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**CSM3023 -PEMBANGUNAN APLIKASI BERASASKAN WEB**

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

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

**SEMESTER 2 2023/2024**

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**PREPARED FOR:**

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**PREPARED BY:**

NUR EZREENA SHUHADA BT EMRAN

S66467

**TASK 1: USING JSP PAGE TO ACCESS A SIMPLE MYSQL DATABASE**

SampleInsertionRecord.jsp

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| <%--  Document : SampleInsertionRecord  Created on : 5 Jun 2024, 3:47:32 pm  Author : Nur Ezreena  --%>  <%@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.cj.jdbc.Driver");  out.println("Step 1 : MySQL driver loaded..!");  %>  <br>  <%  String myURL = "jdbc:mysql://localhost/lab6\_csm3023";  // Step 2: Establish the connection  Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");  out.println("Step 2 : Database is connected...!");  %>  <br>  <%  // Step 3: Create a prepared statement  out.println("Step 3 : Prepared statement created..!");  // Prepared SQL query as a string  String sInsertQry = "INSERT INTO FirstTable VALUES (?)";  // Call method prepared statement  PreparedStatement myPS = myConnection.prepareStatement(sInsertQry);  %>  <br>  <%  // Step 4: Perform insertion of record  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><font color=\"blue\">" + "The record : (" + name + ") is successfully created..!" + "</font></p>"); }  //Step 5: Close database connection...!  myConnection.close();  %>  </body>  </html> |

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**TASK 2: CREATE RECORD VIA JSP PAGE**

insertAuthor.jsp

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| <%--  Document : insertAuthor  Created on : 15 Jun 2024, 7:17:03 pm  Author : Nur Ezreena  --%>  <%@ page language="java" contentType="text/html; charset=UTF-8"  pageEncoding="UTF-8"%>  <!DOCTYPE html>  <html>  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>Lab 6 - Task 2</title>  </head>  <body>  <h2>Task 2 - Perform creating and retrieving records via JSP page</h2>  <form action="processAuthor.jsp" method="POST">  <fieldset>  <legend>Author Registration</legend>  <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>  <br>  <input type="submit" value="Submit">  <input type="reset" value="Cancel">  </form>  </body>  </fieldset>  <br><br>  </html> |

processAuthor.jsp

|  |
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| <%@ 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 http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>Process Author</title>  </head>  <body>  <h1>Task 2 - Perform creating and retrieving records via JSP page</h1>  <jsp:setProperty name="myAuthor" property="\*"/>  <%  try {    // Load the JDBC driver  Class.forName("com.mysql.cj.jdbc.Driver");  // Establish connection  String myURL = "jdbc:mysql://localhost:3306/lab6\_csm3023";  Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");  // Prepare SQL insert statement  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());  // Execute update  int result = myPS.executeUpdate();  // Check result and print corresponding messages  if (result > 0) {  out.println("<p style='color:blue;'>Record successfully added into Author table...!</p>");  out.print("<p style='color:blue;'>Record with author no " + myAuthor.getAuthno() + " successfully created..!</p>");  out.print("<p style='color:blue;'>Details of record are:</p>");  out.print("<p style='color:blue;'>Name: " + myAuthor.getName() + "</p>");  out.print("<p style='color:blue;'>Address: " + myAuthor.getAddress() + "</p>");  out.print("<p style='color:blue;'>City: " + myAuthor.getCity() + "</p>");  out.print("<p style='color:blue;'>State: " + myAuthor.getState() + "</p>");  out.print("<p style='color:blue;'>Zip: " + myAuthor.getZip() + "</p>");  } else {  out.println("<p style='color:red;'>Failed to add record into Author table.</p>");  }  // Close database connection  myConnection.close();  } catch (ClassNotFoundException e) {  out.println("<p style='color:red;'>JDBC Driver not found: " + e.getMessage() + "</p>");  } catch (SQLException e) {  out.println("<p style='color:red;'>SQL Error: " + e.getMessage() + "</p>");  } catch (Exception e) {  out.println("<p style='color:red;'>Error: " + e.getMessage() + "</p>");  }  %>  </body>  </html> |

Author.java

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| /\*  \* 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  \*/  package lab6.com;  /\*\*  \*  \* @nur ezreena  \*/  public class Author {    private String authno;  private String name;  private String address;  private String city;  private String state;  private String zip;  /\*\*  \* @return the authno  \*/  public String getAuthno() {  return authno;  }  /\*\*  \* @param authno the authno to set  \*/  public void setAuthno(String authno) {  this.authno = authno;  }  /\*\*  \* @return the name  \*/  public String getName() {  return name;  }  /\*\*  \* @param name the name to set  \*/  public void setName(String name) {  this.name = name;  }  /\*\*  \* @return the address  \*/  public String getAddress() {  return address;  }  /\*\*  \* @param address the address to set  \*/  public void setAddress(String address) {  this.address = address;  }  /\*\*  \* @return the city  \*/  public String getCity() {  return city;  }  /\*\*  \* @param city the city to set  \*/  public void setCity(String city) {  this.city = city;  }  /\*\*  \* @return the state  \*/  public String getState() {  return state;  }  /\*\*  \* @param state the state to set  \*/  public void setState(String state) {  this.state = state;  }  /\*\*  \* @return the zip  \*/  public String getZip() {  return zip;  }  /\*\*  \* @param zip the zip to set  \*/  public void setZip(String zip) {  this.zip = zip;  }  } |

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**TASK 3 : CREATE RECORD CONSTRAINED BY REGULAR EXPRESSION IN JSP**

insertStudent.jsp

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| <%--  Document : insertStudent  Created on : 15 Jun 2024, 8:04:04 pm  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>Student Registration</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" required></td>  </tr>  <tr>  <td><label for="name">Name</label></td>  <td><input type="text" id="name" name="name" placeholder="Enter your name" required></td>  </tr>  <tr>  <td><label for="program">Program</label></td>  <td>  <select id="program" name="program" required>  <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 colspan="2">  <br>  <button type="submit" value="Submit">Submit</button>  <button type="reset" value="Reset">Cancel</button>  </td>  </tr>  </table>  </form>  </fieldset>  <br>  </body>  </html> |

processStudent.jsp

|  |
| --- |
| <%--  Document : processStudent  Created on : 15 Jun 2024, 8:06:07 pm  Author : Nur Ezreena  --%>  <%@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>Process Student</title>  </head>  <body>  <jsp:useBean id="myStudent" class="lab6.com.Student" scope="request"/>  <jsp:setProperty name="myStudent" property="\*"/>    <%  int result;  try {  // 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/lab6\_csm3023";  Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");  System.out.println("Step 2: Database is connected...!");  // Step 3: Create a PreparedStatement object  String sInsertQry = "INSERT INTO student(stuno, stuname, stuprogram) VALUES(?, ?, ?)";  PreparedStatement myPS = myConnection.prepareStatement(sInsertQry);  // Assign each value to respective columns for Student's table (C-Create)  String studentNo = myStudent.getStuno();  if (studentNo.length() > 10) {  throw new Exception("Student number exceeds maximum length of 10 characters.");  }    myPS.setString(1, studentNo);  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 style='color:blue;'>" + "Record with student no " + myStudent.getStuno() + " successfully created..!" + "</p>");  out.print("<p style='color:blue;'>" + "Details of record are; " + "</p>");  out.print("<p style='color:blue;'>Student ID : " + myStudent.getStuno() + "</p>");  out.print("<p style='color:blue;'>Name : " + myStudent.getName() + "</p>");  out.print("<p style='color:blue;'>Program : " + myStudent.getProgram() + "</p>");  }  // Step 5: Close database connection  myConnection.close();  System.out.println("Database connection is closed..!");  } catch (Exception e) {  e.printStackTrace();  out.print("<p style='color:red;'>Error: " + e.getMessage() + "</p>");  }  %>  </body>  </html> |

Student.java

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| package lab6.com;  import java.util.regex.Matcher;  import java.util.regex.Pattern;  public class Student {  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 re-enter!";  if(bl) {  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;  }  } |

errorStudent.jsp

|  |
| --- |
| <%--  Document : errorStudent  Created on : 15 Jun 2024, 8:34:06 pm  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>errorStudent</title>  </head>  <body>  <form id="errorFrm" action="insertStudent.jsp" method="post">  <p>Error occur when inserting record...!</p>  <p>Error Message: ${exception.getMessage()}</p>  <br>  </form>  </body>  </html> |

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**TASK 4 : PERFORM RETRIEVING RECORDS VIA JSP PAGE**

queryStudent.jsp

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| <%@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>Lab 6 - Task 4 : Retrieving record vis JSP page </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>");  %>  <%  Class.forName("com.mysql.cj.jdbc.Driver");  System.out.println("Step 1: MySQL driver loaded...!");  String myURL = "jdbc:mysql://localhost:3306/lab6\_csm3023";  Connection myConnection = DriverManager.getConnection(myURL, "root", "admin");  System.out.println("Step 2: Database is connected...!");  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>");  }  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> |

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**TASK 5 : CREATE RECORD USING JSP MODEL 1**

registerMarathon.jsp

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| <%--  Document : registerMarathon  Created on : 15 Jun 2024, 9:04:17 pm  Author : Nur Ezreena  --%>  <%@ page contentType="text/html" pageEncoding="UTF-8" %>  <!DOCTYPE html>  <html lang="en">  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <meta name="viewport" content="width=device-width, initial-scale=1.0">  <title>Marathon Registration</title>  <style>  body {  font-family: Arial, sans-serif;  line-height: 1.6;  margin: 0;  padding: 0;  display: flex;  flex-direction: column;  min-height: 100vh;  }  h1 {  text-align: center;  margin-top: 20px;  }  fieldset {  margin: 20px auto;  padding: 20px;  border: 2px solid #ccc;  max-width: 400px;  }  table {  width: 100%;  }  td {  padding: 10px;  }  label {  display: block;  margin-bottom: 5px;  }  input[type="text"], select {  width: 100%;  padding: 8px;  box-sizing: border-box;  }  button {  padding: 10px 15px;  background-color: #007BFF;  color: white;  border: none;  cursor: pointer;  }  button[type="reset"] {  background-color: #DC3545;  }  button:hover {  opacity: 0.9;  }  footer {  text-align: center;  margin-top: auto;  padding: 10px;  background: #f1f1f1;  }  </style>  </head>  <body>  <h1>Marathon Registration</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" required>  </td>  </tr>  <tr>  <td>  <label for="name">Name</label>  </td>  <td>  <input type="text" id="name" name="name" placeholder="Enter your name" required>  </td>  </tr>  <tr>  <td>  <label for="category">Category</label>  </td>  <td>  <select id="category" name="category" required>  <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 colspan="2" style="text-align: center;">  <br>  <button type="submit" value="Submit">Submit</button>  <button type="reset" value="Reset">Cancel</button>  </td>  </tr>  </table>  </form>  </fieldset>    </body>  </html> |

processMarathon.jsp

|  |
| --- |
| <%--  Document : processMarathon  Created on : 15 Jun 2024, 9:06:22 pm  Author : Nur Ezreena  --%>  <%@ 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>Marathon Registration Result</title>  <style>  body {  font-family: Arial, sans-serif;  line-height: 1.6;  margin: 0;  padding: 20px;  }  p {  margin: 10px 0;  }  footer {  text-align: center;  margin-top: 20px;  padding: 10px;  background: #f1f1f1;  }  </style>  </head>  <body>  <h1>Marathon Registration Result</h1>  <jsp:useBean id="myMarathon" class="lab6.com.Marathon" scope="request"/>  <jsp:setProperty name="myMarathon" property="\*"/>  <%  int result;  Database myDB = new Database();  MarathonDAO marathonDAO = new MarathonDAO();  try {  // Add the records  result = marathonDAO.addDetails(myMarathon);  // Check if the transaction is successful  if (result > 0) {  out.print("<p style='color:green;'>Record with IC No " + myMarathon.getIcno() + " successfully created!</p>");  out.print("<p>Details of the 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 style='color:red;'>There was an error! Maybe you have already registered before?</p>");  }  } catch (Exception e) {  e.printStackTrace();  out.print("<p style='color:red;'>An error occurred while processing your registration. Please try again later.</p>");  } finally {  // Close the database connection  myDB.closeConnection();  }  %>  </body>  </html> |

Marathon.java

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| /\*  \* 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  \*/  package lab6.com;  /\*\*  \*  \* @nur ezreena  \*/  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

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| /\*  \* 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  \*/  package lab6.com;  import java.sql.Connection;  import java.sql.DriverManager;  import java.sql.SQLException;  public class Database {  private static Connection myConnection = null;  private static final String myURL = "jdbc:mysql://localhost:3306/lab6\_csm3023";  public static Connection getConnection() throws ClassNotFoundException, SQLException {  if (myConnection != null && !myConnection.isClosed()) {  return myConnection;  } else {  try {  Class.forName("com.mysql.cj.jdbc.Driver");  myConnection = DriverManager.getConnection(myURL, "root", "admin");  } catch (ClassNotFoundException | SQLException e) {  e.printStackTrace();  throw e; // Rethrow the exception to handle it at a higher level if needed  }  return myConnection;  }  }  public void closeConnection() {  try {  if (myConnection != null && !myConnection.isClosed()) {  myConnection.close();  }  } catch (SQLException e) {  e.printStackTrace();  }  }  } |

MarathonDAO.java

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| /\*  \* 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  \*/  package lab6.com;  import java.sql.Connection;  import java.sql.PreparedStatement;  import java.sql.SQLException;  public class MarathonDAO {  private Connection connection;  private int result = 0;  public MarathonDAO() throws ClassNotFoundException, SQLException {  connection = Database.getConnection();  }  public int addDetails(Marathon marathon) {  PreparedStatement preparedStatement = null;  try {  String mySQL = "INSERT INTO marathon(icno, name, category) VALUES (?, ?, ?)";  preparedStatement = connection.prepareStatement(mySQL);  // Set parameters for the PreparedStatement  preparedStatement.setString(1, marathon.getIcno());  preparedStatement.setString(2, marathon.getName());  preparedStatement.setString(3, marathon.getCategory());  // Execute the query  result = preparedStatement.executeUpdate();  } catch (SQLException e) {  e.printStackTrace();  } finally {  // Close PreparedStatement in finally block to ensure it always gets closed  if (preparedStatement != null) {  try {  preparedStatement.close();  } catch (SQLException e) {  e.printStackTrace();  }  }  }  return result;  }  // Ensure to close the connection when the DAO is no longer needed  public void closeConnection() {  if (connection != null) {  try {  connection.close();  } catch (SQLException e) {  e.printStackTrace();  }  }  }  } |

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**EXERCISE**

insertUser.html

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| <!DOCTYPE html>  <html lang="en">  <head>  <meta charset="UTF-8">  <meta name="viewport" content="width=device-width, initial-scale=1.0">  <title>User Registration</title>  </head>  <body>  <h1>User Registration</h1>  <fieldset>  <legend>User Registration</legend>  <form action="processUser.jsp" method="post">  <table>  <tr>  <td><label for="username">Username</label></td>  <td><input type="text" id="username" name="username" placeholder="Enter a username" required></td>  </tr>  <tr>  <td><label for="password">Password</label></td>  <td><input type="password" id="password" name="password" placeholder="Enter a password" required></td>  </tr>  <tr>  <td><label for="firstname">Firstname</label></td>  <td><input type="text" id="firstname" name="firstname" placeholder="E.g.: Jamal" required></td>  </tr>  <tr>  <td><label for="lastname">Lastname</label></td>  <td><input type="text" id="lastname" name="lastname" placeholder="E.g.: bin Abdullah" required></td>  </tr>  <tr>  <td><br></td>  <td>  <button type="submit">Submit</button>  <button type="reset">Cancel</button>  </td>  </tr>  </table>  </form>  </fieldset>  </body>  </html> |

processUser.jsp

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| <%@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>Exercise</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/lab6\_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

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| <%@page contentType="text/html" pageEncoding="UTF-8"%>  <!DOCTYPE html>  <html>  <head>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  <title>Exercise - User Login</title>  </head>  <body>  <h1>Login</h1>  <fieldset>  <legend>User Login</legend>  <form action="doLogin.jsp" method="post">  <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">Submit</button></td>  <td><button type="reset">Cancel</button></td>  </tr>  </table>  </form>  </fieldset>  <%  String errorMessage = request.getParameter("error");  if (errorMessage != null && !errorMessage.isEmpty()) {  %>  <p style="color: red"><%= errorMessage %></p>  <%  }  %>  </body>  </html> |

doLogin.jsp

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| <%@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>Exercise</title>  </head>  <body>  <h1>Login</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/lab6\_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

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| <%--  Document : main  Created on : 15 Jun 2024, 9:37:00?pm  Author : Nur Ezreena  --%>  <%@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>Exercise</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>  <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> |

User.java

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| 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;  }  } |

**Output:**











