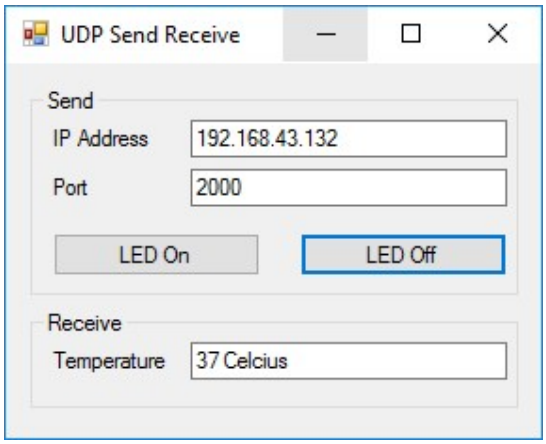
Praktikum UDP Client Server

1. Buatlah program pada Wemos seperti berikut ini !

```
#include <ESP8266WiFi.h>
#include <WiFiUdp.h>

const char* ssid = "xxxxx";
const char* password = "xxxxxx";

WiFiUDP Udp;
unsigned int localUdpPort = 2000;  // UDP Port yang dibuka pada sisi Wemos
char incomingPacket[255];         // Variabel untuk menampung data yang diterima, dalam bentuk
byte array
char sendPacket[10];              // Variabel untuk mengirim data

unsigned long previousMillis = 0;
const long interval = 1000;

void setup()
{
 pinMode(LED_BUILTIN, OUTPUT);
 digitalWrite(LED_BUILTIN, 1);
 Serial.begin(115200);
 Serial.println();
 // Koneksi ke WiFi
 Serial.printf("Connecting to %s ", ssid);
 WiFi.begin(ssid, password);
 while (WiFi.status() != WL_CONNECTED)
 {
  delay(500);
  Serial.print(".");
 }
 Serial.println(" connected");
 // Membuka akses UDP Port
 Udp.begin(localUdpPort);
 Serial.printf("Now listening at IP %s, UDP port %d\n", WiFi.localIP().toString().c_str(),
localUdpPort);
}


void loop()
{
 int packetSize = Udp.parsePacket();
 // Jika ada data yang masuk
 if (packetSize)
 {
```

```
  Serial.printf("Received %d bytes from %s, port %d\n", packetSize,
Udp.remoteIP().toString().c_str(), Udp.remotePort());
  int len = Udp.read(incomingPacket, 255);
  if (len > 0)
  {
   incomingPacket[len] = 0;
  }
  Serial.printf("UDP packet contents: %s\n", incomingPacket);
  // Convert byte array ke string
  String data(incomingPacket);
  // Cek data
  if (data.equals("On")) {
   digitalWrite(LED_BUILTIN, 0);
  }
  else if (data.equals("Off")) {
   digitalWrite(LED_BUILTIN, 1);
  }
 }

 unsigned long currentMillis = millis();
 // Kirim data tiap 1 second
 if (currentMillis - previousMillis >= interval) {
  previousMillis = currentMillis;
  // Generate data random
  String tempVal = String(random(0, 100));
  // Convert string ke byte array
  tempVal.toCharArray(sendPacket, 10);
  // Kirim data ke IP dan Port Tujuan
  Udp.beginPacket("192.168.43.50", 2000);
  Udp.write(sendPacket);
  Udp.endPacket();
 }
}
```

2. Buatlah aplikasi pada C# dengan tampilan dan sourcecode seperti berikut ini !



```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Threading;
using System.Net;
using System.Net.Sockets;


namespace UDP_Send_Receive
{
    public partial class Form1 : Form
    {
        Thread thdUDPServer;
        public Form1()
        {
            InitializeComponent();
        }
        private void Form1_Load(object sender, EventArgs e)
        {
            thdUDPServer = new Thread(new ThreadStart(serverThread));
            thdUDPServer.Start();
        }
        public void serverThread()
        {
            UdpClient udpClient = new UdpClient(2000);
            while (true)
            {
                IPEndPoint RemoteIpEndPoint = new IPEndPoint(IPAddress.Any, 0);
                Byte[] receiveBytes = udpClient.Receive(ref RemoteIpEndPoint);
                string returnData = Encoding.ASCII.GetString(receiveBytes);
                Invoke(new Action(() => textBoxTemp.Text = returnData + " Celcius"));
            }
        }
        private void buttonLedOn_Click(object sender, EventArgs e)
        {
            UdpClient udpClient = new UdpClient();
            udpClient.Connect(textBoxIP.Text, Int32.Parse(textBoxPort.Text));
            Byte[] senddata = Encoding.ASCII.GetBytes("On");
            udpClient.Send(senddata, senddata.Length);
        }
        private void buttonLedOff_Click(object sender, EventArgs e)
        {
            UdpClient udpClient = new UdpClient();
            udpClient.Connect(textBoxIP.Text, Int32.Parse(textBoxPort.Text));
            Byte[] senddata = Encoding.ASCII.GetBytes("Off");
            udpClient.Send(senddata, senddata.Length);
        }
        private void Form1_FormClosing(object sender, FormClosingEventArgs e)
        {
            thdUDPServer.Abort();
            Application.Exit();
        }
    }
}
```

3. Jalankan kedua device dan lakukan ujicoba dengan mengaktifkan LED pada wemos dengan aplikasi Anda !