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

```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>
```

```xml
    <!-- 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

```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) {
```

```java
        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

```java
package com.util;



import java.sql.Connection;
```

```java
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;

        }

    }
```

```java
    public static void closeConnection() {

        try {

            if (myConnection != null && !myConnection.isClosed()) {

                myConnection.close();

            }

        } catch (SQLException e) {

            e.printStackTrace();

        }

    }

}
```

UserDao.java

```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;
```

```java
    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=?");
```

```java
            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<>();
```

```java
    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();
```

```java
        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

```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;
```

```java
@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");
```

```java
        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");
```

```java
        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

```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

```jsp
<%--
    Document   : listUser
    Created on : 31 May 2024, 2:01:29 am
    Author     : Nur Ezreena
```

```jsp
--%>


<%@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">
```

```html
            <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

```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>
```

```html
<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>
```
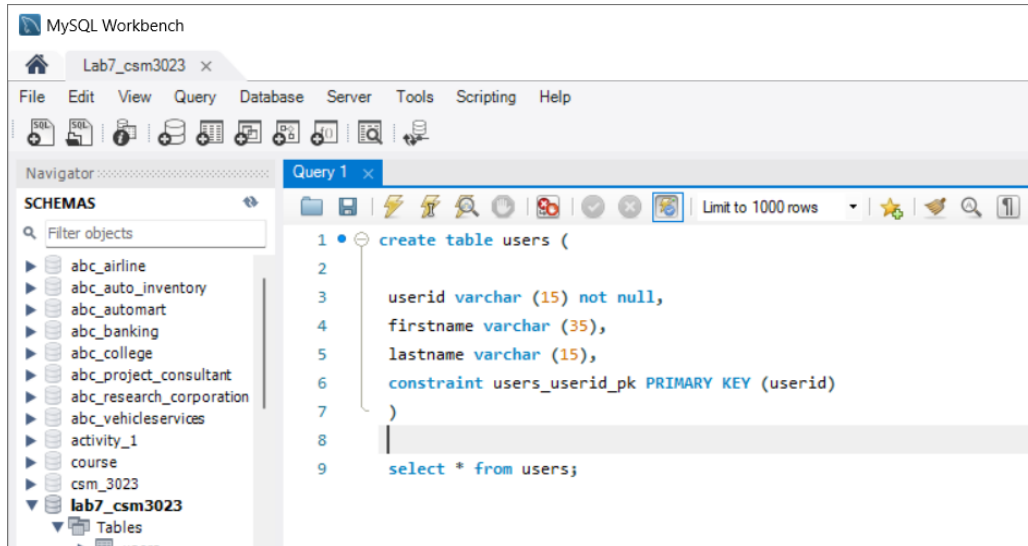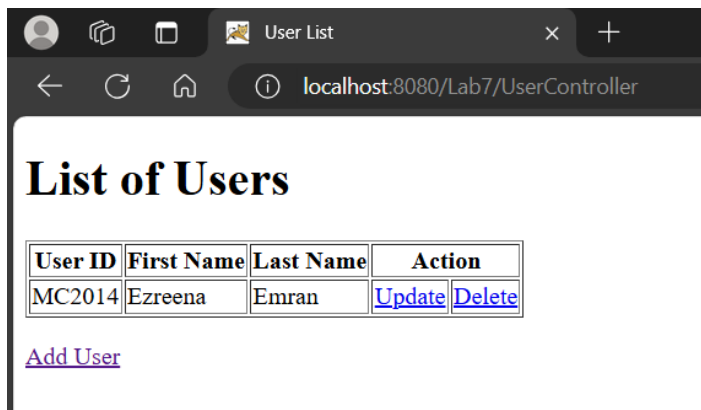
```
    </body>

</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>
```

```html
        <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>
```


OUTPUT :

ADD USER

UPDATE

DELETE

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

```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;
```

```java
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";
```

```java
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 (?, ?, ?)";
```

```java
        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>
```

```html
    <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:

Profile registered successfully!
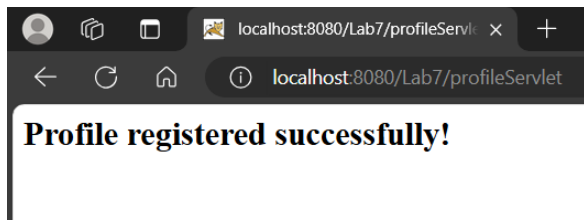
Q2) Applying session in student registration.

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">
```
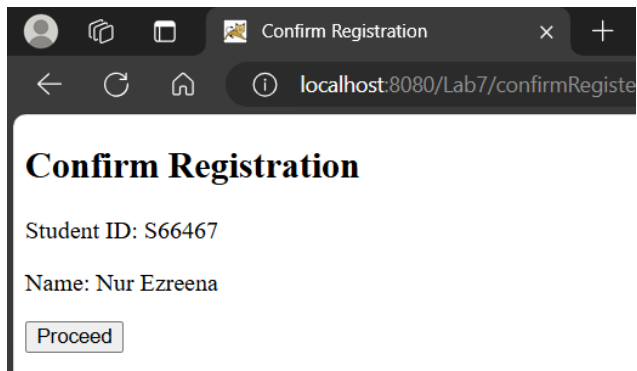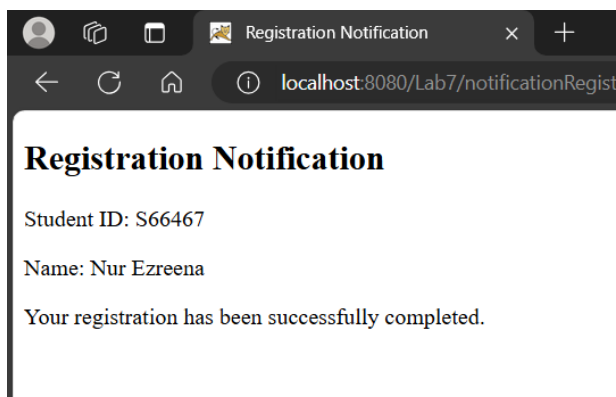
```
    </form>

</body>

</html>
```

NotificationRegister.jsp

```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>
```
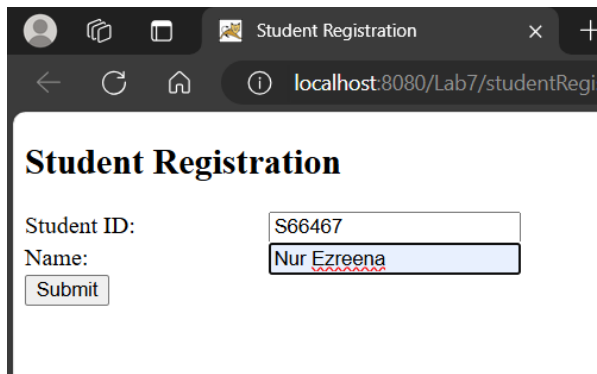
Output: