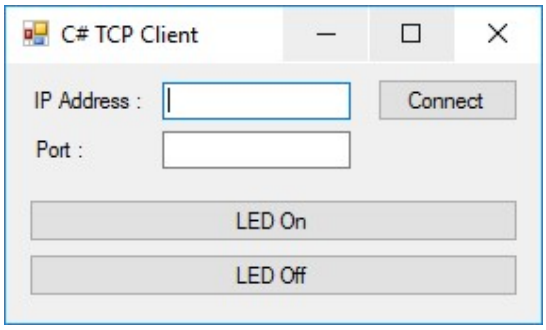
MODUL PRAKTIKUM KOMUNIKASI TCP/IP

1. Buatlah program TCP server pada Wemos dengan menggunakan Arduino IDE

```
#include <ESP8266WiFi.h>
#include <WiFiClient.h>
#include <WiFiServer.h>

#define PORT 2000

WiFiClient client;
WiFiServer server(PORT);

char c;
String message;

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

void setup()
{
 pinMode(LED_BUILTIN, OUTPUT);
 digitalWrite(LED_BUILTIN, HIGH);
 Serial.begin(115200);
 Serial.println("Wemos TCP Server");
 Serial.print("Listening Port : ");
 Serial.println(PORT);
 delay(100);

 // Koneksi ke akses point
 WiFi.begin(ssid, password);
 Serial.println("Connecting to Access Point ...");
 // Tunggu sampai terkoneksi
 while(WiFi.status() != WL_CONNECTED) {
  delay(500);
  Serial.print(".");
 }

 // Tampilkan IP Address Wemos
 Serial.println("");
 Serial.print("Connected to ");
 Serial.println(ssid);
 Serial.print("IP address: ");
 Serial.println(WiFi.localIP());

 // Start TCP Server
 server.begin();
}
```

```
void loop()
{
 if (!client.connected()) {
  // Tunngu koneksi dari client
  client = server.available();
 }
 // Client terkoneksi
 while (client.connected()) {
  // Tampilkan data dari client ke serial port
  if (client.available()) {
   while (client.available() > 0) {
    c = (char)client.read();
    //Serial.print(c);
    message += c;
    if (message.equals("on")) {
     digitalWrite(LED_BUILTIN, LOW);
     //Serial.println("LED ON");
    }
    else if (message.equals("off")) {
     digitalWrite(LED_BUILTIN, HIGH);
     //Serial.println("LED OFF");
    }
   }
  }
  message = "";
 }
}
```

2. Buatlah program TCP client menggunakan C# dengan tampilan 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.Net.Sockets;
using System.Net;
using System.IO;
```

```
namespace TCP_Client
{
   public partial class Form1 : Form
   {
      TcpClient tcpclient;
      public Form1()
      {
         InitializeComponent();
      }

      private void Form1_Load(object sender, EventArgs e)
      {
         tcpclient = new TcpClient();
      }

      private void buttonConnect_Click(object sender, EventArgs e)
      {
         bool err = false;

         try
         {

            tcpclient.Connect(textBoxIP.Text, Int32.Parse(textBoxPort.Text));
         }
         catch (Exception ex)
         {
            MessageBox.Show(ex.ToString());
            err = true;
         }

         if (!err)
         {
            buttonConnect.Enabled = false;
         }

      }

      private void buttonLedOn_Click(object sender, EventArgs e)
      {
         try
         {
            Stream tcpData = tcpclient.GetStream();
            ASCIIEncoding asen = new ASCIIEncoding();
            String data = "on";
            byte[] ba = asen.GetBytes(data);
            tcpData.Write(ba, 0, ba.Length);
         }
         catch (Exception err)
         {
            MessageBox.Show(err.ToString());
```

```
        }
    }

    private void buttonLedOff_Click(object sender, EventArgs e)
    {
        try
        {
            Stream tcpData = tcpclient.GetStream();
            ASCIIEncoding asen = new ASCIIEncoding();
            String data = "off";
            byte[] ba = asen.GetBytes(data);
            tcpData.Write(ba, 0, ba.Length);
        }
        catch (Exception err)
        {
            MessageBox.Show(err.ToString());
        }
    }
  }
}
```

Lakukan pengujian dengan melakukan koneksi ke Wemos dan mencoba untuk menyalakan dan mematikan LED.