윈도우 기반의 채팅 프로그램

모든 부분이 콘솔 부분의 채팅 프로그램과 유사하다. 한글 처리 부분과 쓰레드 처리 부분을
유심히 보도록 하자. 실행 화면은 다음과 같다.

[서버]
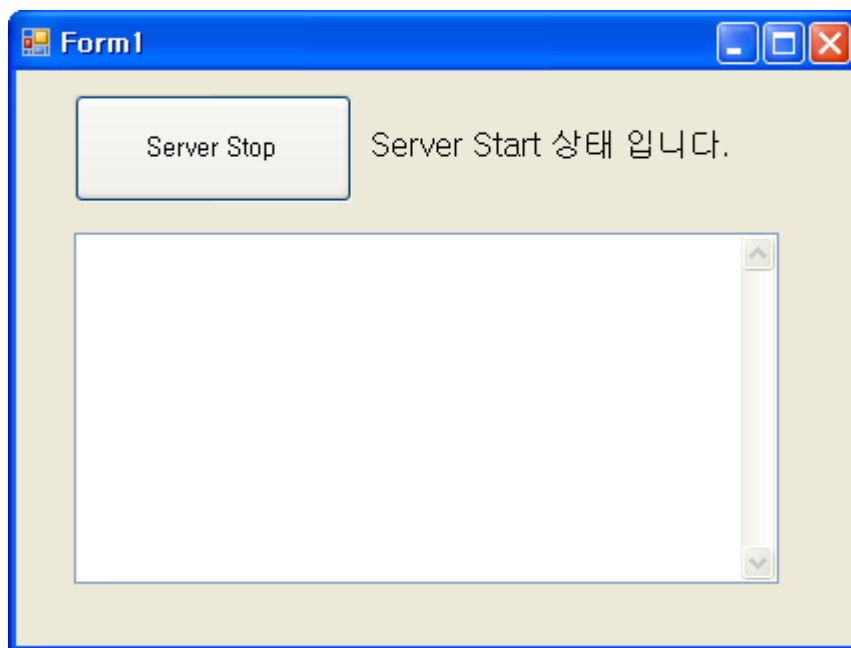
[클라이언트]
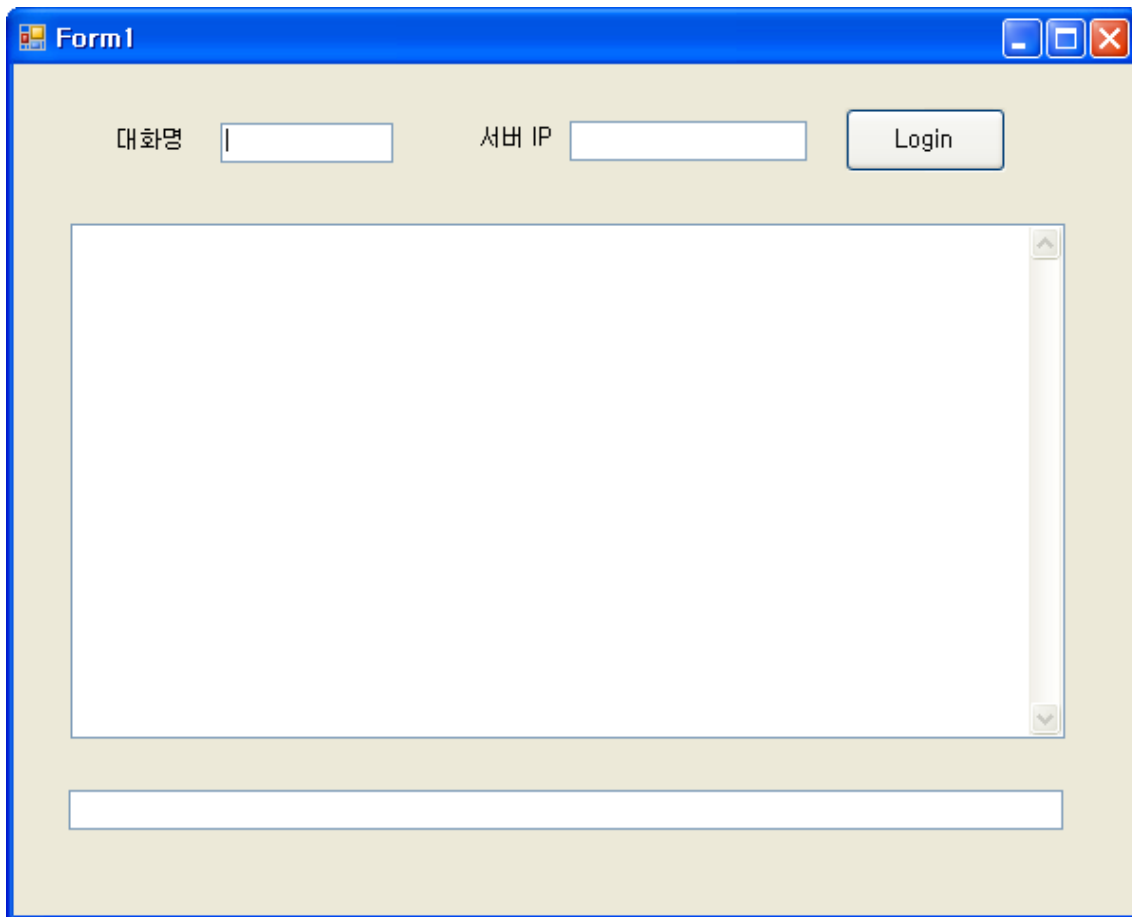
[*******************채팅 서버**************************]

1. 프로젝트명 : ChatServer

[Form1.Desigmer.cs]

```csharp
namespace ChatServer
{
    partial class Form1
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;
        /// <summary>
```

```csharp
/// Clean up any resources being used.
/// </summary>
/// <param name="disposing">true if managed resources should be disposed;
otherwise, false.</param>
protected override void Dispose(bool disposing)
{
    if (disposing && (components != null))
    {
        components.Dispose();
    }
    base.Dispose(disposing);
}
#region Windows Form Designer generated code
/// <summary>
/// Required method for Designer support - do not modify
/// the contents of this method with the code editor.
/// </summary>
private void InitializeComponent()
{
    this.cmd_Start = new System.Windows.Forms.Button();
    this.lbl_Message = new System.Windows.Forms.Label();
    this.txt_Chat = new System.Windows.Forms.TextBox();
    this.SuspendLayout();
    //
    // cmd_Start
    //
    this.cmd_Start.Location = new System.Drawing.Point(29, 12);
    this.cmd_Start.Name = "cmd_Start";
    this.cmd_Start.Size = new System.Drawing.Size(139, 54);
    this.cmd_Start.TabIndex = 0;
    this.cmd_Start.Text = "Server Start";
    this.cmd_Start.UseVisualStyleBackColor = true;
    this.cmd_Start.Click += new System.EventHandler(this.cmd_Start_Click);
    //
    // lbl_Message
    //
```

```csharp
            this.lbl_Message.AutoSize = true;
            this.lbl_Message.Font = new System.Drawing.Font("Gulim", 12F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point, ((byte)(129)));
            this.lbl_Message.Location = new System.Drawing.Point(174, 29);
            this.lbl_Message.Name = "lbl_Message";
            this.lbl_Message.Size = new System.Drawing.Size(186, 16);
            this.lbl_Message.TabIndex = 1;
            this.lbl_Message.Tag = "Stop";
            this.lbl_Message.Text = "Server 중지 상태 입니다.";
            //
            // txt_Chat
            //
            this.txt_Chat.Location = new System.Drawing.Point(29, 81);
            this.txt_Chat.Multiline = true;
            this.txt_Chat.Name = "txt_Chat";
            this.txt_Chat.ScrollBars = System.Windows.Forms.ScrollBars.Vertical;
            this.txt_Chat.Size = new System.Drawing.Size(352, 175);
            this.txt_Chat.TabIndex = 2;
            //
            // Form1
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(7F, 12F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(419, 287);
            this.Controls.Add(this.txt_Chat);
            this.Controls.Add(this.lbl_Message);
            this.Controls.Add(this.cmd_Start);
            this.Name = "Form1";
            this.Text = "Form1";
            this.FormClosed += new
System.Windows.Forms.FormClosedEventHandler(this.Form1_FormClosed);
            this.ResumeLayout(false);
            this.PerformLayout();
        }
        #endregion
        private System.Windows.Forms.Button cmd_Start;
```

```csharp
        private System.Windows.Forms.Label lbl_Message;
        private System.Windows.Forms.TextBox txt_Chat;
    }
}
```

[Form1.cs]

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

    //서버의 txt_Chat(텍스트박스)에 글을 쓰기위한 델리게이트
    //실제 글을 쓰는것은 Form1클래스의 쓰레드가 아닌 다른 스레드인 Chat_Class의 스
레드 이기에
    //(만약 컨트롤을 만든 쓰레드가 아닌 다른 스레드에서 텍스트박스에 글을 쓴다면 에러
발생)
    //Chat_Class의 스레드에서 이 델리게이트를 호출하여 텍스트 박스에 글을 쓴다.
    delegate void SetTextCallback(string s);

    public partial class Form1 : Form
    {
```

```csharp
TcpListener lit_Listener =
new TcpListener(IPAddress.Parse("192.168.0.13"), 5001);
public static ArrayList soketArray = new ArrayList();
public Form1()
{
    InitializeComponent();
}


//텍스트박스에 대화내용을 쓰는 메소드
public void SetText(string text)
{
    if (this.txt_Chat.InvokeRequired)
    {
        SetTextCallback d = new SetTextCallback(SetText);   //델리게이트 선언
        this.Invoke(d, new object[] { text });              //델리게이트로 글을
쓴다.
    }
    else
    {
        this.txt_Chat.AppendText(text);
    }
}


private void Form1_FormClosed(object sender, FormClosedEventArgs e)
{
    Application.Exit();
    lit_Listener.Stop();
}
private void cmd_Start_Click(object sender, EventArgs e)
{
    if (lbl_Message.Tag.ToString() == "Stop")
    {
        //Listener Start
        lit_Listener.Start();
        //Client로 부터 연결을 기다리는 Thread생성
        Thread thd_WaitSocket = new Thread(new ThreadStart(Wait_Socket));
```

```
            thd_WaitSocket.Start();
            lbl_Message.Text = "Server Start 상태 입니다.";
            lbl_Message.Tag = "Start";
            cmd_Start.Text = "Server Stop";
        }
        else
        {
            lit_Listener.Stop();
            foreach (Socket soket in Form1.soketArray)
            {
                soket.Close();
            }
            Form1.soketArray.Clear();
            lbl_Message.Text = "Server Stop 상태 입니다.";
            lbl_Message.Tag = "Stop";
            cmd_Start.Text = "Server Start";
        }
    }
    private void Wait_Socket()
    {
        Socket sktClient = null;
        while (true)
        {
            //Socket 생성 및 연결 대기
            try
            {
                //Client 연결을 기다린다.
                sktClient = lit_Listener.AcceptSocket();
                //Chatting을 실행하는 Class 인스턴스화시키고 Socket 할당
                Chat_Class cht_Class = new Chat_Class();
                cht_Class.Chat_Class_Setup(this, sktClient, this.txt_Chat);
                //Chatting을 실행하는Thread 생성
                Thread       thd_ChatProcess      =      new      Thread(new
ThreadStart(cht_Class.Chat_Process));
                thd_ChatProcess.Start();
            }
```

```csharp
            catch (System.Exception)
            {
                Form1.soketArray.Remove(sktClient); break;
            }
        }
    }
}




public class Chat_Class
{
    //한글 처리를 위해 Encod 정의
    private Encoding ecd_Encode = Encoding.GetEncoding("KS_C_5601-1987");
    //글자를 Display할 Object
    private System.Windows.Forms.TextBox txt_Chat;
    private Socket sktClient;
    private NetworkStream netStream;
    private StreamReader strReader;
    private Form1 form1;

    public void Chat_Class_Setup(Form1 form1, Socket sktClient,
System.Windows.Forms.TextBox txt_Chat)
    { //TextBox를 할당함.
        this.txt_Chat = txt_Chat; //Socket 을 할당함.
        this.sktClient = sktClient; //Network Stream을 생성
        this.netStream = new NetworkStream(sktClient);
        Form1.soketArray.Add(sktClient); //Stream Reader을 생성
        this.strReader = new StreamReader(netStream, ecd_Encode);
        this.form1 = form1;
    }
    public void Chat_Process()
    {
        while (true)
        {
            try
```

```csharp
            {
                //문자열을 받음
                string lstMessage = strReader.ReadLine();
                if (lstMessage != null && lstMessage != "")
                {
                    //Form1클래스의 SetText메소드를 호출
                    //SetText에서는 델리게이트를 통해 켁스트박스에 글을 쓴다.
                    form1.SetText(lstMessage + "₩r₩n");

                    //직접 다른 쓰레드의 TextBox에 값을 쓰면 오류 발생
                    //Cross-thread operation not valid: Control accessed from a
thread other than the thread it was created on
                    //this.txt_Chat.AppendText(lstMessage + "₩r₩n");

                    byte[] bytSand_Data = Encoding.Default.GetBytes(lstMessage
+ "₩r₩n");

                    ArrayList remove_soketArray = new ArrayList();
                    lock (Form1.soketArray)
                    {   foreach   (Socket   soket   in   Form1.soketArray)
{ NetworkStream stream = new NetworkStream(soket); stream.Write(bytSand_Data, 0,
bytSand_Data.Length); } }
                }
            }
            catch (System.Exception e)
            {
                MessageBox.Show(e.ToString());
                Form1.soketArray.Remove(sktClient);
                break;
            }
        }
    }
}
```

----

2. 프로젝트명 : ChatClient

[*****************채팅 클라이언트****************************]

[Form1.Designer.cs]

```csharp
namespace ChatClient
{
    partial class Form1
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;
        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed;
otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }
        #region Windows Form Designer generated code
        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.label1 = new System.Windows.Forms.Label();
```

```
this.txt_Name = new System.Windows.Forms.TextBox();
this.label2 = new System.Windows.Forms.Label();
this.txt_Server_IP = new System.Windows.Forms.TextBox();
this.txt_Chat = new System.Windows.Forms.TextBox();
this.txt_Msg = new System.Windows.Forms.TextBox();
this.cmd_Connect = new System.Windows.Forms.Button();
this.SuspendLayout();
//
// label1
//
this.label1.AutoSize = true;
this.label1.Location = new System.Drawing.Point(52, 34);
this.label1.Name = "label1";
this.label1.Size = new System.Drawing.Size(41, 12);
this.label1.TabIndex = 0;
this.label1.Text = "대화명";
//
// txt_Name
//
this.txt_Name.Location = new System.Drawing.Point(109, 31);
this.txt_Name.Name = "txt_Name";
this.txt_Name.Size = new System.Drawing.Size(91, 21);
this.txt_Name.TabIndex = 1;
//
// label2
//
this.label2.AutoSize = true;
this.label2.Location = new System.Drawing.Point(243, 33);
this.label2.Name = "label2";
this.label2.Size = new System.Drawing.Size(44, 12);
this.label2.TabIndex = 2;
this.label2.Text = "서버 IP";
//
// txt_Server_IP
//
this.txt_Server_IP.Location = new System.Drawing.Point(293, 30);
```

```csharp
this.txt_Server_IP.Name = "txt_Server_IP";
this.txt_Server_IP.Size = new System.Drawing.Size(125, 21);
this.txt_Server_IP.TabIndex = 3;
//
// txt_Chat
//
this.txt_Chat.Location = new System.Drawing.Point(30, 84);
this.txt_Chat.Multiline = true;
this.txt_Chat.Name = "txt_Chat";
this.txt_Chat.ScrollBars = System.Windows.Forms.ScrollBars.Vertical;
this.txt_Chat.Size = new System.Drawing.Size(524, 271);
this.txt_Chat.TabIndex = 4;
//
// txt_Msg
//
this.txt_Msg.Location = new System.Drawing.Point(29, 382);
this.txt_Msg.Name = "txt_Msg";
this.txt_Msg.Size = new System.Drawing.Size(524, 21);
this.txt_Msg.TabIndex = 5;
    this.txt_Msg.KeyPress                    +=                    new
System.Windows.Forms.KeyPressEventHandler(this.txt_Msg_KeyPress);
//
// cmd_Connect
//
this.cmd_Connect.Location = new System.Drawing.Point(438, 23);
this.cmd_Connect.Name = "cmd_Connect";
this.cmd_Connect.Size = new System.Drawing.Size(85, 34);
this.cmd_Connect.TabIndex = 6;
this.cmd_Connect.Text = "Login";
this.cmd_Connect.UseVisualStyleBackColor = true;
this.cmd_Connect.Click                    +=                new
System.EventHandler(this.cmd_Connect_Click);
//
// Form1
//
this.AutoScaleDimensions = new System.Drawing.SizeF(7F, 12F);
```

```csharp
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(590, 448);
            this.Controls.Add(this.cmd_Connect);
            this.Controls.Add(this.txt_Msg);
            this.Controls.Add(this.txt_Chat);
            this.Controls.Add(this.txt_Server_IP);
            this.Controls.Add(this.label2);
            this.Controls.Add(this.txt_Name);
            this.Controls.Add(this.label1);
            this.Name = "Form1";
            this.Text = "Form1";
            this.FormClosed                           +=                           new
System.Windows.Forms.FormClosedEventHandler(this.Form1_FormClosed);
            this.ResumeLayout(false);
            this.PerformLayout();

        }
        #endregion
        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.TextBox txt_Name;
        private System.Windows.Forms.Label label2;
        private System.Windows.Forms.TextBox txt_Server_IP;
        private System.Windows.Forms.TextBox txt_Chat;
        private System.Windows.Forms.TextBox txt_Msg;
        private System.Windows.Forms.Button cmd_Connect;
    }
}
```

[Form1.cs]

using System;

using System.Collections.Generic;

```csharp
using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Windows.Forms;

using System.IO;

using System.Net;

using System.Net.Sockets;

using System.Threading;




namespace ChatClient
{

    //클라이언트의 txt_Chat(텍스트박스)에 글을 쓰기위한 델리게이트
    //실제 글을 쓰는것은 Form1클래스의 쓰레드가 아닌 다른 스레드인 Chat_Class의 스
레드 이기에
    //(만약 컨트롤을 만든 쓰레드가 아닌 다른 스레드에서 텍스트박스에 글을 쓴다면 에러
발생)
    //Chat_Class의 스레드에서 이 델리게이트를 호출하여 서버에서 넘어오는 메시지를 쓴
다.
    delegate void SetTextCallback(string s);
```

```csharp
public partial class Form1 : Form
{

    public Form1()
    {

        InitializeComponent();

    }



    TcpClient tcpClient = null;

    NetworkStream ntwStream = null;

    //Chatting을 실행하는 Class 인스턴스화시킴

    Chat_Class cht_Class = new Chat_Class();



    private void Form1_FormClosed(object sender, FormClosedEventArgs e)
    {

        if (cmd_Connect.Text == "Login")
        {

            return;

        }

        Message_Snd("<" + txt_Name.Text + "> 님께서 접속해제 하셨습니다.",
false);
```

```csharp
            cht_Class.Chat_Close();

            ntwStream.Close();

            tcpClient.Close();

        }



        private void cmd_Connect_Click(object sender, EventArgs e)
        {

            if (cmd_Connect.Text == "Login")
            {

                try
                {

                    //IP Address 할당

                    IPAddress ipaAddress = IPAddress.Parse(txt_Server_IP.Text);

                    //TCP Client 선언

                    tcpClient = new TcpClient();

                    //TCP Client연결

                    tcpClient.Connect(ipaAddress, 5001);

                    //NetworkStream을 생성

                    ntwStream = tcpClient.GetStream();

                    //Stream과 txt_Chat 할당
```

```
                cht_Class.Chat_Class_Setup(this, ntwStream, this.txt_Chat);

                //Thread를 생성하고 Star시킴

                Thread        thd_Receive        =        new        Thread(new
ThreadStart(cht_Class.Chat_Process));

                thd_Receive.Start();

                Message_Snd("<" + txt_Name.Text + "> 님께서 접속 하셨습니다.",
true);

                cmd_Connect.Text = "Logout";

            }

            catch (System.Exception Err)
            {

                MessageBox.Show("Chatting Server 오류발생 또는 Start 되지 않았
거나\n\n" + Err.Message, "Client");

            }

        }

        else
        {

            Message_Snd("<" + txt_Name.Text + "> 님께서 접속해제 하셨습니다.",
false);

            cmd_Connect.Text = "Login";

            cht_Class.Chat_Close();
```

```csharp
            ntwStream.Close();

            tcpClient.Close();

        }

    }



private void txt_Msg_KeyPress(object sender, KeyPressEventArgs e)
{

    if (e.KeyChar == 13)
    {

        if (cmd_Connect.Text == "Logout")
        {

            Message_Snd("<" + txt_Name.Text + "> " + txt_Msg.Text, true);

        }

        txt_Msg.Text = "";

        e.Handled = true;

    }

}

//다른 스레드인 Chat_Class의 쓰레드에서 호출하는 함수
//txt_Chat 텍스트박스는 Chat_Class에서 생성한 것이 아니므로
//이 메소드를 호출하여 델리게이트를 통하여 서버에서 넘어오는 메시지를 쓴다.
public void SetText(string text)
```

```csharp
        {
            if (this.txt_Chat.InvokeRequired)
            {
                SetTextCallback d = new SetTextCallback(SetText);
                this.Invoke(d, new object[] { text });
            }
            else
            {
                this.txt_Chat.AppendText(text);
            }
        }

        private void Message_Snd(string lstMessage, Boolean Msg)
        {

            try
            {

                //보낼 데이터를 읽어 Default 형식의 바이트 스트림으로 변환 해서 전송

                string dataToSend = lstMessage + "₩r₩n";
                byte[] data = Encoding.Default.GetBytes(dataToSend);

                ntwStream.Write(data, 0, data.Length);

            }

            catch (System.Exception Err)
            {

                if (Msg == true)
                {

                    MessageBox.Show("Chatting Server가 오류발생 또는 Start 되지 않
았거나₩n₩n" + Err.Message, "Client");
```

```csharp
            cmd_Connect.Text = "Login";

            cht_Class.Chat_Close();

            ntwStream.Close();

            tcpClient.Close();

        }

    }

}


public class Chat_Class
{

    //한글 처리를 위해 Encod 정의

    private Encoding ecd_Encode = Encoding.GetEncoding("KS_C_5601-1987");

    //글자를 Display할 Object

    private System.Windows.Forms.TextBox txt_Chat;

    private NetworkStream netStream;

    private StreamReader strReader;

    private Form1 form1;
```

```csharp
        public void Chat_Class_Setup(Form1 form1, NetworkStream netStream,
System.Windows.Forms.TextBox txt_Chat)
        {

            //TextBox를 할당함.

            this.txt_Chat = txt_Chat;

            //Network Stream을 할당

            this.netStream = netStream;

            //Stream Reader을 생성

            this.strReader = new StreamReader(netStream, ecd_Encode);

            this.form1 = form1;

        }

        public void Chat_Process()
        {

            while (true)
            {

                try
                {

                    //문자열을 받음

                    string lstMessage = strReader.ReadLine();

                    if (lstMessage != null && lstMessage != "")
                    {
```

//SetText의 델리게이트를 이용하여 서버에서 넘어오는 메시지를 쓴다.

```
                form1.SetText(lstMessage + "\r\n");

                //아래처럼 직접쓰면 에러발생
                //this.txt_Chat.AppendText(lstMessage + "\r\n");

            }

        }

        catch (System.Exception)
        {

            break;

        }

    }

}


public void Chat_Close()
{

    netStream.Close();

    strReader.Close();

}


}
```

}