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43139 BE-9 R9 CL-9

**Assignment 1 C**

Power Calculation: Design a distributed application which consist of a client server communication using TCP, UDP & RMI techniques in Java. Multiple clients can simultaneously connect to the server and send messages of the format -> (a, b) where a and bare integers and server returns the value a^b (a raised to b).

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**// Power Calculation: using RMI**

**// PowInterface.java**

// Creating a PowInterface interface

import java.rmi.Remote;

import java.rmi.RemoteException;

public interface PowInterface extends Remote {

// Declaring the method prototype

public double pow(double x, double y) throws RemoteException;

}

**// Impl.java**

// Java program to implement the PowInterface

import java.rmi.\*;

import java.rmi.server.\*;

import java.lang.Math;

public class Impl extends UnicastRemoteObject

implements PowInterface

{

// Default constructor to throw RemoteException

// from its parent constructor

public Impl() throws Exception { super(); }

// Implementation of the PowInterface,

public double pow(double x, double y) { return Math.pow(x, y); }

}

**// Client.java**

// Program for client application

import java.rmi.\*;

import java.util.\*;

public class Client {

public static void main(String[] args) throws Exception

{

Scanner sc = new Scanner(System.in);

while (true) {

// User Menu

System.out.println(

"\n1.Power function\n2.Exit");

System.out.println("Enter the option:");

int opt = sc.nextInt();

if (opt == 2) {

break;

}

System.out.println(

"Enter the the first number:");

double a = sc.nextDouble();

System.out.println("Enter the second number:");

double b = sc.nextDouble();

double n;

// lookup method to find reference of remote

// object

PowInterface obj

= (PowInterface)Naming.lookup("POW");

n = obj.pow(a, b);

System.out.println(a + " raised to " + b + " = " + n);

}

}

}

**// Server.java**

// Program for server application

import java.rmi.\*;

import java.rmi.registry.\*;

public class Server {

public static void main(String[] args) throws Exception

{

// Create an object of the interface implementation class

Impl obj = new Impl();

// Binds the remote object by the name POW

Naming.rebind("POW", obj);

System.out.println("Server Started");

}

}

Graphical user interface

Description automatically generated