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Skill-11 Servlets and JDBC

1. Simple Calculator Using Servlet

Mr. John kong is programmer working the company he gets order to prepare the simple calculator application using servlet. perform the simple calculations like addition, subtraction, multiplication, division, modular.

The operations have to be done in maven dynamic web project as follows:

- a. Design UI (VIEW) using html to get inputs from the user.
- b. Create a Calculator (MODEL) class and implement the above-mentioned operations.
- c. Create a servlet (CONTROLLER) and interact with model and view

index.html

```
<html>
```

```
<head>
```

```
<title>Calculator App</title>
```

```
</head>
```

```
<body>
```

```
<form action="CalculatorServlet" method="post" >
```

Enter First Number <input type="text" name="txtN1" >
 Enter Second Number <input type="text" name="txtN2" >
 Select an Operation

```
<input type="radio" name="opr" value="+">ADDTION
```

```
<input type="radio" name="opr" value="*">MULTIPLY <input type="radio" name="opr" value="/">DIVIDE
```

```
<input type="radio" name="opr" value="-"> Substraction
```

```
<br> <input type="reset">
```

```
<input type="submit" value="Calculate" >
```

```
</form>
```

```
</body>
```

```
</html>
```

```
Caluculator.java
```

```
package mypack;
```

```
import java.io.IOException;
```

```
import java.io.PrintWriter;
```

```
import javax.servlet.ServletException;
```

```
import javax.servlet.http.HttpServlet;
```

```
import javax.servlet.http.HttpServletRequest;
```

```
import javax.servlet.http.HttpServletResponse;
```

```
public class CalculatorServlet extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse response)

        throws ServletException, IOException { response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();

        out.println("<html><head><title>Servlet CalculatorServlet</title></head><body>");           double
        n1 = Double.parseDouble(request.getParameter("txtN1"));

        double n2 = Double.parseDouble(request.getParameter("txtN2"));

        double result =0;

        String opr=request.getParameter("opr");

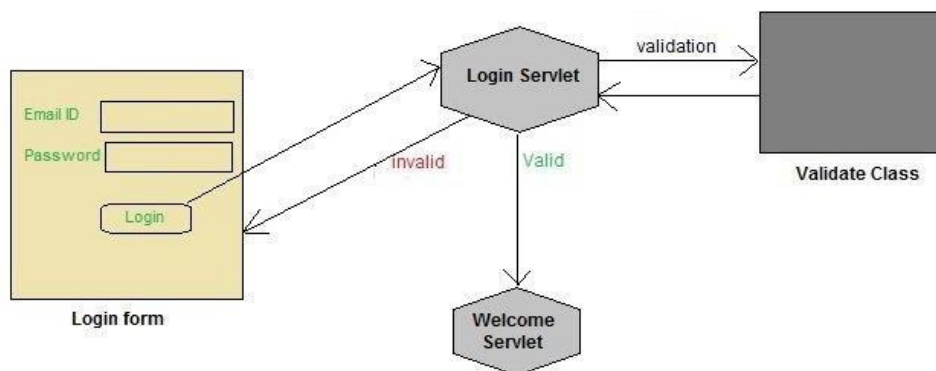
        if(opr.equals("+")) result=n1+n2;
        if(opr.equals("-")) result=n1-n2;
        if(opr.equals("*")) result=n1*n2;
        if(opr.equals("/")) result=n1/n2;

        out.println("<h1> Result = "+result);
        out.println("</body></html>");
    }

}
```

2. Login System

Problem is to develop a login form using servlet.



To try this application, you will need to create a table in your database and enter some record into it. Refer the previous Lesson for creating table.

List of files to be created are:

- index.html
- Login.java
- Validate.java
- Welcome.java
- web.xml

Solution:

index.html

```
<html>

  <head>

    <title>login form</title>

  </head>

  <body>

    <form method="post" action="login">

      Email ID:<input type="text" name="email" /><br/>

      Password:<input type="text" name="pass" /><br/>

      <input type="submit" value="login" />

    </form>

  </body>

</html>
```

Login.java

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;
import java.sql.*;

public class Login extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {

        response.setContentType("text/html;charset=UTF-8");

        PrintWriter out = response.getWriter();

        String email = request.getParameter("email");
        String pass = request.getParameter("pass");

        if(Validate.checkUser(email, pass))
```

```

{
    RequestDispatcher rs = request.getRequestDispatcher("Welcome");
    rs.forward(request, response);
}
else
{
    out.println("Username or Password incorrect");
    RequestDispatcher rs = request.getRequestDispatcher("index.html");
    rs.include(request, response);
}
}
}

```

Validate.java

```

import java.sql.*;

public class Validate {
    public static boolean checkUser(String email,String pass)
    {
        boolean st =false;
        try {

            //loading drivers for mysql
            Class.forName("com.mysql.jdbc.Driver");

            //creating connection with the database
            Connection con = DriverManager.getConnection("jdbc:mysql:/
localhost:3306/test","root","studytonight");

            PreparedStatement ps = con.prepareStatement("select * from register where email=? and
pass=?");

            ps.setString(1, email);
            ps.setString(2, pass);

```

```

        ResultSet rs =ps.executeQuery();

        st = rs.next();

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

```

Welcome.java

```

import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;
import java.sql.*;

public class Welcome extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        out.println("Welcome user");
    }
}

```

Web.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<web-app version="3.0" xmlns="http://java.sun.com/xml/ns/javaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/javaee http://java.sun.com/xml/ns/javaee/web-
app_3_0.xsd" >

```

```
<servlet>

    <servlet-name>login</servlet-name>

    <servlet-class>Login</servlet-class>

</servlet>

<servlet>

    <servlet-name>Welcome</servlet-name>

    <servlet-class>Welcome</servlet-class>

</servlet>

<servlet-mapping>

    <servlet-name>login</servlet-name>

    <url-pattern>/login</url-pattern>

</servlet-mapping>

<servlet-mapping>

    <servlet-name>Welcome</servlet-name>

    <url-pattern>/Welcome</url-pattern>

</servlet-mapping>

</web-app>
```

3. Employee Form

Develop an application to connect to a PostgreSQL database with a JDBC driver to retrieve Employee Name, Salary, and Date_of_Joining details.

JDBCExample2.java

```
package com.mkyong.jdbc;
```

```
import com.mkyong.jdbc.model.Employee;
```

```
import java.math.BigDecimal;
```



```
import java.sql.*;

import java.util.ArrayList;

import java.util.List;


public class JDBCExample2 {


    public static void main(String[] args) {


        List<Employee> result = new ArrayList<>();


        String SQL_SELECT = "Select * from EMPLOYEE";


        // auto close connection and preparedStatement
        try (Connection conn = DriverManager.getConnection(
            "jdbc:postgresql://127.0.0.1:5432/test", "postgres", "password");
            PreparedStatement preparedStatement = conn.prepareStatement(SQL_SELECT)) {


            ResultSet resultSet = preparedStatement.executeQuery();


            while (resultSet.next()) {


                long id = resultSet.getLong("ID");
                String name = resultSet.getString("NAME");
                BigDecimal salary = resultSet.getBigDecimal("SALARY");
                Timestamp createdAt = resultSet.getTimestamp("CREATED_DATE");


                Employee obj = new Employee();
                obj.setId(id);
                obj.setName(name);
                obj.setSalary(salary);
                // Timestamp -> LocalDateTime
```

```

        obj.setCreatedDate(createdDate.toLocalDateTime());

        result.add(obj);

    }

    result.forEach(x -> System.out.println(x));

} catch (SQLException e) {

    System.err.format("SQL State: %s\n%s", e.getSQLState(), e.getMessage());

} catch (Exception e) {

    e.printStackTrace();

}

}

}

```

Employee.java

```

package com.mkyong.jdbc.model;

import java.math.BigDecimal;

import java.time.LocalDateTime;

public class Employee {

    private Long id;

    private String name;

    private BigDecimal salary;

    private LocalDateTime createdDate;}

```

```
CREATE TABLE EMPLOYEE
(
  ID serial,
  NAME varchar(100) NOT NULL,
  SALARY numeric(15, 2) NOT NULL,
  CREATED_DATE timestamp with time zone NOT NULL DEFAULT CURRENT_TIMESTAMP
  PRIMARY KEY (ID)
);
```