



UNIVERSITI MALAYSIA TERENGGANU

CSM3023 WEB BASED APPLICATION DEVELOPMENT

BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH HONORS

LAB 7

SEMESTER II 2023/2024

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Task 1 : Using JSP Page to Access a Simple MySQL Database

Code:

Users Table

```
CREATE TABLE `users` (  
  `userID` VARCHAR (15) NOT NULL,  
  `firstName` VARCHAR (35) DEFAULT NULL,  
  `lastName` VARCHAR (35) DEFAULT NULL,  
  PRIMARY KEY (userID)  
)
```

User.java

```
package lab7.model;  
  
/**  
 *  
 * @author Zahier  
 */  
public class User {  
  
    private String userID, firstname, 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 lab7.dao;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

/**
 *
 * @author Zahier
 */
public class DBConnection {
    private static Connection connection = null;
    private static String url = "jdbc:mysql://localhost:3306/lab7_task1";
    private static String username = "root";
    private static String password = "admin";

    public static Connection getConnection() throws ClassNotFoundException {

        if (connection != null)
            return connection;

        else {
            try {
                Class.forName("com.mysql.cj.jdbc.Driver");
                connection = DriverManager.getConnection(url, username, password);
            }

            catch (SQLException e) {
                e.printStackTrace();
            }
        }

        return connection;
    }

    public void closeConnection() throws ClassNotFoundException {

        try {
            connection.close();
        }

        catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
```

UserDAO.java

```
package lab7.dao;

import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.ArrayList;
import java.util.List;
import lab7.model.User;

/**
 *
 * @author Zahier
 */
public class UserDAO {
    private Connection connection;

    private static final String INSERT_USER = "INSERT INTO users VALUES (?, ?, ?)";
    private static final String DELETE_USER = "DELETE FROM users WHERE userID = ?";
    private static final String UPDATE_USER = "UPDATE users SET firstname = ?, lastname = ? WHERE userID = ?";
    private static final String SELECT_ALL_USERS = "SELECT * FROM users";
    private static final String SELECT_USER_BY_ID = "SELECT * FROM users WHERE userID = ?";

    public UserDAO() throws ClassNotFoundException {
        connection = DBConnection.getConnection();
    }

    public void addUser(User user) {
        try {
            PreparedStatement preparedStatement = connection.prepareStatement(INSERT_USER);
            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_USER);
            preparedStatement.setString(1, userID);
            preparedStatement.executeUpdate();
        }

        catch (SQLException e) {
            e.printStackTrace();
        }
    }

    public void updateUser(User user) {

        try {
            PreparedStatement preparedStatement = connection.prepareStatement(UPDATE_USER);
            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 {
            PreparedStatement preparedStatement = connection.prepareStatement(SELECT_ALL_USERS);
            ResultSet resultSet = preparedStatement.executeQuery();
            while (resultSet.next()) {
                User user = new User();
                user.setUserID(resultSet.getString("userID"));
                user.setFirstname(resultSet.getString("firstname"));
                user.setLastname(resultSet.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_USER_BY_ID);
            preparedStatement.setString(1, userID);
            ResultSet resultSet = preparedStatement.executeQuery();

            while (resultSet.next()) {
                user.setUserID(resultSet.getString("userID"));
                user.setFirstname(resultSet.getString("firstname"));
                user.setLastname(resultSet.getString("lastname"));
            }
        }

        catch (SQLException e) {
            e.printStackTrace();
        }

        return user;
    }
}

```

UserServlet.java

```
package lab7.controller;

import jakarta.servlet.RequestDispatcher;
import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.ServletException;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import lab7.model.User;
import lab7.dao.UserDAO;

/**
 *
 * @author Zahier
 */
public class UserServlet extends HttpServlet {

    private static String INSERT = "/user.jsp";
    private static String EDIT = "/editUser.jsp";
    private static String LIST_USER = "/listUser.jsp";
    private UserDAO userDAO;

    public UserServlet() throws ClassNotFoundException {
        super();
        userDAO = new UserDAO();
    }

    protected void processRequest(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");

        try (PrintWriter out = response.getWriter()) {
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet UserServlet</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Servlet UserServlet at " + request.getContextPath() + "</h1>");
            out.println("</body>");
            out.println("</html>");
        }
    }

    @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");
            userDAO.deleteUser(userID);
            forward = LIST_USER;
            request.setAttribute("users", userDAO.getAllUsers());
        }

        else if ( action.equalsIgnoreCase("edit") ) {
            forward = EDIT;
            String userID = request.getParameter("userID");
            User user = userDAO.getUserByID(userID);
            request.setAttribute("user", user);
        }

        else if ( action.equalsIgnoreCase("listUser") ) {
            forward = LIST_USER;
            request.setAttribute("users", userDAO.getAllUsers());
        }

        else if ( action.equalsIgnoreCase("insert") ) {
            forward = INSERT;
        }
    }
}
```

```

        RequestDispatcher requestDispatcher = request.getRequestDispatcher(forward);
        requestDispatcher.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 ( action.equalsIgnoreCase("edit") ) {
            userDao.updateUser(user);
        }

        else {
            userDao.addUser(user);
        }

        RequestDispatcher requestDispatcher = request.getRequestDispatcher(LIST_USER);
        request.setAttribute("users", userDao.getAllUsers());
        requestDispatcher.forward(request, response);
    }

    @Override
    public String getServletInfo() {
        return "Short description";
    }
}

```

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>Sample Perform CRUD Using Java Servlet</title>
</head>
<body>
<h1>Sample Perform CRUD Using Java Servlet!</h1>
<jsp:forward page="/UserServlet?action=listUser" />
</body>
</html>

```

ListUser.jsp

```

<%%page contentType="text/html" pageEncoding="UTF-8"%>
<%%page language="java" %>
<%%taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%%taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>User List</title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HFLEh07PJGoPKI"
<script src="https://kit.fontawesome.com/aa5de83a5b.js" crossorigin="anonymous"></script>
</head>
<body>
<div class="container mt-3">
<table class="table">
<thead class="table-dark text-center">
<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 class="text-center"><a href="UserServlet?action=edituserID={user.userID}" /><i class="fa-solid f
<td class="text-center"><a href="UserServlet?action=deleteuserID={user.userID}" /><i class="fa-solid
</tr>
</c:forEach>
<tr>
<td colspan="5"><a href="UserServlet?action=insert"><i class="fa-solid fa-plus"></i></a></td>
</tr>
</tbody>
</table>
</div>
</body>
</html>

```


User.jsp

```
<%%page contentType="text/html" pageEncoding="UTF-8"%>
<%%page language="java" %>
<%%taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%%taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>New Record</title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HFLEh07PJGoP"
</head>
<body>
<div class="container mt-3">
<h2>New Record</h2>
<form name="formAddUser" action="UserServlet" method="post" class="mt-3">
<div class="form-group">
<label for="userID">User ID:</label>
<input type="text" class="form-control" name="userID" id="userID" size="25" required>
</div>
<div class="form-group">
<label for="firstname">First Name:</label>
<input type="text" class="form-control" name="firstname" id="firstname" size="40">
</div>
<div class="form-group">
<label for="lastname">Last Name:</label>
<input type="text" class="form-control" name="lastname" id="lastname" size="40">
</div>
<div class="form-group">
<input type="hidden" name="action" value="insert">
</div>
<div class="d-flex justify-content-end">
<button type="reset" class="btn">Clear</button>
<button type="submit" class="btn btnDark">Submit</button>
</div>
</form>
</div>
</body>
</html>
```

editUser.jsp

```
<%%page language="java" %>
<%%taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%%taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Edit User</title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HFLEh07PJGoP"
</head>
<body>
<div class="container mt-3">
<h2>Updating User Profile</h2>
<form name="formEditUser" action="UserServlet" method="post" class="mt-3">
<div class="form-group">
<label for="userID">User ID:</label>
<input type="text" class="form-control" name="userID" id="userID" size="25" value="<c:out value='${user.userID}' />" readonly>
</div>
<div class="form-group">
<label for="firstname">First Name:</label>
<input type="text" class="form-control" name="firstname" id="firstname" size="40" value="<c:out value='${user.firstname}' />" />
</div>
<div class="form-group">
<label for="lastname">Last Name:</label>
<input type="text" class="form-control" name="lastname" id="lastname" size="40" value="<c:out value='${user.lastname}' />" />
</div>
<div class="form-group">
<input type="hidden" name="action" value="edit">
</div>
<div class="d-flex justify-content-end">
<button type="submit" class="btn btn-dark">Submit</button>
</div>
</form>
</div>
</body>
</html>
```

Output:

User ID	First Name	Last Name	Action
+			

New Record

User ID:

john17

First Name:

John

Last Name:

Smith

Clear

Submit

User ID	First Name	Last Name	Action
john17	John	Smith	<div><div></div><div></div></div>
+			

Updating User Profile

User ID:

john17

First Name:

Johny

Last Name:

Smith

Submit

User ID	First Name	Last Name	Action
john17	Johny	Smith	<div><div></div><div></div></div>
+			

User ID	First Name	Last Name	Action
+			

Reflection:

- Why we use servlet for Java Web Application?

Servlets are a very useful technology for the development of dynamic Java-based web applications because they share specifications with web servers, but execute Java code. These process and control HTTP transactions, thus you are capable of processing the inputs from users, querying databases, creating more content and rendering consummate web interactions. This makes servlets as very crucial tool in establishing web-based applications that are strong and can allow for more than the basic html web page.

Exercise 1

Code:

userProfile Table

```
CREATE TABLE `userprofile`(  
  `username` VARCHAR(15) NOT NULL,  
  `icno` VARCHAR(15) DEFAULT NULL,  
  `firstname` VARCHAR(50) DEFAULT NULL,  
  PRIMARY KEY (username)  
)
```

Profile.java

```
package lab7.model;  
  
import java.util.Objects;  
  
/**  
 *  
 * @author Zahier  
 */  
public class Profile {  
  
    private String username, icno, firstname;  
  
    public String getUsername() {  
        return username;  
    }  
  
    public void setUsername(String username) {  
        this.username = username;  
    }  
  
    public String getIcno() {  
        return icno;  
    }  
  
    public void setIcno(String icno) {  
        this.icno = icno;  
    }  
  
    public String getFirstname() {  
        return firstname;  
    }  
  
    public void setFirstname(String firstname) {  
        this.firstname = firstname;  
    }  
  
    @Override  
    public boolean equals(Object obj) {  
        if (this == obj) {  
            return true;  
        }  
  
        if (obj == null) {  
            return false;  
        }  
  
        if (getClass() != obj.getClass()) {  
            return false;  
        }  
  
        final Profile other = (Profile) obj;  
        if (!Objects.equals(this.username, other.username)) {  
            return false;  
        }  
  
        if (!Objects.equals(this.icno, other.icno)) {  
            return false;  
        }  
  
        return Objects.equals(this.firstname, other.firstname);  
    }  
}
```

ProfileDAO.java

```
package lab7.dao;

import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.ArrayList;
import java.util.List;
import lab7.model.Profile;

/**
 *
 * @author Zahier
 */
public class ProfileDAO {

    private Connection connection;

    private static final String INSERT_PROFILE = "INSERT INTO userprofile VALUES (?, ?, ?)";
    private static final String SELECT_PROFILE_BY_USERNAME = "SELECT * FROM userprofile WHERE username = ?";

    public ProfileDAO() throws ClassNotFoundException {
        connection = DBConnection.getConnection();
    }

    public void addProfile(Profile profile) {
        try {
            PreparedStatement preparedStatement = connection.prepareStatement(INSERT_PROFILE);
            preparedStatement.setString(1, profile.getUsername());
            preparedStatement.setString(2, profile.getIcno());
            preparedStatement.setString(3, profile.getFirstname());
            preparedStatement.executeUpdate();
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }

    public Profile getProfileByUsername(String username) {
        Profile profile = new Profile();

        try {
            PreparedStatement preparedStatement = connection.prepareStatement(SELECT_PROFILE_BY_USERNAME);
            preparedStatement.setString(1, username);
            ResultSet resultSet = preparedStatement.executeQuery();

            while (resultSet.next()) {
                profile.setUsername(resultSet.getString("username"));
                profile.setIcno(resultSet.getString("icno"));
                profile.setFirstname(resultSet.getString("firstname"));
            }
        } catch (SQLException e) {
            e.printStackTrace();
        }

        return profile;
    }
}
```

ProfileServlet.java

```
package lab7.controller;

import jakarta.servlet.RequestDispatcher;
import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.ServletException;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.util.logging.Level;
import java.util.logging.Logger;
import lab7.dao.ProfileDAO;
import lab7.model.Profile;

/**
 *
 * @author Zahier
 */
public class ProfileServlet extends HttpServlet {

    protected void processRequest(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException, ClassNotFoundException {
        PrintWriter out = response.getWriter();
        ProfileDAO profileDAO = new ProfileDAO();
        Profile profile = new Profile();

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

        profile.setUsername(username);
        profile.setIcno(icno);
        profile.setFirstname(firstname);

        if (!profile.equals(profileDAO.getProfileByUsername(username))) {
            profileDAO.addProfile(profile);
        }
    }
}
```

```

        RequestDispatcher requestDispatcher = request.getRequestDispatcher("/processProfile.jsp");
        request.setAttribute("profile", profile);
        requestDispatcher.forward(request, response);
    }

    else {
        out.println("<script>");
        out.println("alert('Profile with username \"' + username + '\" already exists.');

```

registerProfile.html

```

<!DOCTYPE html>
<html>
<head>
    <title>User Profile Registration</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HfLeh07PJGoPkLv
</head>
<body>
    <div class="container mt-3">
        <h2>User Profile Registration</h2>
        <form action="ProfileServlet" class="mt-3">
            <div class="form-group">
                <label for="username">Username</label>
                <input type="text" id="username" name="username" class="form-control" maxlength="15" required>
            </div>
            <div class="form-group">
                <label for="icno">IC No</label>
                <input type="text" id="icno" name="icno" class="form-control" maxlength="15" required>
            </div>
            <div class="form-group">
                <label for="firstname">First Name</label>
                <input type="text" id="firstname" name="firstname" class="form-control" maxlength="50">
            </div>
            <div class="d-flex justify-content-end">
                <button type="reset" class="btn">Clear</button>
                <button type="submit" class="btn btn-dark">Submit</button>
            </div>
        </form>
    </div>
    <script src="https://cdn.jsdelivr.net/npm/jquery@3.5.1/dist/jquery.slim.min.js" integrity="sha384-DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-Fy6S3B9q64Wd2WQ0iU+q4/2Lc9npg8tCaS
</body>
</html>

```

processProfile.jsp

```
<%%page contentType="text/html" pageEncoding="UTF-8"%>
<%%taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%%taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>User Profile Details</title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HFLEh07PJGoPkLv
</head>
<body>
<div class="container mt-3">
<p>User profile with username <out value="{profile.username}" /> has been registered successfully!</p>
<p>User profile details are:</p>
<table>
<tr>
<td>Username:</td>
<td class="pl-3"><out value="{profile.username}" /></td>
</tr>
<tr>
<td>IC No:</td>
<td class="pl-3"><out value="{profile.icno}" /></td>
</tr>
<tr>
<td>First Name:</td>
<td class="pl-3"><out value="{profile.firstname}" /></td>
</tr>
</table>
</div>
<script src="https://cdn.jsdelivr.net/npm/jquery@3.5.1/dist/jquery.slim.min.js" integrity="sha384-DfXdz2htPH0lsSSs5nCTpuj/zy4C+OgpmoFVy38M
<script src="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-Py6S3B9q64WdZWQ1U+q4/2Lc9npb8
</body>
</html>
```

Output:

User Profile Registration

Username

afif17

IC No

010203-04-0506

First Name

Ahmad Afif Syahmi

Clear

Submit

User profile with username afif17 has been registered successfully!

User profile details are:

Username: afif17

IC No: 010203-04-0506

First Name: Ahmad Afif Syahmi

	username	icno	firstname
▶	afif17	010203-04-0506	Ahmad Afif Syahmi
●	NULL	NULL	NULL

Exercise 2

Code:

Student table

```
CREATE TABLE `student` (  
  `studID` varchar(6) NOT NULL,  
  `studName` varchar(50) DEFAULT NULL,  
  PRIMARY KEY (`studID`)  
)
```

Student.java

```
package lab7.model;  
  
/**  
 *  
 * @author Zahier  
 */  
public class Student {  
  
    private String studID, studName;  
  
    public String getStudID() {  
        return studID;  
    }  
  
    public void setStudID(String studID) {  
        this.studID = studID;  
    }  
  
    public String getStudName() {  
        return studName;  
    }  
  
    public void setStudName(String studName) {  
        this.studName = studName;  
    }  
}
```

StudentDAO.java

```
package lab7.dao;  
  
import java.sql.Connection;  
import java.sql.DriverManager;  
import java.sql.PreparedStatement;  
import java.sql.ResultSet;  
import java.sql.SQLException;  
import lab7.model.Student;  
  
/**  
 *  
 * @author Zahier  
 */  
public class StudentDAO {  
  
    private String jdbcurl = "jdbc:mysql://localhost:3306/lab7_task2";  
    private String username = "root";  
    private String password = "admin";  
    private static final String INSERT_STUDENT = "INSERT INTO student VALUES (?, ?)";  
    private static final String SELECT_STUDENT_BY_ID = "SELECT * FROM student WHERE studID = ?";  
  
    protected Connection getConnection() {  
  
        Connection connection = null;  
  
        try {  
            Class.forName("com.mysql.cj.jdbc.Driver");  
            connection = DriverManager.getConnection(jdbcurl, username, password);  
        }  
  
        catch (SQLException e) {  
            e.printStackTrace();  
        }  
  
        catch (ClassNotFoundException e) {  
            e.printStackTrace();  
        }  
    }  
}
```

```

    }

    return connection;
}

public boolean insertStudent(Student student) throws SQLException {

    boolean isSuccess = false;

    try {
        Connection connection = getConnection();

        PreparedStatement preparedStatement = connection.prepareStatement(INSERT_STUDENT);
        preparedStatement.setString(1, student.getStudID());
        preparedStatement.setString(2, student.getStudName());

        isSuccess = preparedStatement.executeUpdate() > 0;

        connection.close();
    }

    catch (Exception e) {
        e.printStackTrace();
    }

    return isSuccess;
}

public Student selectStudentByID(int studID) {

    Student student = null;

    try {
        Connection connection = getConnection();
        PreparedStatement preparedStatement = connection.prepareStatement(SELECT_STUDENT_BY_ID);

        preparedStatement.setInt(1, studID);

        ResultSet rs = preparedStatement.executeQuery();

        if (rs.next()) {
            student.setStudID(rs.getString("studID"));
            student.setStudName(rs.getString("studName"));
        }

        connection.close();
    }

    catch (SQLException e) {
        e.printStackTrace();
    }

    return student;
}
}

```

StudentServlet.java

```

package lab7.controller;

import jakarta.servlet.RequestDispatcher;
import jakarta.servlet.ServletContext;
import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.ServletException;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import jakarta.servlet.http.HttpSession;
import java.sql.SQLException;
import java.util.logging.Level;
import java.util.logging.Logger;
import lab7.dao.StudentDAO;
import lab7.model.Student;

/**
 *
 * @author Zahier
 */
public class StudentServlet extends HttpServlet {

    private StudentDAO studentDAO;

    @Override
    public void init() {
        studentDAO = new StudentDAO();
    }

    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

        String studID = request.getParameter("studID");
        String studName = request.getParameter("studName");

        HttpSession session = request.getSession();
    }
}

```



```

        session.setAttribute("studID", studID);
        session.setAttribute("studName", studName);
        response.sendRedirect("confirmRegister.jsp");
    }

    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
        try {
            String studID = request.getParameter("studID");
            String studName = request.getParameter("studName");

            Student student = new Student();
            student.setStudID(studID);
            student.setStudName(studName);

            boolean addSuccess = studentDAO.insertStudent(student);

            HttpSession session = request.getSession();
            session.setAttribute("addSuccess", addSuccess);

            ServletContext sc = getServletContext();
            RequestDispatcher dispatcher = sc.getRequestDispatcher("/notificationRegister.jsp");
            dispatcher.forward(request, response);
        }

        catch (SQLException ex) {
            ex.printStackTrace();
        }
    }

    @Override
    public String getServletInfo() {
        return "Short description";
    }
}

```

StudentRegister.jsp

```

<%%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Student Registration</title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HFLEh07PJGoPkLv
</head>
<body>
<div class="container mt-3">
<h2>Student Registration</h2>
<form action="StudentServlet" class="mt-3" method="get">
<div class="form-group">
<label for="studID">Student ID<span class="text-danger">*</span></label>
<input type="text" id="studID" name="studID" class="form-control" placeholder="E.g. S12345" maxlength="6" pattern="^[S0-9]{5}$" req
</div>
<div class="form-group">
<label for="studName">Name</label>
<input type="text" id="studName" name="studName" class="form-control" maxlength="50" placeholder="Enter name">
</div>
<div class="d-flex justify-content-end">
<button type="reset" class="btn">Clear</button>
<button type="submit" class="btn btn-dark">Submit</button>
</div>
</form>
</div>
</body>
</html>

```

ConfirmRegister.jsp

```
<%%page contentType="text/html" pageEncoding="UTF-8"%>
<%%taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Confirm Student Registration</title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HFLEh07PJGoPkLv"
<script src="https://code.jquery.com/jquery-3.7.1.slim.min.js" integrity="sha256-kmHvs0B+OpCW5GVHUNjv9rOmY0IvSIRcf7zGUMTDQM8=" crossorigin=

</head>
<body>
<div class="container mt-3">
<h2>Student Registration Confirmation</h2>
<p>You want to register the following student:</p>
<ul>
<li>Student ID: <c:out value="${studID}" /></li>
<li>Name: <c:out value="${studName}" /></li>
</ul>
<div class="d-flex justify-content-end">
<form action="notificationRegister.jsp" method="post">
<input type="hidden" value="${studID}" name="studID">
<input type="hidden" value="${studName}" name="studName">
<button type="button" class="btn" id="btnCancel">Cancel</button>
<button type="submit" class="btn btn-dark">Proceed</button>
</form>
</div>
</div>
<script>
$("#btnCancel").click(() => {
window.location = "studentRegister.jsp");
</script>
</body>
</html>
```

NotificationRegister.jsp

```
<%%page contentType="text/html" pageEncoding="UTF-8"%>
<%%taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Student Registration</title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/css/bootstrap.min.css" integrity="sha384-xOo1HFLEh07PJGoPkLv"

</head>
<body>
<div class="container mt-3">
<c:if test="${addSuccess}" >
<h2 class="text-center">Student Registration Successful</h2>
</c:if>
<c:if test="${!addSuccess}" >
<h2 class="text-center">Student Registration Unsuccessful</h2>
</c:if>
</div>
</body>
</html>
```

Output:

Student Registration

Student ID*

Name

[Clear](#)

Student Registration Confirmation

You want to register the following student:

- Student ID: S65526
- Name: Ahmad Afif Syahmi

[Cancel](#)

Student Registration Successful!

	studID	studName
▶	S65526	Ahmad Afif Syahmi
●	NULL	NULL