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**UNIVERSITI MALAYSIA TERENGGANU**



**CSM3023 -PEMBANGUNAN APLIKASI BERASASKAN WEB**

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

**LAB 2 – Servlet: Data Sharing and Database Management**

**SEMESTER 2 2023/2024**



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**Task 1 : Data Sharing in Servlet**

**AccountServlet.java**

|  |
| --- |
| import java.io.IOException;  import java.io.PrintWriter;  import java.util.HashMap;  import jakarta.servlet.ServletException;  import jakarta.servlet.http.HttpServlet;  import jakarta.servlet.http.HttpServletRequest;  import jakarta.servlet.http.HttpServletResponse;  /\*\*  \*  \* Nur Ezreena  \*/  public class AccountServlet extends HttpServlet {  HashMap<String,String[]> account = new HashMap();    @Override  public void init() throws ServletException{  super.init();  account.put("Ali", new String[]{"31/01/2019: 2000.00","28/02/2019: 3000.00"});  account.put("Ahmad", new String[]{"31/01/2019: 100.00","28/02/2019: 5000.00"});  account.put("Muthu", new String[]{"31/01/2019: 1000","28/02/2019: 2000"});  }      protected void processRequest(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  response.setContentType("text/html;charset=UTF-8");    String userid\_login = (String)request.getAttribute("userid");    try (PrintWriter out = response.getWriter()) {  out.println("<!DOCTYPE html>");  out.println("<html>");  out.println("<head>");  out.println("<title>Servlet AccountServlet</title>");  out.println("</head>");  out.println("<body>");    if (account.get(userid\_login) == null){  out.println("<h1>Sorry, no information found!</h1>");  }  else{  out.println("<h1>Account status for: " +userid\_login+"</h1>");  for(String tempAcc: account.get(userid\_login)){  out.println("<h2>" +tempAcc+ "</h2>");  }  }  out.println("</body>");  out.println("</html>");  }  } |

**LoginServlet.Java**

|  |
| --- |
| import jakarta.servlet.RequestDispatcher;  import jakarta.servlet.ServletContext;  import java.io.IOException;  import java.util.HashMap;  import jakarta.servlet.ServletException;  import jakarta.servlet.http.HttpServlet;  import jakarta.servlet.http.HttpServletRequest;  import jakarta.servlet.http.HttpServletResponse;  /\*\*  \*  \* @Nur Ezreena  \*/  public class LoginServlet extends HttpServlet {  HashMap <String,String> users = new HashMap();    @Override  public void init() throws ServletException{  super.init();  users.put("Ali", "1234");  users.put("Ahmad", "4567");  users.put("Muthu", "8910");  }  protected void processRequest(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  response.setContentType("text/html;charset=UTF-8");    String username = request.getParameter("txtUsername");  String password = request.getParameter("txtPassword");    if(!username.equals(" ") && !password.equals(" ")  && users.get(username).equals(password)){  request.setAttribute("userid", username);  ServletContext sc = getServletContext();  RequestDispatcher rd = sc.getRequestDispatcher("/AccountServlet");  rd.forward(request,response);  }else{  //avoid direct access to the servlet  RequestDispatcher rd = request.getRequestDispatcher("/login.html");  rd.forward(request,response);  }    } |

**Login.html**

|  |
| --- |
| <html>  <head>  <title>Login Page</title>  <meta charset="UTF-8">  <meta name="viewport" content="width=device-width, initial-scale=1.0">  <style>  body{  background-color: black;  text-align: lefft;  color:white;  font-family: Arial,Helvetica,sans-serif;  }  </style>  </head>  <body>  <h1>WELCOME TO CSF3107</h1>  <p>Please insert your username and password</p>    <form name="login" id="login" action="LoginServlet" method="POST" autocomplete="off">  Username:<input name="txtUsername" type="text"><br>  Password:<input name="txtPassword" type="text"><br>  <br>  <input name="btnlogin" value="Login" type="submit">  <input name="txtReset" value="Reset" type="reset"><br><!-- comment -->  </form>  <p><br><!-- comment -->  </p><!-- comment -->  </body>  </html> |

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**Task 2 : Creating A Table in MySQL Database**

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**Task 3 : Setting the Environment of Web Application for Database Connection**

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**Task 4 : Using Servlets for Database CRUD Operations**

**Index.html**

|  |
| --- |
| <!DOCTYPE html>  <html>  <head>  <title>Start Page</title>  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">  </head>  <body>  <h1>Add New User</h1>  <form action="SaveServlet" method="post">    <table>  <tr><td>Username:</td><td><input type="text" name="name"/></td></tr>  <tr><td>Password:</td><td><input type="password" name="password"/></td></tr>  <tr><td>Role:</td><td>  <select name="role" style="width:150px">  <option>admin</option>  <option>user</option>  </select>  </<td></tr>  <tr><td colspan="2"><input type="submit" value="Save User"/></td></tr>  </table>  </form>    <br/>  <a href="ViewServlet">view users</a>    </body>  </html> |

**DeleteServlet.java**

|  |
| --- |
| 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;  /\*\*  \*  \* @Nur Ezreena  \*/  public class DeleteServlet extends HttpServlet {  protected void processRequest(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  response.setContentType("text/html;charset=UTF-8");  String sid = request.getParameter("id");  int id = Integer.parseInt(sid);  UserDao.delete(id);  response.sendRedirect("ViewServlet");  } |

**EditServlet.java**

|  |
| --- |
| 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;  /\*\*  \*  \* @Nur Ezreena  \*/  public class EditServlet extends HttpServlet {  protected void processRequest(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  response.setContentType("text/html;charset=UTF-8");  PrintWriter out = response.getWriter();  out.println("<h1>Update User</h1>");  String sid = request.getParameter("id");  int id = Integer.parseInt(sid);    User e = UserDao.getUserById(id);    out.print("<form action='EditServlet2' method='post'>");  out.print("<table>");  out.print("<tr><td></td><td><input type='hidden' name='id' value='"  + e.getId() + "'></td></tr>"  );  out.print("<tr><td>Name:</td><td><input type='text' name='username' value='"  + e.getUsername() + "'></td></tr>"  );  out.print("<tr><td>Password:</td><td><input type='password' name='password' value='"  + e.getPassword() + "'></td></tr>"  );  out.print("<tr><td>Role:</td><td>");  out.print("<select name='role' style='width:150px'>");  out.print("<option>Admin</option>");  out.print("<option>User</option>");  out.print("</select>");  out.print("</td></tr>");  out.print("<tr><td colspan='2'><input type='submit' value='Edit & Save'></td></tr>");  out.print("</table></form>");    out.close();  } |

**EditServlet2.java**

|  |
| --- |
| 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;  /\*\*  \*  \* @Nur Ezreena  \*/  public class EditServlet2 extends HttpServlet {  protected void processRequest(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  response.setContentType("text/html;charset=UTF-8");  PrintWriter out = response.getWriter();    int id = Integer.parseInt(request.getParameter("id"));  String username = request.getParameter("username");  String password = request.getParameter("password");  String role = request.getParameter("role");    User e = new User();  e.setId(id);  e.setUsername(username);  e.setPassword(password);  e.setRole(role);    int status = UserDao.update(e);  if (status > 0) {  out.print("<p>Record saved successfully!</p>");  request.getRequestDispatcher("index.html").include(request, response);  }  else {  out.println("Sorry! Unable to save record");  }    out.close();  } |

**SaveServlet.java**

|  |
| --- |
| 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;  /\*\*  \*  \* @Nur Ezreena  \*/  public class SaveServlet extends HttpServlet {  protected void processRequest(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  response.setContentType("text/html;charset=UTF-8");  PrintWriter out = response.getWriter();    String name = request.getParameter("name");  String password = request.getParameter("password");  String role = request.getParameter("role");    User e = new User();  e.setUsername(name);  e.setPassword(password);  e.setRole(role);    int status = UserDao.save(e);  if (status > 0) {  out.print("<p>Record saved successfully!</p>");  request.getRequestDispatcher("index.html").include(request, response);  }  else {  out.println("Sorry! Unable to save record.");  }    out.close();  } |

**User.java**

|  |
| --- |
| /\*\*  \*  \* @Nur Ezreena  \*/  public class User {    private int id;  private String username, password, role;  public int getId() {  return id;  }  public void setId(int id) {  this.id = id;  }  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 getRole() {  return role;  }  public void setRole(String role) {  this.role = role;  }    } |

**UserDao.java**

|  |
| --- |
| import java.util.\*;  import java.sql.\*;  public class UserDao {    public static Connection getConnection() {  Connection con = null;  try {  Class.forName("com.mysql.jdbc.Driver");  con = DriverManager.getConnection("jdbc:mysql://localhost:3306/csm\_3023", "root", "admin");  }  catch (Exception e) {  System.out.println(e);  }  return con;  }    public static int save(User e) {  int status = 0;  try {  Connection con = UserDao.getConnection();  PreparedStatement ps = con.prepareStatement(  "INSERT INTO users(username, password, roles) VALUES (?, ?, ?)"  );  ps.setString(1, e.getUsername());  ps.setString(2, e.getPassword());  ps.setString(3, e.getRole());    status = ps.executeUpdate();    con.close();  } catch (Exception ex) {  ex.printStackTrace();  }    return status;  }    public static int update(User e) {  int status = 0;  try {  Connection con = UserDao.getConnection();  PreparedStatement ps = con.prepareStatement(  "UPDATE users SET username = ?, password = ?, roles = ? WHERE id = ?"  );  ps.setString(1, e.getUsername());  ps.setString(2, e.getPassword());  ps.setString(3, e.getRole());  ps.setInt(4, e.getId());    status = ps.executeUpdate();    con.close();  } catch (Exception ex) {  ex.printStackTrace();  }    return status;  }    public static int delete(int id) {  int status = 0;    try {  Connection con = UserDao.getConnection();  PreparedStatement ps = con.prepareStatement(  "DELETE FROM users WHERE id = ?"  );  ps.setInt(1, id);    status = ps.executeUpdate();    con.close();  } catch (Exception ex) {  ex.printStackTrace();  }    return status;  }    public static User getUserById(int id) {  User e = new User();    try {  Connection con = UserDao.getConnection();  PreparedStatement ps = con.prepareStatement(  "SELECT \* FROM users WHERE id = ?"  );  ps.setInt(1, id);  ResultSet rs = ps.executeQuery();  if (rs.next()) {  e.setId(rs.getInt(1));  e.setUsername(rs.getString(2));  e.setPassword(rs.getString(3));  e.setRole(rs.getString(4));  }    con.close();  } catch (Exception ex) {  ex.printStackTrace();  }    return e;  }    public static List<User> getAllUsers() {  List<User> list = new ArrayList<User>();    try {  Connection con = UserDao.getConnection();  PreparedStatement ps = con.prepareStatement(  "SELECT \* FROM users"  );  ResultSet rs = ps.executeQuery();  while (rs.next()) {  User e = new User();  e.setId(rs.getInt(1));  e.setUsername(rs.getString(2));  e.setPassword(rs.getString(3));  e.setRole(rs.getString(4));  list.add(e);  }  con.close();  } catch (Exception ex) {  ex.printStackTrace();  }    return list;  }    } |

**ViewServlet.java**

|  |
| --- |
| 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.List;  /\*\*  \*  \* @Nur Ezreena  \*/  public class ViewServlet extends HttpServlet {  protected void processRequest(HttpServletRequest request, HttpServletResponse response)  throws ServletException, IOException {  response.setContentType("text/html;charset=UTF-8");  PrintWriter out = response.getWriter();  out.println("<a href='index.html'>Add New User</a>");  out.println("<h1>User List</h1>");    List<User> list = UserDao.getAllUsers();    out.print("<table border='1' width='100%'>");  out.print("<tr><th>Id</th><th>Name</th><th>Password</th><th>Role</th><th>Edit</th><th>Delete</th>");  for (User e : list) {  out.print("<tr><td>" + e.getId() + "</td><td>" + e.getUsername() + "</td><td>"  + e.getPassword() + "</td><td>" + e.getRole() + "</td><td><a href='EditServlet?id="  + e.getId() + "'>Edit</a></td><td><a href='DeleteServlet?id="  + e.getId() + "'>Delete</a></td></tr>"  );  }  out.print("</table>");    out.close();  } |

Output:

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Add:

A screenshot of a computer

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View user:

Screens screenshot of a computer

Description automatically generated

Edit:

A screenshot of a computer

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Delete:

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