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**CSM3023 WEB BASED APPLICATION DEVELOPMENT (K1)**

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

**SEMESTER II 2023/2024**

**LAB 6 – JSP: Saving and Retrieving Data from Database**

**Prepared for:**

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## Task 1

### Step 1

```
1 • CREATE TABLE FirstTable(NAME VARCHAR(45))
```

### Step 2

#### SampleInsertionRecord.jsp

```
<%--
Document   : SampleInsertionRecord
Created on : 15 May 2024, 4:48:15 pm
Author    : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language="java"%>
<%@page import="java.sql.*"%>
<!DOCTYPE html>
<html>
<head>
  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
  <title>JSP Page</title>
</head>
<body>
  <h1>Lab 6 - Task 1 - Sample Insertion records into MySQL through JSP's page</h1>

  <%
    int result;

    //Step 1: Load JDBC driver...
    Class.forName("com.mysql.jdbc.Driver");
    out.println("Step 1: MySQL driver loaded...!");
  %>
  <br>
  <%
    //Step 2: Establish the connection...
    String myURL = "jdbc:mysql://localhost/csm3023";
    Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");
    out.println("Step 2: Database is connected...!");
  %>
  <br>
  <%
    //Step 3: Create a PreparedStatement object...
    out.println("Step 3: Prepared Statements created...!");

    //Prepared SQL query as a String...
```

```

//Prepared SQL query as a String...
String sInsertQry = "INSERT INTO FirstTable VALUE(?)";

//Call method preparedStatement
PreparedStatement myPS = myConnection.prepareStatement(sInsertQry);
%>
<br>
<%
//Assign each value to respective columns for Book's table...(C-Create)
out.println("Step 4: Perform insertion of record...!");
String name = "Welcome to access MySQL database with JSP. ...!";
myPS.setString(1, name);

result = myPS.executeUpdate();

if (result > 0){
%>
<br>
<%
out.println("Step 5: Close database connection...!");

out.println("");
out.println("Database connection is closed...!");

out.print("<p>" + "The record : (" + name + ") is successfully created..." + "</p>");
}
//Step 5: Close database connection...!
myConnection.close();
%>
</body>
</html>

```

Step 3

Result:

	NAME
►	Welcome to access MySQL database with JSP. ...!

## Task 2

```
CREATE TABLE AUTHOR(  
    authno VARCHAR(15) PRIMARY KEY,  
    NAME VARCHAR(40),  
    address VARCHAR(40),  
    city VARCHAR(40),  
    state VARCHAR(40),  
    zip VARCHAR(40))
```

## insertAuthor.jsp

```
<!--  
    Document    : insertAuthor  
    Created on  : 22 May 2024, 2:50:15 pm  
    Author      : USER  
-->  
  
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>  
<!DOCTYPE html>  
<html>  
<head>  
    <meta charset="UTF-8">  
    <title>Insert Author</title>  
</head>  
<body>  
    <h2>Lab 6 - Task 2 - Perform creating and retrieving records via JSP page</h2>  
    <form action="processAuthor.jsp" method="post">  
        <table>  
            <tr>  
                <td>Author No:</td>  
                <td><input type="text" name="authno" required></td>  
            </tr>  
            <tr>  
                <td>Name:</td>  
                <td><input type="text" name="name" required></td>  
            </tr>  
            <tr>  
                <td>Address:</td>  
                <td><input type="text" name="address" required></td>  
            </tr>  
            <tr>  
                <td>City:</td>  
                <td><input type="text" name="city" required></td>  
            </tr>  
            <tr>  
                <td>State:</td>  
                <td><input type="text" name="state" required></td>  
            </tr>  
            <tr>  
                <td>Zip:</td>  
                <td><input type="text" name="zip" required></td>  
            </tr>  
        </table>  
        <input type="submit" value="Submit">  
        <input type="reset" value="Cancel">  
    </form>  
</body>  
<footer>  
    &copy; Haris Zakuwan  
</footer>  
</html>
```

## processAuthor.jsp

```
<%--
    Document    : processAuthor
    Created on  : 22 May 2024, 2:53:48 pm
    Author      : USER
--%>

<%@ page contentType="text/html" pageEncoding="UTF-8"%>
<%@ page language="java"%>
<%@ page import="java.sql.*" %>
<jsp:useBean id="myAuthor" class="lab6.com.Author" scope="request"/>
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Process Author</title>
</head>
<body>
    <h1>Lab 6 - Task 2 - Perform creating and retrieving records via JSP page</h1>

    <jsp:setProperty name="myAuthor" property="*" />
<%
    int result;

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

    String myURL = "jdbc:mysql://localhost/csm3023";
    Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");

    String sInsertQry = "INSERT INTO author(authno, name, address, city, state, zip) VALUES(?, ?, ?, ?, ?, ?)";

    PreparedStatement myPS = myConnection.prepareStatement(sInsertQry);

    myPS.setString(1, myAuthor.getAuthno());
    myPS.setString(2, myAuthor.getName());
    myPS.setString(3, myAuthor.getAddress());
    myPS.setString(4, myAuthor.getCity());
    myPS.setString(5, myAuthor.getState());
    myPS.setString(6, myAuthor.getZip());

    result = myPS.executeUpdate();
    if (result > 0) {
        out.println("\tRecord succesfully added into Author table...!");
        out.print("<p>" + "Record with author no " + myAuthor.getAuthno() + " successfully created..!" + "</p>");
        out.print("<p>" + "Details of record are: " + "</p>");
        out.print("<p>Name : " + myAuthor.getName() + "</p>");
        out.print("<p>Address : " + myAuthor.getAddress() + "</p>");
        out.print("<p>City : " + myAuthor.getCity() + "</p>");
        out.print("<p>State : " + myAuthor.getState() + "</p>");
        out.print("<p>Zip : " + myAuthor.getZip() + "</p>");

        //Step 5: Close database connection...!
        System.out.println("Step 5: Close database connection...!");
        myConnection.close();
        System.out.println(" ");
        System.out.println("Database connection is closed...!");
    }
%>
</body>
</html>
```

## Author.java

```
package lab6.com;

/**
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */

/**
 *
 * @author USER
 */
public class Author {
    private String authno;
    private String name;
    private String address;
    private String city;
    private String state;
    private String zip;

    public String getAuthno() {
        return authno;
    }

    public void setAuthno(String authno) {
        this.authno = authno;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getAddress() {
        return address;
    }

    public void setAddress(String address) {
        this.address = address;
    }

    public String getCity() {
        return city;
    }

    public void setCity(String city) {
        this.city = city;
    }

    public String getState() {
        return state;
    }

    public void setState(String state) {
        this.state = state;
    }

    public String getZip() {
        return zip;
    }

    public void setZip(String zip) {
        this.zip = zip;
    }
}
```

Result:

### Lab 6 - Task 2 - Perform creating and retrieving records via JSP page

Author No:

Name:

Address:

City:

State:

Zip:

© Haris Zakuwan

### Lab 6 - Task 2 - Perform creating and retrieving records via JSP page

Record succesfully added into Author table...!

Record with author no gsk23322 successfully created..!

Details of record are;

Name : Fouad

Address : Malaysia

City : KT

State : UMT

Zip : 23

	authno	NAME	address	city	state	zip
▶	gsk23322	Fouad	Malaysia	KT	UMT	23
•	NULL	NULL	NULL	NULL	NULL	NULL

Reflection

1. What have you learnt from this exercise?

I have learn how to using JSP to insert records and retrieve them from MySQL database.

2. Define step by step before you successfully perform the transaction in a database.

1.Load JDBC driver.

2.Establish the connection.

3.Create a PreparedStatement object.

4.Execute the query.

5.Close database connection.

### Task 3

#### Step 1

```
CREATE TABLE student(  
    stuno VARCHAR(15) PRIMARY KEY,  
    stuname VARCHAR(50),  
    stuprogram VARCHAR(40))
```

#### Step 2

##### insertStudent.jsp

```
<!--  
    Document    : InsertStudent  
    Created on  : 22 May 2024, 3:54:37 pm  
    Author      : USER  
-->  
  
<%@page contentType="text/html" pageEncoding="UTF-8"%>  
<!DOCTYPE html>  
<html>  
    <head>  
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  
        <title>Hero Academy</title>  
    </head>  
    <body>  
        <fieldset>  
            <legend>Student Registration</legend>  
            <form action="processStudent.jsp" method="post">  
                <table>  
                    <tr>  
                        <td>  
                            <label for="stuno">Student No</label>  
                        </td>  
                        <td>  
                            <input type="text" id="stuno" name="stuno" placeholder="E.g.: UKXXXXXX">  
                        </td>  
                    </tr>  
                    <tr>  
                        <td>  
                            <label for="name">Name</label>  
                        </td>  
                        <td>  
                            <input type="text" id="name" name="name" placeholder="Enter your name">  
                        </td>  
                    </tr>  
                    <tr>  
                        <td><label for="program">Program</label></td>  
                        <td>  
                            <select id="program" name="program">  
                                <option value="BSc. Soft. Eng.">BSc. Soft. Eng.</option>  
                                <option value="BSc. with IM">BSc. with IM</option>  
                                <option value="BSc. in Networking">BSc. in Networking</option>  
                                <option value="BSc. in Robotics">BSc. in Robotics</option>  
                            </select>  
                        </td>  
                    </tr>  
                    <tr>  
                        <td>  
                            <button type="submit" value="Submit">Submit</button>  
                            <button type="reset" value="Reset">Cancel</button>  
                        </td>  
                    </tr>  
                </table>  
            </form>  
        </fieldset>  
        <footer>  
            <p>&copy;Haris Zakuwan</p>  
        </footer>  
    </body>  
</html>
```



### Step 3

#### Student.java

```
package lab6.com;

/**
 *
 * @author USER
 */
import java.util.regex.Matcher;
import java.util.regex.Pattern;

public class Student {
    //Create attributes...
    private String stuno;
    private String name;
    private String program;

    public String getStuno() {
        Pattern pt = Pattern.compile("[A-Z0-9]*");
        Matcher mt = pt.matcher(stuno);
        boolean bl = mt.matches();
        String valid = "";
        String invalid = "Invalid input please reenter!";
        if(bl == true){
            valid = stuno;
        }else{
            valid = invalid;
        }
        return valid;
    }

    public void setStuno(String stuno) {
        this.stuno = stuno;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getProgram() {
        return program;
    }

    public void setProgram(String program) {
        this.program = program;
    }
}
```

## Step 4

### processStudent.jsp

```
<%--
    Document    : processStudent
    Created on  : 22 May 2024, 4:20:57 pm
    Author      : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language="java"%>
<%@page import="java.sql.*"%>
<%@page errorPage="errorStudent.jsp"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>JSP Page</title>
    </head>
    <body>
        <jsp:useBean id="myStudent" class="lab6.com.Student" scope="request"/>
        <jsp:setProperty name="myStudent" property="*" />

        <%
            int result;

            //Step 1: Load JDBC driver..
            Class.forName("com.mysql.cj.jdbc.Driver");
            System.out.println("Step 1: MySQL driver loaded...!");

            //Step 2: Establish the connection
            String myURL = "jdbc:mysql://localhost:3306/csm3023";
            Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");
            System.out.println("Step 2: Database is connected...!");

            //Step 3: Create a PreparedStatement object...
            System.out.println("Step3: Prepared Statements created...!");
            String sInsertQry = "INSERT INTO student(stuno, stuname, stuprogram) VALUES(?, ?, ?)";
            System.out.println("\tSQL Query: " + sInsertQry);

            //Call method preparedStatement
            PreparedStatement myPS = myConnection.prepareStatement(sInsertQry);

            //Assign each value to respective columns for Student's table.. (C-Create)
            myPS.setString(1, myStudent.getStuno());
            myPS.setString(2, myStudent.getName());
            myPS.setString(3, myStudent.getProgram());

            result = myPS.executeUpdate();
            if (result > 0){
                out.println("\tRecord successfully added into Student table...!");
                out.print("<p>" + "Record with student no " + myStudent.getStuno()
                    + " successfully created..!" + "</p>");
                out.print("<p>" + "Details of record are; " + "</p>");
                out.print("<p>Student ID : " + myStudent.getStuno() + "</p>");
                out.print("<p>Name : " + myStudent.getName() + "</p>");
                out.print("<p>Program : " + myStudent.getProgram() + "</p>");
            }
            //Step5: close database connection..!
            System.out.println("Step 5: Close database connection..!");
            myConnection.close();
            System.out.println(" ");
            System.out.println("Database connection is closed..!");
        %>
    </body>
</html>
```

## Step 5

### errorStudent.jsp

```
<%--
    Document      : errorStudent
    Created on    : 22 May 2024, 4:52:45 pm
    Author       : USER
--%>

<%@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>
    <form id="errorFrm" action="insertStudent.jsp" method="post">
        <h1>Lab 6 - Task 1 - Perform creating and retrieving records via JSP page</h1>
        <p>Error occur when inserting record...!</p>
        <p>Error Message: ${exception.getMessage()}</p>
        <br>
    </form>
</body>
</html>
```

## Step 6

Student Registration	
Student No	<input type="text" value="S65720"/>
Name	<input type="text" value="Haris Zakuwan"/>
Program	<input type="text" value="BSc. in Networking"/>
<input type="button" value="Submit"/> <input type="button" value="Cancel"/>	

©Haris Zakuwan

Record successfully added into Student table...!

Record with student no S65720 successfully created..!

Details of record are;

Student ID : S65720

Name : Haris Zakuwan

Program : BSc. in Networking

## Reflection

1. What have you learnt from this exercise?

I have learnt how to use JSP Standard Action, scriplets and regular expression to insert records and retrieve them from MySQL database.

2. Define step by step before you successfully perform the transaction in a database.

1. Load JDBC driver.

2. Establish the connection.

3. Create a PreparedStatement object.

4. Execute the query.

5. Close database connection.

## Task 4

	stuno	stuname	stuprogram
▶	S65720	Haris Zakuwan	BSc. Soft. Eng.
	UK12489	Ahmad Salam	BSc. with IM
	UK56789	Rosnah Azman	BSc. Soft. Eng.
	UK67342	Liew Cheng Huat	BSc. in Robotics

## queryStudent.jsp

```

<!--
Document   : queryStudent
Created on : 26 May 2024, 1:41:40 am
Author    : USER
-->

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="java.sql.*"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Hero Academy Student 2024/2025</title>
<style>
table{
border-collapse: collapse;
}
td, th{
border: 1px solid #999;
padding: 0.5rem;
text-align: left;
}
th{
background: gold;
}
</style>
</head>
<body>
<h1>Task 4: Retrieving record via JSP page</h1>

<%
out.print("<table>");
out.print("<thead>");
out.print("<tr>");
out.print("<th>" + "ISBNNo" + "</th>");
out.print("<th>" + "Author" + "</th>");
out.print("<th>" + "Title" + "</th>");
out.print("</tr>");
out.print("</thead>");
out.print("<tbody>");

%>
<%
//Step 1: Load JDBC driver..
Class.forName("com.mysql.cj.jdbc.Driver");
System.out.println("Step 1: MySQL driver loaded...!");

//Step 2: Establish the connection
String myURL = "jdbc:mysql://localhost:3306/csm3023";
Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");
System.out.println("Step 2: Database is connected...!");

//Step 3: Create a PreparedStatement object...
Statement myStatement = myConnection.createStatement();

String myQuery = "SELECT * FROM student";
ResultSet myResultSet = myStatement.executeQuery(myQuery);

while(myResultSet.next()){
out.print("<tr>");
out.print("<td width=\\\"20%\\\">" + myResultSet.getString(1) + "</td>");
out.print("<td width=\\\"40%\\\">" + myResultSet.getString(2) + "</td>");
out.print("<td width=\\\"40%\\\">" + myResultSet.getString(3) + "</td>");
out.print("</tr>");
}
//Step5: close database connection..!
System.out.println("Step 5: Close database connection...!");
myConnection.close();
System.out.println(" ");
System.out.println("Database connection is closed..!");

out.print("</tbody>");
out.print("</table>");

%>
</body>
</html>

```

Result

### Task 4: Retrieving record via JSP page

ISBNNo	Author	Title
S65720	Haris Zakuwan	BSc. Soft. Eng.
UK12489	Ahmad Salam	BSc. with IM
UK56789	Rosnah Azman	BSc. Soft. Eng.
UK67342	Liew Cheng Huat	BSc. in Robotics

Reflection

1. What have you learnt from this exercise?

I have learned how to use Java Scriptlet to query a list of records.

2. Explain the differences when using Statement() and PreparedStatement().

The Statement interface is used for executing static SQL statements while The PreparedStatement interface is precompiled and stored in an object.

Besides, Statement() cannot accept parameters at runtime while PreparedStatement() accepts input parameters at runtime (parameterized queries).

Statement() typically used for executing SQL queries that are run only once while PreparedStatement() Ideal for executing the same SQL query multiple times with different parameter values.

---

## Task 5

### registerMarathon.jsp

```
<%--
Document   : registerMarathon
Created on : 26 May 2024, 1:47:17 am
Author    : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Superhero Marathon 2025</title>
</head>
<body>
<h1>Superhero Marathon 2025</h1>
<fieldset>
<legend>Marathon Registration</legend>
<form action="processMarathon.jsp" method="post">
<table>
<tr>
<td>
<label for="icno">IC No</label>
</td>
<td>
<input type="text" id="icno" name="icno" placeholder="E.g.: 921110-10-2514">
</td>
</tr>
<tr>
<td>
<label for="name">Name</label>
</td>
<td>
<input type="text" id="name" name="name" placeholder="Enter your name">
</td>
</tr>
<tr>
<td>
<label for="category">Category</label>
</td>
<td>
<select id="category" name="category">
<option value="5 KM">5 KM</option>
<option value="7 KM">7 KM</option>
<option value="10 KM">10 KM</option>
</select>
</td>
</tr>
<tr>
<td>
<button type="submit" value="Submit">Submit</button>
<button type="reset" value="Reset">Cancel</button>
</td>
</tr>
</table>
</form>
</fieldset>
<footer>
<p>&copy; Haris Zakuwan</p>
</footer>
</body>
</html>
```

## Marathon.java

```
package lab6.com;

/**
 *
 * @author USER
 */
public class Marathon {
    private String icno;
    private String name;
    private String category;

    public String getIcno() {
        return icno;
    }

    public void setIcno(String icno) {
        this.icno = icno;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getCategory() {
        return category;
    }

    public void setCategory(String category) {
        this.category = category;
    }
}
```

## Database.java

```
package lab6.com;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.util.logging.Level;
import java.util.logging.Logger;
import lab6.com.Marathon;

/**
 *
 * @author USER
 */
public class Database {
    private static Connection myConnection = null;
    private static String myURL = "jdbc:mysql://localhost:3306/csm3023";
    private int result = 0;

    public static Connection getConnection() throws ClassNotFoundException {
        if (myConnection != null) {
            return myConnection;
        }
        else try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            myConnection = DriverManager.getConnection(myURL, "root", "admin");
        }
        catch (SQLException e) {
            e.printStackTrace();
        }
        return myConnection;
    }

    public void closeConnection() throws ClassNotFoundException {
        try {
            myConnection.close();
        }
        catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
```



## MarathonDAO.java

```
package lab6.com;

/**
 *
 * @author USER
 */
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import lab6.com.Database;

public class MarathonDAO {
    private Connection connection;
    private int result = 0;
    public MarathonDAO() throws ClassNotFoundException{
        connection = Database.getConnection();
    }
    public int addDetails(Marathon marathon){
        try{
            String mySQL = "INSERT INTO marathon(icno, name, category) VALUES (?, ?, ?)";
            PreparedStatement preparedStatement = connection.prepareStatement(mySQL);

            System.out.println("IC no    = " + marathon.getIcno());
            System.out.println("Name      = " + marathon.getName());
            System.out.println("Category= " + marathon.getCategory());

            //Parameters
            preparedStatement.setString(1, marathon.getIcno());
            preparedStatement.setString(2, marathon.getName());
            preparedStatement.setString(3, marathon.getCategory());
            result = preparedStatement.executeUpdate();
        } catch (SQLException e) {
            e.printStackTrace();
        }
        return result;
    }
}
```

## processMarathon.jsp

```
<%--
Document    : processMarathon
Created on  : 26 May 2024, 1:52:53 am
Author     : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language="java"%>
<%@page import="java.sql.*"%>
<%@page import="lab6.com.Database"%>
<%@page import="lab6.com.Marathon"%>
<%@page import="lab6.com.MarathonDAO"%>
<!DOCTYPE html>

<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Superhero Marathon 2025</title>
</head>
<body>
<jsp:useBean id="myMarathon" class="lab6.com.Marathon" scope="request"/>
<jsp:setProperty name="myMarathon" property="*" />

<%
    int result;
    //Step 1: create Database object...
    Database myDB = new Database();

    MarathonDAO object1 = new MarathonDAO();

    //Step 2: Add the records...
    result = object1.addDetails(myMarathon);

    //Step 3: Determine whether the transactions is success..
    if(result > 0){
        System.out.println("\tRecord successfully added into Book's table...!");
        out.print("<p>" + "Record with IC No " + myMarathon.getIcno() +
            " successfully created..!" + "</p>");
        out.print("<p>" + "Details of record are: " + "</p>");
        out.print("<p>IC NO    : " + myMarathon.getIcno() + "</p>");
        out.print("<p>Name     : " + myMarathon.getName() + "</p>");
        out.print("<p>Category  : " + myMarathon.getCategory() + "</p>");
    }else{
        out.print("<p>Crazyy this is an error! maybe you already registerd before?</p>");
    }

    //Step 4: Close database connection..!
    System.out.println("Step 5: Close database connection...!");
    myDB.closeConnection();
    System.out.println(" ");
    System.out.println("Database connection is closed...!");
%>

</body>
</html>
```

## Result

### Superhero Marathon 2025

Marathon Registration	
IC No	<input type="text" value="030617-14-0423"/>
Name	<input type="text" value="Haris Zakuwan"/>
Category	<input type="text" value="7 KM"/>
<input type="button" value="Submit"/> <input type="button" value="Cancel"/>	

©Haris Zakuwan

Record with IC No 030617-14-0423 successfully created..!

Details of record are:

Ic NO : 030617-14-0423

Name : Haris Zakuwan

Category : 7 KM

#### Reflection

1. What have you learnt from this exercise?

I have learned how to use JavaBeans to perform SQL transaction using PreparedStatement().

2. Describe the benefits of using JavaBeans

JavaBeans allow components to be reused across different parts of a program. JavaBeans are easy to configure and use. They work across different platforms.

## Exercise

### 1. userprofile table

```
1 • CREATE TABLE userprofile(  
2     username VARCHAR(15) PRIMARY KEY,  
3     password VARCHAR(10),  
4     firstname VARCHAR(50),  
5     lastname VARCHAR(50))
```

### 2. insertUser.html

```
<!DOCTYPE html>  
<!--  
Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license  
Click nbfs://nbhost/SystemFileSystem/Templates/JSP\_Servlet/Html.html to edit this template  
-->  
<html>  
  <head>  
    <title>Department of Quality UMT</title>  
    <meta charset="UTF-8">  
    <meta name="viewport" content="width=device-width, initial-scale=1.0">  
  </head>  
  <body>  
    <h1>Department of Quality UMT</h1>  
    <fieldset>  
      <legend>User Registration</legend>  
      <form action="processUser.jsp">  
        <table>  
          <tr>  
            <td>  
              <label for="username">Username</label>  
            </td>  
            <td>  
              <input type="text" id="username" name="username" placeholder="Enter a username">  
            </td>  
          </tr>  
          <tr>  
            <td>  
              <label for="password">Password</label>  
            </td>  
            <td>  
              <input type="password" id="password" name="password" placeholder="Enter a password">  
            </td>  
          </tr>  
          <tr>  
            <td>  
              <label for="firstname">Firstname</label>  
            </td>  
            <td>  
              <input type="text" id="firstname" name="firstname" placeholder="E.g.:Jamal">  
            </td>  
          </tr>  
          <tr>  
            <td>  
              <label for="lastname">Lastname</label>  
            </td>  
            <td>  
              <input type="text" id="lastname" name="lastname" placeholder="E.g.:bin Abdullah">  
            </td>  
          </tr>  
          <tr>  
            <td>  
              <button type="submit" value="Submit">Submit</button>  
              <button type="reset" value="Reset">Cancel</button>  
            </td>  
          </tr>  
        </table>  
      </form>  
    </fieldset>  
    <footer>  
      <p>&copy;Haris Zakuwan</p>  
    </footer>  
  </body>  
</html>
```

### 3. processUser.jsp

```
<%--
    Document    : processUser
    Created on  : 26 May 2024, 2:19:04 am
    Author      : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language="java"%>
<%@page import="java.sql.*"%>
<%@page errorPage="login.jsp"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Department of Quality UMT</title>
    </head>
    <body>
        <jsp:useBean id="myUser" class="lab6.com.User" scope="request"/>
        <jsp:setProperty name="myUser" property="*" />

        <%
            int result;

            //Step 1: Load JDBC driver..
            Class.forName("com.mysql.cj.jdbc.Driver");
            System.out.println("Step 1: MySQL driver loaded...!");

            //Step 2: Establish the connection
            String myURL = "jdbc:mysql://localhost:3306/csm3023";
            Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");
            System.out.println("Step 2: Database is connected...!");

            //Step 3: Create a PreparedStatement object...
            System.out.println("Step3: Prepared Statements created...!");
            String sInsertQry = "INSERT INTO userprofile(username, password, firstname, lastname) VALUES(?, ?, ?, ?)";
            System.out.println("\tSQL Query: " + sInsertQry);

            //Call method preparedStatement
            PreparedStatement myPS = myConnection.prepareStatement(sInsertQry);

            //Assign each value to respective columns for Student's table.. (C-Create)
            myPS.setString(1, myUser.getUsername());
            myPS.setString(2, myUser.getPassword());
            myPS.setString(3, myUser.getFirstname());
            myPS.setString(4, myUser.getLastname());

            result = myPS.executeUpdate();
            if (result > 0){
                out.println("\tRecord successfully added into User table...!");
                out.print("<p>" + "Record with Username " + myUser.getUsername()
                    + " successfully created..!" + "</p>");
                out.print("<p>" + "Details of record are: " + "</p>");
                out.print("<p>Username : " + myUser.getUsername() + "</p>");
                out.print("<p>Firstname : " + myUser.getFirstname() + "</p>");
                out.print("<p>Lastname : " + myUser.getLastname() + "</p>");
            }
            //Step5: close database connection..!
            System.out.println("Step 5: Close database connection..!");
            myConnection.close();
            System.out.println(" ");
            System.out.println("Database connection is closed..!");
        %>
    </body>
</html>
```

## Login.jsp

```
<!--
Document   : login
Created on : 26 May 2024, 2:19:57 am
Author    : USER
-->

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Department of Quality UMT</title>
</head>
<body>
<h1>Department of Quality UMT</h1>
<fieldset>
<legend>User Login</legend>
<form action="doLogin.jsp">
<table>
<tr>
<td>
<label for="username">Username</label>
</td>
<td>
<input type="text" id="username" name="username" placeholder="Enter a username">
</td>
</tr>
<tr>
<td>
<label for="password">Password</label>
</td>
<td>
<input type="password" id="password" name="password" placeholder="Enter a password">
</td>
</tr>
<tr>
<td>
<button type="submit" value="Submit">Submit</button>
<button type="reset" value="Reset">Cancel</button>
</td>
</tr>
</table>
</form>
</fieldset>
<%
String errorMessage = request.getParameter("error");
if (errorMessage != null && !errorMessage.isEmpty()) {
    out.println("<p style='color: red'>" + errorMessage + "</p>");
}
%>
<footer>
<p>&copy;Haris Zakuwan</p>
</footer>
</body>
</html>
```

## 5. doLogin.jsp

```
<!--
Document   : doLogin
Created on : 26 May 2024, 2:20:52 am
Author    : USER
-->

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@ page import="java.sql.*, lab6.com.User" %>
<%@ page import="java.io.*, java.util.*" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Department of Quality UMT</title>
</head>
<body>
<h1>Department of Quality UMT</h1>
<%
    // Retrieve username and password from the request
    String username = request.getParameter("username");
    String password = request.getParameter("password");

    // Check if username and password are not null and not empty
    if (username != null && !username.isEmpty() && password != null && !password.isEmpty()) {
        // Establish database connection
        Connection conn = null;
        PreparedStatement pstmt = null;
        ResultSet rs = null;
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            String myURL = "jdbc:mysql://localhost:3306/csm3023";
            conn = DriverManager.getConnection(myURL, "root", "admin");

            // Query to check if the username and password are valid
            String query = "SELECT * FROM userprofile WHERE username = ? AND password = ?";
            pstmt = conn.prepareStatement(query);
            pstmt.setString(1, username);
            pstmt.setString(2, password);
            rs = pstmt.executeQuery();

            if (rs.next()) {
                // If user exists and credentials are valid, redirect to main.jsp
                User user = new User();
                user.setUsername(rs.getString("username"));
                user.setFirstname(rs.getString("firstname"));
                user.setLastname(rs.getString("lastname"));

                // Set user object in session for later use
                session.setAttribute("user", user);
                response.sendRedirect("main.jsp");
            } else {
                // If invalid username or password, redirect back to login.jsp with error message
                response.sendRedirect("login.jsp?error=Invalid+username+or+password");
            }
        } catch (Exception e) {
            e.printStackTrace();
        } finally {
            // Close resources
            if (rs != null) rs.close();
            if (pstmt != null) pstmt.close();
            if (conn != null) conn.close();
        }
    } else {
        // If username or password is empty, redirect back to login.jsp with error message
        response.sendRedirect("login.jsp?error=Username+and+password+are+required");
    }
%>
</body>
</html>
```

## Main.jsp

```
<%--
    Document      : main
    Created on    : 26 May 2024, 2:21:34 am
    Author       : USER
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page language="java"%>
<%@ page import="lab6.com.User" %>
<%@ page import="java.io.*, java.util.*" %>
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Department of Quality UMT</title>
</head>
<body>
<%
    // Retrieve user object from session
    lab6.com.User user = (lab6.com.User) session.getAttribute("user");

    // Check if user object exists in session
    if (user != null) {
%>
<h1>Welcome, <%= user.getFirstname() %> <%= user.getLastname() %></h1>
<p>Your username is: <%= user.getUsername() %></p>

<!-- Add other content here -->

<p><a href="logout.jsp">Logout</a></p>
<%
    } else {
        // If user object does not exist in session, redirect to login page
        response.sendRedirect("login.jsp");
    }
%>
</body>
</html>
```



## 6. user.java

```
package lab6.com;

/**
 *
 * @author USER
 */
public class User {
    private String username;
    private String password;
    private String firstname;
    private String lastname;

    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;
    }

    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;
    }
}
```

Result

## Department of Quality UMT

User Registration

Username

Rishhh

Password

\*\*\*\*\*

Firstname

Haris

Lastname

Zakuwan

Submit

Cancel

©Haris Zakuwan

Record successfully added into User table...!

Record with Username Rishhh successfully created..!

Details of record are;

Username : Rishhh

Firstname : Haris

Lastname : Zakuwan

	username	password	firstname	lastname
▶	Rishhh	Harisz123	Haris	Zakuwan
✱	NULL	NULL	NULL	NULL