Practical 1
Title : - Implementing Simple Servlet applications.
Theory :-

- IOException : This is the core package of the Java Debug Interface (JDI), it defines mirrors for values, types, and the target VirtualMachine itself - as well bootstrapping facilities. This package defines connections between the virtual machine using the JDI and the target virtual machine.
- PrintWriter : It is a class used to write any form of data e.g. int, float, double, String or Object in the form of text either on the console or in a file in Java.
- javax.servlet.ServletException : Defines an exception that a servlet or filter throws to indicate that it is permanently or temporarily unavailable.
- javax.servlet.http.HttpServlet : Provides an abstract class to be subclassed to create an HTTP servlet suitable for a Web site. Methods - doGet, doPost, doPut, doDelete, init and destroy, getServletInfo

1a. Create a simple calculator application using servlet.

index.html

```
<html>
<head>
<title>calculator App</title>
</head>
<body>
<form method="post" action ="CalculatorServlet">
        Enter First Number <input type="text" name="txtN1"><br>
        Enter Second Number <input type="text" name="txtN2"><br>
        Select an Operation
<input type="radio" name="opr" value="+">ADDITION
<input type="radio" name="opr" value="-">SUBSTRACTION
<input type="radio" name="opr" value="*">MULTIPLY
<input type="radio" name="opr" value="/">DIVIDE
<input type="reset">
<input type="submit" value="Calculate">

</form>

</body>
</html>
```

CalculatorServlet.java

```
package Mypack;

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.annotation.*;
import jakarta.servlet.annotation.WebServlet;
@WebServlet("/CalculatorServlet")
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>");} }
```

1b. Create a servlet for a login page. If the username and password are correct then it says message "Hello <username>" else a message "login failed"

index.html

```
<html>
<head>
<title>Login Form</title>
</head>
<form action="LoginServlet">
      Enter User ID<input type="text" name="txtId"><br>
      Enter Password<input type="password" name="txtPass"><br>
<input type="reset">
<input type="submit" value=" Click to Login " >
</form>
</html>
```

LoginServlet.java

```
package MyPack;

import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
@WebServlet(name = "LoginServlet", urlPatterns = {"/LoginServlet"})
public class LoginServlet extends HttpServlet {
@Override
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 LoginServlet</title></head>");
String uname = request.getParameter("txtId");
String upass = request.getParameter("txtPass");
if(uname.equals("admin") &&upass.equals("12345")){
out.println("<body bgcolor=blue >");
out.println("<h1> Welcome !!! "+uname+"</h1>");
}
else{
out.println("<body bgcolor=red >");out.println("<h1> Login Fail !!! </h1>");
}
out.println("</body></html>");}}
```

1c. Create a registration servlet in Java using JDBC. Accept the details such as Username, Password, Email, and Country from the user using HTML Form and store the registration details in the database.

Index.html

```
<html>
<head>
<title>Registration Page</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
<form action="RegisterServlet" >
<H1>Welcome to Registration page</H1>
 Enter User Name <input type="text" name="txtUid"><br>
 Enter Password <input type="password" name="txtPass"><br>
 Enter Email <input type="text" name="txtEmail" ><br>
 Enter Country <input type="text" name="txtCon" ><br>
<input type="reset" ><input type="submit" value="REGISTER" >
</form>

</body>
</html>
```

The @WebServlet annotation in Java is used to declare a servlet and configure its deployment directly in the code, rather than in the web.xml deployment descriptor.

RegisterServlet.java

```
package MyPack;
importjava.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.ServletException;
importjakarta.servlet.annotation.WebServlet;
importjakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import java.sql.*;

@WebServlet(name = "RegisterServlet", urlPatterns = {"/RegisterServlet"})
public class RegisterServlet extends HttpServlet {
    @Override
  public void doGet(HttpServletRequest request, HttpServletResponse response)
 throws ServletException, IOException {
response.setContentType("text/html;charset=UTF-8");
PrintWriter out = response.getWriter();
 String id = request.getParameter("txtUid");
 String ps = request.getParameter("txtPass");
 String em = request.getParameter("txtEmail");
 String co = request.getParameter("txtCon");
 String url = "jdbc:mysql://localhost:3306/logindb?autoReconnect=true&useSSL=false";
String username = "root";
String password = "tiger";
 try{
Class.forName("com.mysql.cj.jdbc.Driver");
    Connection con = DriverManager.getConnection(url,username,password);
```

```
PreparedStatementpst = con.prepareStatement("insert into user values(?,?,?,?)");
pst.setString(1,id);
pst.setString(2,ps);
pst.setString(3,em);
pst.setString(4,co);
pst.executeUpdate();
out.println("<h1> Inserted Succesfullyyyyy</h1>");
 }catch(ClassNotFoundException | SQLException e){out.println(e);}
}
}
```