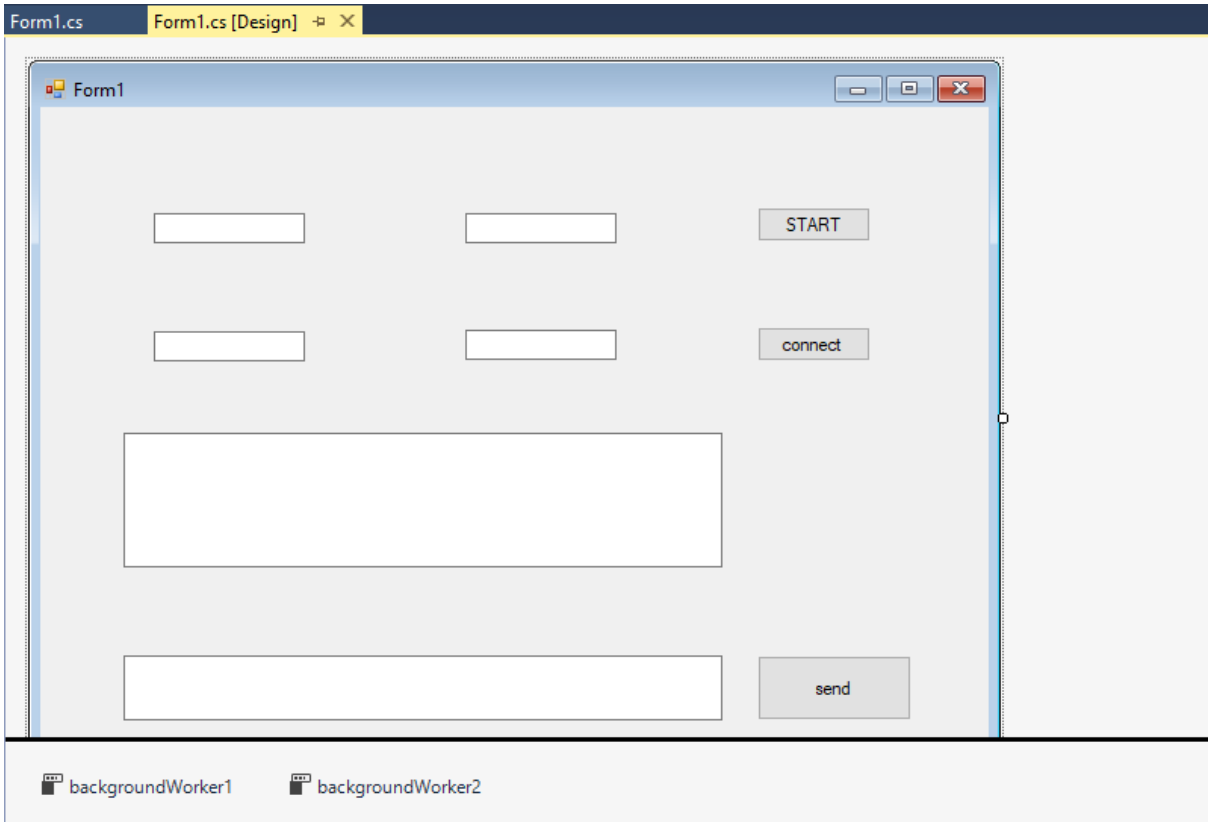
Kabeer Ahmed SE-19028

LAB 10

A Socket is an End-Point of To and From (Bidirectional) communication link between two programs (Server Program and Client Program) running on the same network . We need two programs for communicating a socket application in C#. A Server Socket Program (Server) and a Client Socket Program (Client).
So let's develop a Client Server Windows Forms C# application (chat application). First let's create this Windows Form:



TextBoxes names : ServerIPtextBox, ServerPorttextBox, ClientIPtextBox, ClientPorttextBox, ChatScreentextBox, MessagetextBox.
Then add two BackgroundWorker to the project.

And add these namespaces to the project:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;
using System.Net;
using System.Net.Sockets;
using System.IO;
namespace WindowsFormsApplication1
{
```

```
    public partial class Form1 : Form
    {
```

After that, declare these variables:

```
        private TcpClient client;
        public StreamReader STR;
        public StreamWriter STW;
        public string recieve;
        public String TextToSend;

        public Form1()
        {
            InitializeComponent();

            IPAddress[] localIP = Dns.GetHostAddresses(Dns.GetHostName());

            foreach (IPAddress address in localIP)
            {
                if (address.AddressFamily == AddressFamily.InterNetwork)
                {
                    ServerIPtextBox.Text = address.ToString();
                }
            }

        }
```

In StartButton click event add this code:

```
        private void button1_Click(object sender, EventArgs e)
        {
            TcpListener listener = new TcpListener(IPAddress.Any,
int.Parse(ServerPorttextBox.Text));
            listener.Start();
            client = listener.AcceptTcpClient();
            STR = new StreamReader(client.GetStream());
            STW = new StreamWriter(client.GetStream());
            STW.AutoFlush = true;

            backgroundWorker1.RunWorkerAsync();
            backgroundWorker2.WorkerSupportsCancellation = true;

        }
```

In ConnectButton click event add this code:

```
        private void button2_Click(object sender, EventArgs e)
        {
            client = new TcpClient();
            IPEndPoint IpEnd = new IPEndPoint(IPAddress.Parse(ClientIPtextBox.Text),
int.Parse(ClientPorttextBox.Text));

            try
            {
                client.Connect(IpEnd);

                if (client.Connected)
                {
                    ChatScreentextBox.AppendText("Connected to server" + "\n");
                    STW = new StreamWriter(client.GetStream());
                    STR = new StreamReader(client.GetStream());
                    STW.AutoFlush = true;
                    backgroundWorker1.RunWorkerAsync();
                    backgroundWorker2.WorkerSupportsCancellation = true;
```

```
                }
            }
            catch (Exception ex)
            {
                MessageBox.Show(ex.Message.ToString());
            }
        }
```

In backgroundWorker1 DoWork event add this code:

```
        private void backgroundWorker1_DoWork(object sender, DoWorkEventArgs e)
        {
            while (client.Connected)
            {
                try
                {
                    recieve = STR.ReadLine();
                    this.ChatScreentextBox.Invoke(new MethodInvoker(delegate()
                    {
                        ChatScreentextBox.AppendText("You:" + recieve + "\n");
                    }));
                    recieve = "";
                }
                catch (Exception ex)
                {
                    MessageBox.Show(ex.Message.ToString());
                }
            }
        }
```

And in backgroundWorker2 DoWork event add this code:

```
        private void backgroundWorker2_DoWork(object sender, DoWorkEventArgs e)
        {
            if (client.Connected)
            {
                STW.WriteLine(TextToSend);
                this.ChatScreentextBox.Invoke(new MethodInvoker(delegate()
                {
                    ChatScreentextBox.AppendText("Me:" + TextToSend + "\n");
                }));
            }
            else
            {
                MessageBox.Show("Sending failed");
            }
            backgroundWorker2.CancelAsync();
        }
```

Finally in SendButton click event add this code:

```
        private void button3_Click(object sender, EventArgs e)
        {
            if (MessagetextBox.Text != "")
            {
                TextToSend = MessagetextBox.Text;
                backgroundWorker2.RunWorkerAsync();
            }
            MessagetextBox.Text = "";
        }
    }
}
```

Then let's run the application and open a second instance to it from (%project

directory%\bin\Debug). Open two instances for testing purposes in your computer, then give the IP address and Port number to the two instances. Then connect both Applications and start sending message

Finally this is our output: