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**UNIVERSITI MALAYSIA TERENGGANU**

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**CSM3023 -PEMBANGUNAN APLIKASI BERASASKAN WEB**

**BANCHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH HONORS**

**LAB 7 - Perform Basic CRUD Process Using Java Servlet**

**SEMESTER 2 2023/2024**

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S66467

Add all the dependencies.

**Pom.xml**

|  |
| --- |
| <dependencies>  <dependency>  <groupId>jakarta.platform</groupId>  <artifactId>jakarta.jakartaee-api</artifactId>  <version>${jakartaee}</version>  <scope>provided</scope>  </dependency>  <dependency>  <groupId>jakarta.servlet</groupId>  <artifactId>jakarta.servlet-api</artifactId>  <version>6.0.0</version>  </dependency>  <dependency>  <groupId>jakarta.servlet.jsp.jstl</groupId>  <artifactId>jakarta.servlet.jsp.jstl-api</artifactId>  <version>3.0.0</version>  </dependency>  <dependency>  <groupId>org.glassfish.web</groupId>  <artifactId>jakarta.servlet.jsp.jstl</artifactId>  <version>3.0.1</version>  </dependency>  <!-- https://mvnrepository.com/artifact/mysql/mysql-connector-java -->  <dependency>  <groupId>mysql</groupId>  <artifactId>mysql-connector-java</artifactId>  <version>8.0.33</version>  </dependency>  </dependencies> |

**User.java**

|  |
| --- |
| package com.model;  /\*\*  \* Nur Ezreena  \*/  public class User {  private String userid;  private String firstName;  private String lastName;    public String getUserid() {  return userid;  }  public void setUserid(String userid) {  this.userid = userid;  }  public String getFirstName() {  return firstName;  }  public void setFirstName(String firstName) {  this.firstName = firstName;  }  public String getLastName() {  return lastName;  }  public void setLastName(String lastName) {  this.lastName = lastName;  }  } |

**DBConnection.java**

|  |
| --- |
| package com.util;  import java.sql.Connection;  import java.sql.DriverManager;  import java.sql.SQLException;  public class DBConnection {  private static Connection myConnection = null;  private static final String myURL = "jdbc:mysql://localhost:3306/lab7\_csm3023"; // Correct port 3306, typo fixed  private static final String USERNAME = "root";  private static final String PASSWORD = "admin";    public static Connection getConnection() throws ClassNotFoundException {  if (myConnection != null) {  return myConnection;  } else {  try {  Class.forName("com.mysql.cj.jdbc.Driver"); // Updated driver class name  myConnection = DriverManager.getConnection(myURL, USERNAME, PASSWORD);  } catch (SQLException e) {  e.printStackTrace();  }  return myConnection;  }  }    public static void closeConnection() {  try {  if (myConnection != null && !myConnection.isClosed()) {  myConnection.close();  }  } catch (SQLException e) {  e.printStackTrace();  }  }  } |

**UserDao.java**

|  |
| --- |
| package com.dao;  import java.sql.\*;  import java.util.ArrayList;  import java.util.List;  import com.model.User;  import com.util.DBConnection;  public class UserDao {    private Connection connection;    public UserDao() throws ClassNotFoundException {  connection = DBConnection.getConnection();  }    public void addUser(User user) {  try {  PreparedStatement preparedStatement = connection  .prepareStatement("INSERT INTO users(userid, firstname, lastname) VALUES (?, ?, ?)");  preparedStatement.setString(1, user.getUserid());  preparedStatement.setString(2, user.getFirstName());  preparedStatement.setString(3, user.getLastName());  preparedStatement.executeUpdate();  } catch (SQLException e) {  e.printStackTrace();  }  }    public void deleteUser(String userId) {  try {  PreparedStatement preparedStatement = connection  .prepareStatement("DELETE FROM users WHERE userid=?");  preparedStatement.setString(1, userId);  preparedStatement.executeUpdate();  } catch (SQLException e) {  e.printStackTrace();  }  }    public void updateUser(User user) {  try {  PreparedStatement preparedStatement = connection  .prepareStatement("UPDATE users SET firstname=?, lastname=? WHERE userid=?");  preparedStatement.setString(1, user.getFirstName());  preparedStatement.setString(2, user.getLastName());  preparedStatement.setString(3, user.getUserid());  preparedStatement.executeUpdate();  } catch (SQLException e) {  e.printStackTrace();  }  }    public List<User> getAllUsers() {  List<User> users = new ArrayList<>();  try {  Statement statement = connection.createStatement();  ResultSet rs = statement.executeQuery("SELECT \* FROM users");  while (rs.next()) {  User user = new User();  user.setUserid(rs.getString("userid"));  user.setFirstName(rs.getString("firstname"));  user.setLastName(rs.getString("lastname"));  users.add(user);  }  } catch (SQLException e) {  e.printStackTrace();  }  return users;  }    public User getUserById(String userId) {  User user = new User();  try {  PreparedStatement preparedStatement = connection  .prepareStatement("SELECT \* FROM users WHERE userid=?");  preparedStatement.setString(1, userId);  ResultSet rs = preparedStatement.executeQuery();  if (rs.next()) {  user.setUserid(rs.getString("userid"));  user.setFirstName(rs.getString("firstname"));  user.setLastName(rs.getString("lastname"));  }  } catch (SQLException e) {  e.printStackTrace();  }  return user;  }  } |

**UserController.java**

|  |
| --- |
| package com.controller;  import java.io.IOException;  import jakarta.servlet.ServletException;  import jakarta.servlet.annotation.WebServlet;  import jakarta.servlet.http.HttpServlet;  import jakarta.servlet.http.HttpServletRequest;  import jakarta.servlet.http.HttpServletResponse;  import jakarta.servlet.RequestDispatcher;  import com.dao.UserDao;  import com.model.User;  @WebServlet(name = "UserController", urlPatterns = {"/UserController"})  public class UserController extends HttpServlet {  private static final String INSERT = "/user.jsp";  private static final String EDIT = "/editUser.jsp";  private static final String LIST\_USER = "/listUser.jsp";  private UserDao dao;    public UserController() throws ClassNotFoundException {  super();  dao = new UserDao();  }  @Override  protected void doGet(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  String forward = "";  String action = request.getParameter("action");    if (action.equalsIgnoreCase("delete")) {  String userId = request.getParameter("userId");  dao.deleteUser(userId);  forward = LIST\_USER;  request.setAttribute("users", dao.getAllUsers());  } else if (action.equalsIgnoreCase("edit")) {  forward = EDIT;  String userId = request.getParameter("userId");  User user = dao.getUserById(userId);  request.setAttribute("user", user);  } else if (action.equalsIgnoreCase("listUser")) {  forward = LIST\_USER;  request.setAttribute("users", dao.getAllUsers());  } else {  forward = INSERT;  }  RequestDispatcher view = request.getRequestDispatcher(forward);  view.forward(request, response);  }  @Override  protected void doPost(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  String action = request.getParameter("action");  User user = new User();  user.setUserid(request.getParameter("userid"));  user.setFirstName(request.getParameter("firstName"));  user.setLastName(request.getParameter("lastName"));    if ("edit".equalsIgnoreCase(action)) {  dao.updateUser(user);  } else {  dao.addUser(user);  }    RequestDispatcher view = request.getRequestDispatcher(LIST\_USER);  request.setAttribute("users", dao.getAllUsers());  view.forward(request, response);  }  @Override  public String getServletInfo() {  return "UserController Servlet";  }  } |

**Index.jsp**

|  |
| --- |
| <%--  Document : index  Created on : 31 May 2024, 1:58:09 am  Author : Nur Ezreena  --%>  <%@page contentType="text/html" pageEncoding="UTF-8"%>  <!DOCTYPE html>  <html>  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>Sample Perform CRUD Using Java Servlet</title>  </head>  <body>  <h1>Sample Perform CRUD Using Java Servlet!</h1>  <jsp:forward page="/UserController?action=listUser" />  </body>  </html> |

**listUser.jsp**

|  |
| --- |
| <%--  Document : listUser  Created on : 31 May 2024, 2:01:29 am  Author : Nur Ezreena  --%>  <%@page contentType="text/html" pageEncoding="UTF-8"%>  <%@taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>  <!DOCTYPE html>  <html>  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>User List</title>  </head>  <body>  <h1>List of Users</h1>  <table border="1">  <thead>  <tr>  <th>User ID</th>  <th>First Name</th>  <th>Last Name</th>  <th colspan="2">Action</th>  </tr>  </thead>  <tbody>  <c:forEach items="${users}" var="user">  <tr>  <td><c:out value="${user.userid}" /></td>  <td><c:out value="${user.firstName}" /></td>  <td><c:out value="${user.lastName}" /></td>  <td><a href="UserController?action=edit&userId=${user.userid}">Update</a></td>  <td><a href="UserController?action=delete&userId=${user.userid}">Delete</a></td>  </tr>  </c:forEach>  </tbody>  </table>  <p><a href="UserController?action=insert">Add User</a></p>  </body>  </html> |

**User.jsp**

|  |
| --- |
| <%@page contentType="text/html" pageEncoding="UTF-8"%>  <!DOCTYPE html>  <html>  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>New Record</title>  </head>  <body>  <p><b>New Record</b></p>  <form name="frmAddUser" action="UserController" method="POST">  <table border="0">  <tbody>  <tr>  <td>User ID:</td>  <td><input type="text" name="userid" size="25" required /></td>  </tr>  <tr>  <td>First Name:</td>  <td><input type="text" name="firstName" size="40" /></td>  </tr>  <tr>  <td>Last Name:</td>  <td><input type="text" name="lastName" size="40" /></td>  </tr>  <tr>  <td><input type="submit" value="Submit" name="submit" /></td>  <td><input type="reset" value="Cancel" name="cancel" /></td>  </tr>  </tbody>  </table>  </form>  </body>  </html> |

**editUser.jsp**

|  |
| --- |
| <%--  Document : editUser  Created on : 2 Jun 2024, 2:26:06 am  Author : Nur Ezreena  --%>  <%@page contentType="text/html" pageEncoding="UTF-8"%>  <%@taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>  <!DOCTYPE html>  <html>  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>Edit User</title>  </head>  <body>  <p>Updating User Profile</p>  <form name="frmEditUser" action="UserController" method="POST">  <table border="0">  <tbody>  <tr>  <td>User ID:</td>  <td><input type="text" name="userid" readonly="readonly" value="<c:out value='${user.userid}' />" size="25" /></td>  </tr>  <tr>  <td>First Name:</td>  <td><input type="text" name="firstName" value="<c:out value='${user.firstName}' />" size="40" /></td>  </tr>  <tr>  <td>Last Name:</td>  <td><input type="text" name="lastName" value="<c:out value='${user.lastName}' />" size="40" /></td>  </tr>  <tr>  <td><input type="hidden" name="action" value="edit" /></td>  </tr>  <tr>  <td><input type="submit" name="Submit" value="submit" /></td>  </tr>  </tbody>  </table>  </form>  </body>  </html> |

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**OUTPUT :**

**ADD USER**

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**UPDATE**

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**DELETE**

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**Exercise**

**Q1) Implement profile registration using servlet**

**lab7\_csm3023**

|  |
| --- |
| create table userProfile (  username CHAR(15) PRIMARY KEY,  icno CHAR(15),  firstname VARCHAR(50)  ); |

**profileServlet.java**

|  |
| --- |
| package com.exercise;  /\*  \* Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license  \* Click nbfs://nbhost/SystemFileSystem/Templates/JSP\_Servlet/Servlet.java to edit this template  \*/  import java.io.IOException;  import java.io.PrintWriter;  import java.sql.Connection;  import java.sql.DriverManager;  import java.sql.PreparedStatement;  import java.sql.SQLException;  import jakarta.servlet.ServletException;  import jakarta.servlet.annotation.WebServlet;  import jakarta.servlet.http.HttpServlet;  import jakarta.servlet.http.HttpServletRequest;  import jakarta.servlet.http.HttpServletResponse;  /\*\*  \*  \* @author NUR EZREENA  \*/  @WebServlet("/profileServlet")  public class profileServlet 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/lab7\_csm3023";  private static final String DB\_USER = "root";  private static final String DB\_PASSWORD = "admin";  protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {  String username = request.getParameter("username");  String icno = request.getParameter("icno");  String firstname = request.getParameter("firstname");  Connection conn = null;  PreparedStatement stmt = null;  response.setContentType("text/html");  PrintWriter out = response.getWriter();  try {  // Load the JDBC driver  Class.forName(JDBC\_DRIVER);  // Connect to the database  conn = DriverManager.getConnection(DB\_URL, DB\_USER, DB\_PASSWORD);  // Prepare SQL query  String sql = "INSERT INTO userprofile (username, icno, firstname) VALUES (?, ?, ?)";  stmt = conn.prepareStatement(sql);  stmt.setString(1, username);  stmt.setString(2, icno);  stmt.setString(3, firstname);  // Execute SQL query  int rows = stmt.executeUpdate();  // Generate response  if (rows > 0) {  out.println("<h2>Profile registered successfully!</h2>");  } else {  out.println("<h2>Error registering profile!</h2>");  }  } catch (ClassNotFoundException e) {  out.println("<h2>JDBC Driver not found!</h2>");  e.printStackTrace(out);  } catch (SQLException e) {  out.println("<h2>Database error!</h2>");  e.printStackTrace(out);  } finally {  try {  if (stmt != null) stmt.close();  if (conn != null) conn.close();  } catch (SQLException se) {  se.printStackTrace(out);  }  }  }  } |

profileForm.jsp

|  |
| --- |
| <%--  Document : profileForm  Created on : 9 Jun 2024, 12:51:58 am  Author : Nur Ezreena  --%>  <%@page contentType="text/html" pageEncoding="UTF-8"%>  <!DOCTYPE html>  <html>  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>Profile Registration</title>  </head>  <body>  <h2>Profile Registration</h2>  <fieldset>  <legend>Profile Registration</legend>  <form action="profileServlet" method="post">  Username: <br><input type="text" name="username" maxlength="15" required><br>  IC No: <br><input type="text" name="icno" maxlength="15" required><br>  First Name: <br><input type="text" name="firstname" maxlength="50" required><br>  <br>  <input type="submit" value="Register">  </form>  </fieldset>  <br>  </body>  </html> |

**Output:**

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**Q2) Applying session in student registration.**

**studentRegister.jsp**

|  |
| --- |
| <%--  Document : studentRegister  Created on : 9 Jun 2024, 1:12:16 am  Author : NUR EZREENA  --%>  <%@page contentType="text/html" pageEncoding="UTF-8"%>  <!DOCTYPE html>  <html>  <head>  <title>Student Registration</title>  </head>  <body>  <h2>Student Registration</h2>  <form action="confirmRegister.jsp" method="post">  Student ID: <input type="text" name="studentid" required><br>  Name: <input type="text" name="name" required><br>  <input type="submit" value="Submit">  </form>  </body>  </html> |

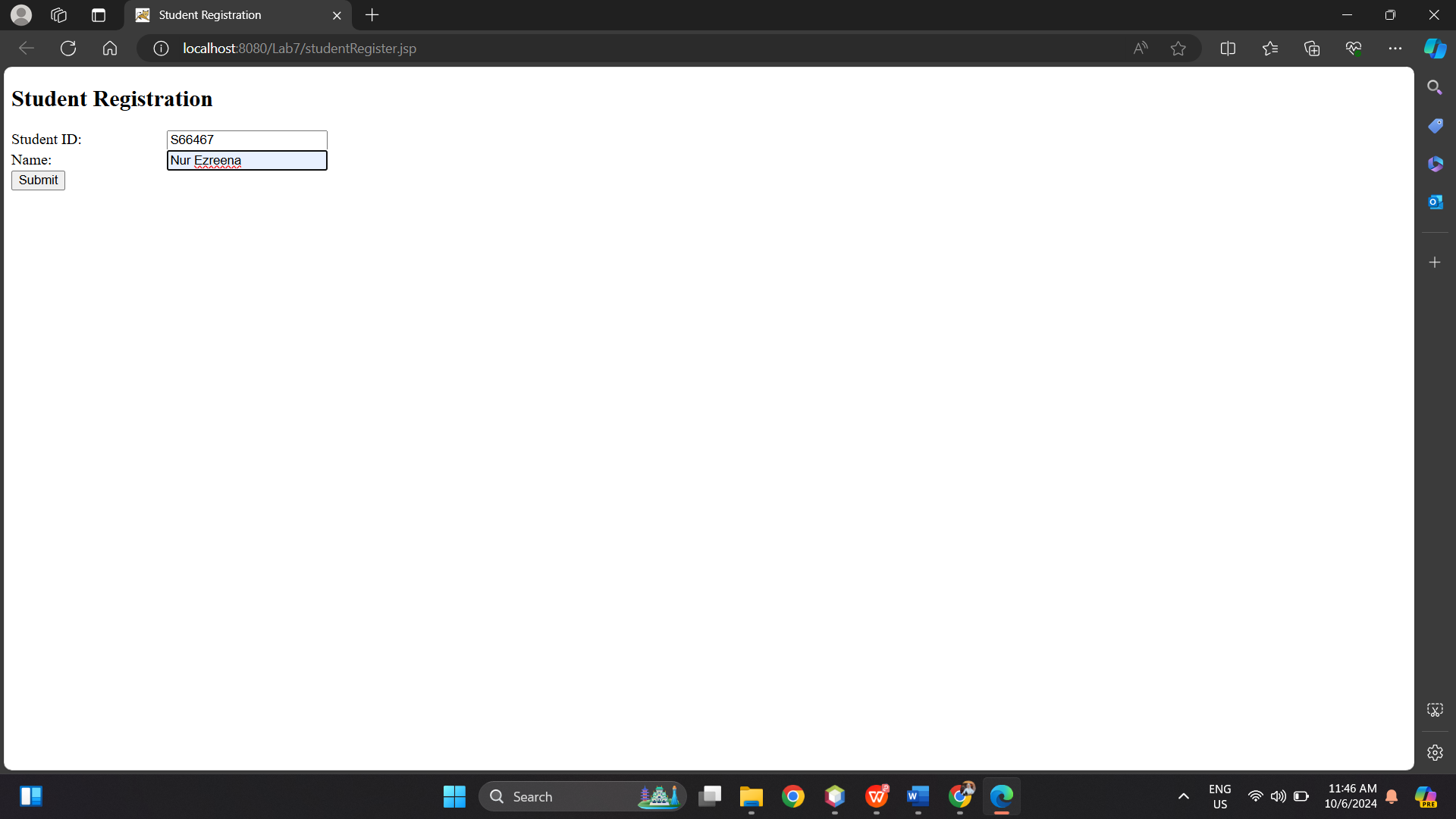
**confirmRegister.jsp**

|  |
| --- |
| <%--  Document : studentRegister  Created on : 9 Jun 2024, 1:12:16 am  Author : NUR EZREENA  --%>  <%@page contentType="text/html" pageEncoding="UTF-8"%>  <!DOCTYPE html>  <html>  <head>  <title>Student Registration</title>  </head>  <body>  <h2>Student Registration</h2>  <form action="confirmRegister.jsp" method="post">  Student ID: <input type="text" name="studentid" required><br>  Name: <input type="text" name="name" required><br>  <input type="submit" value="Submit">  </form>  </body>  </html> |

**NotificationRegister.jsp**

|  |
| --- |
| <%--  Document : notificationRegister  Created on : 9 Jun 2024, 1:13:19 am  Author : NUR EZREENA  --%>  <%@page contentType="text/html" pageEncoding="UTF-8"%>  <%@ page import="jakarta.servlet.http.HttpSession" %>  <%  // Use the implicit session object directly without declaring it  HttpSession currentSession = request.getSession(false);  if (currentSession == null || currentSession.getAttribute("studentid") == null || currentSession.getAttribute("name") == null) {  response.sendRedirect("studentRegister.jsp");  return;  }  String studentid = (String) currentSession.getAttribute("studentid");  String name = (String) currentSession.getAttribute("name");  currentSession.invalidate();  %>  <!DOCTYPE html>  <html>  <head>  <title>Registration Notification</title>  </head>  <body>  <h2>Registration Notification</h2>  <p>Student ID: <%= studentid %></p>  <p>Name: <%= name %></p>  <p>Your registration has been successfully completed.</p>  </body>  </html> |

**Output:**



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