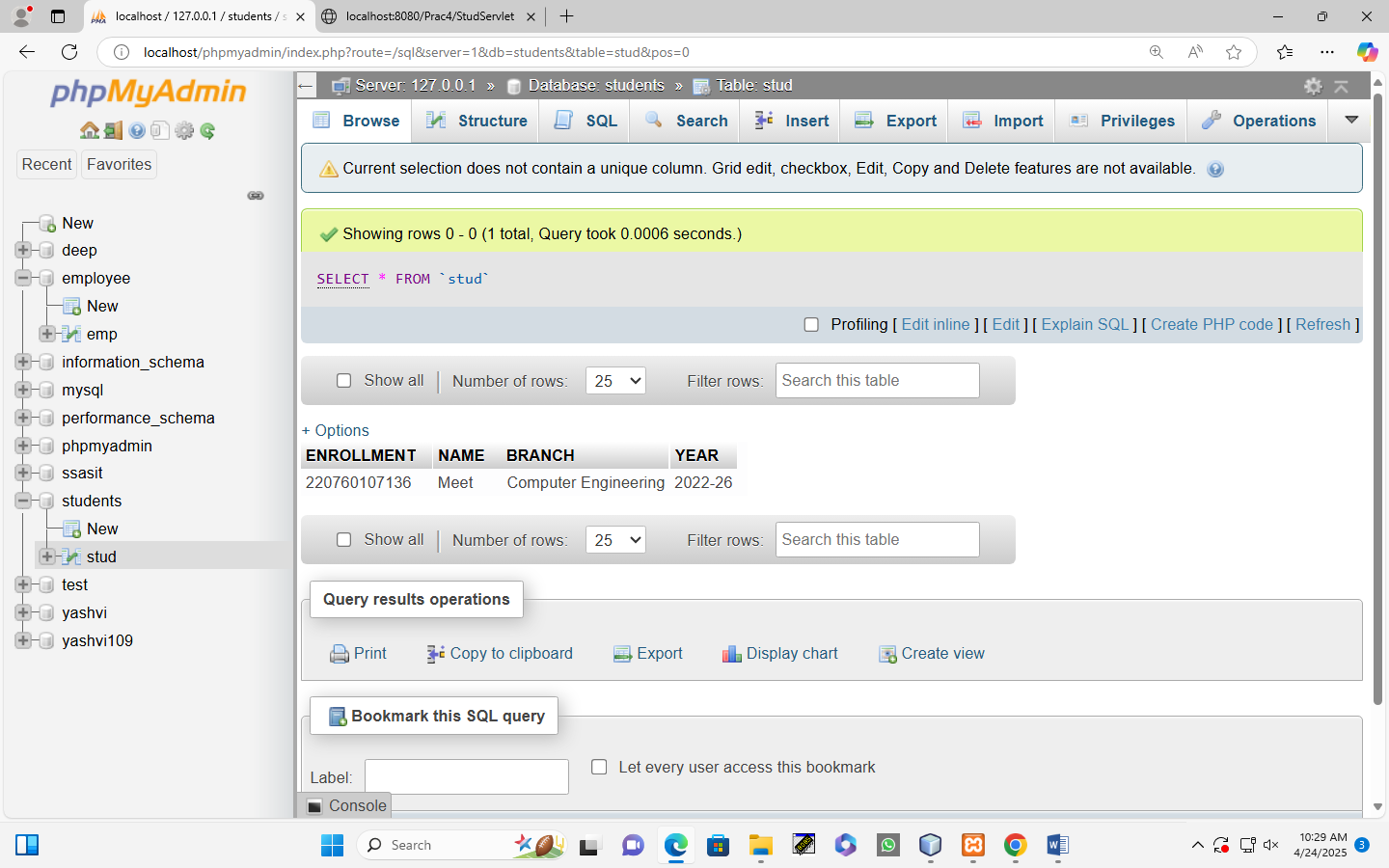
Student entry form..



Student record inserted successfully..



Data updated at database..



**Practical: 5**

**Aim: Implement a Servlet which counts the number of Hits. (I.e. Website Hit-counter).**

**index.jsp:**

<%@page contentType="text/html" pageEncoding="UTF-8"%>

<!DOCTYPE html>

<html>

<head>

<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">

<title>JSP Page</title>

</head>

<body>

<a href="PageHitCounter">Page Hit Counter</a>

</body>

</html>

**PageHitCounter.java:**

import java.io.\*;

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("/PageHitCounter")

public class PageHitCount extends HttpServlet {

protected void doGet(HttpServletRequest request, HttpServletResponse response) throws

ServletException, IOException {

HttpSession session = request.getSession(true);

Integer count = (Integer) session.getAttribute("count");

if (count == null) {

count = 1;

} else {

count++;

}

session.setAttribute("count", count);

response.setContentType("text/html");

PrintWriter out = response.getWriter();

out.println("<html><head><title> Page Hit Counter</title></head><body>");

out.println("<hl>Page Hit Count</h1>");

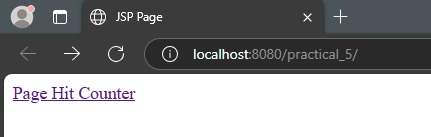
out.println("<p> This page has been visited " + count + " times.</p>");

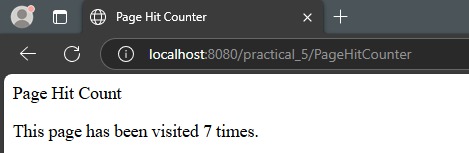
out.println("</body></html>");

}

}

**Output:**





**Practical: 8**

**Aim: Implement the shopping cart for users for the online shopping. Apply the concept of session.**

**index.jsp:**

<%@page contentType="text/html" pageEnco