

W5100S Ethernet Shield User Guide

How to use the WIZnet Ethernet Library

<https://github.com/Wiznet/Ethernet.git>

Version 0.0.2



<http://www.wiznet.io>

Contents

1. Overview	4
2. Download	5
2.1 WIZnet Github	5
2.2 Clone or download.....	6
2.2 Download ZIP.....	6
3. Location	9
4. Example	10
4.1 ChatServer	10
4.2 Set Network.....	12
4.3 Uploading	13
4.4 Run.....	14

Figure

Figure 2-1 WIZnet Github	5
Figure 2-2 Clone or download	6
Figure 2-3 Download ZIP	6
Figure 2-4 Save	7
Figure 2-5 Downloading	7
Figure 2-6 Download Complete	8
Figure 3-1 Default user Libraries	9
Figure 3-2 Copy to default user Libraries	9
Figure 4-1 Arduino IDE	10
Figure 4-2 Ethernet ChatServer	11
Figure 4-3 ChatServer	12
Figure 4-4 Set Network	12
Figure 4-5 Uploading	13
Figure 4-6 Done Uploading	13
Figure 4-7 Run Serial Monitor	14
Figure 4-8 Serial Monitor	15
Figure 4-9 TCP Client mode Hercules	15
Figure 4-10 String from Client	16

1. Overview

Arduino Ethernet Shield의 사용자를 위해 Arduino¹는 배포하는 IDE에 Ethernet Library²를 포함하고 있다. 현재 배포되는 Arduino IDE는 ARDUINO 1.8.7³이며 포함된 Ethernet Library는 V2.0.0이다.

Ethernet Library V2.0.0은 기존 Arduino Ethernet Shield, Arduino Ethernet Shield 2를 함께 지원하며, 이를 위해 W5100/W5200/W5500을 모두 지원할 수 있도록 하였다. Arduino Ethernet Shield 2를 위한 Arduino Ethernet Library 2는 기존과 같이 W5500만을 지원하는 형태로 남았지만 Ethernet Library V2.0.0으로 사용 가능하다.

Ethernet Library V2.0.0은 Github⁴에서 개발되고 Release되며, W5100S를 지원할 수 있도록 WIZnet Github⁵에서 추가 개발하여 현재 Pull Request를 통한 Release를 준비 중 이다.

이 문서는 W5100S를 지원하는 Ethernet Library가 Arduino IDE에 포함되기 전, W5100S Ethernet Shield를 사용하는 사용자를 위해 WIZnet Github에서 Ethernet Library를 다운 받아 설치한 Arduino IDE에 적용하는 방법을 기술한다.

¹ <https://www.arduino.cc/>

² <https://www.arduino.cc/en/Reference/Ethernet>

³ <https://www.arduino.cc/en/Main/Software>

⁴ <https://github.com/arduino-libraries/Ethernet>

⁵ <https://github.com/Wiznet/Ethernet>

2. Download

WIZnet Github에는 Arduino Ethernet Library V2.0.0에서 Fork하여 W5100S를 지원할 수 있도록 개발한 Library가 있다. 아래와 같이 Download한다.

2.1 WIZnet Github

Internet Browser로 아래 주소에 접속한다. TortoiseGit과 Client를 통해 Download하여도 관계 없다.

주소 : <https://github.com/Wiznet/Ethernet>

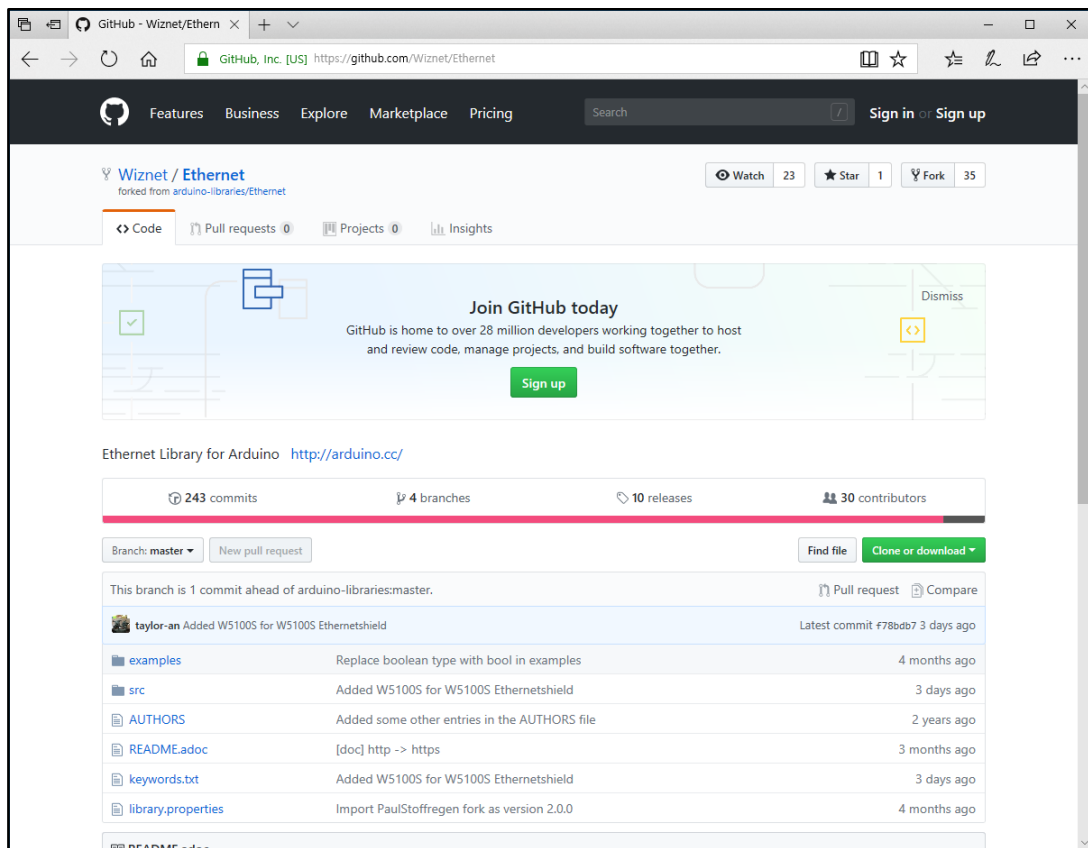


Figure 2-1 WIZnet Github

2.2 Clone or download

Clone or download를 선택 한다.

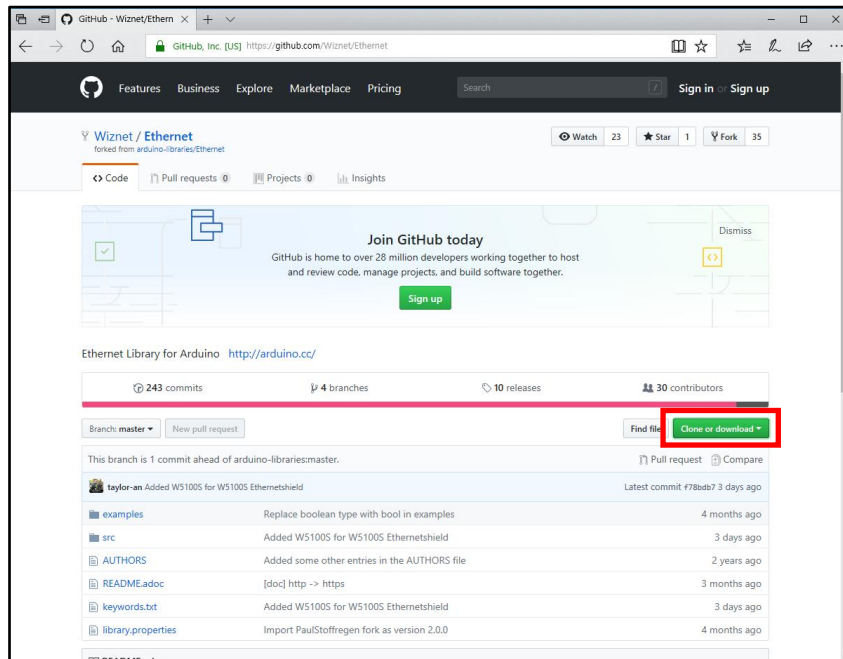


Figure 2-2 Clone or download

2.2 Download ZIP

Download ZIP을 선택하여 ZIP으로 압축된 Source Code를 저장한다.

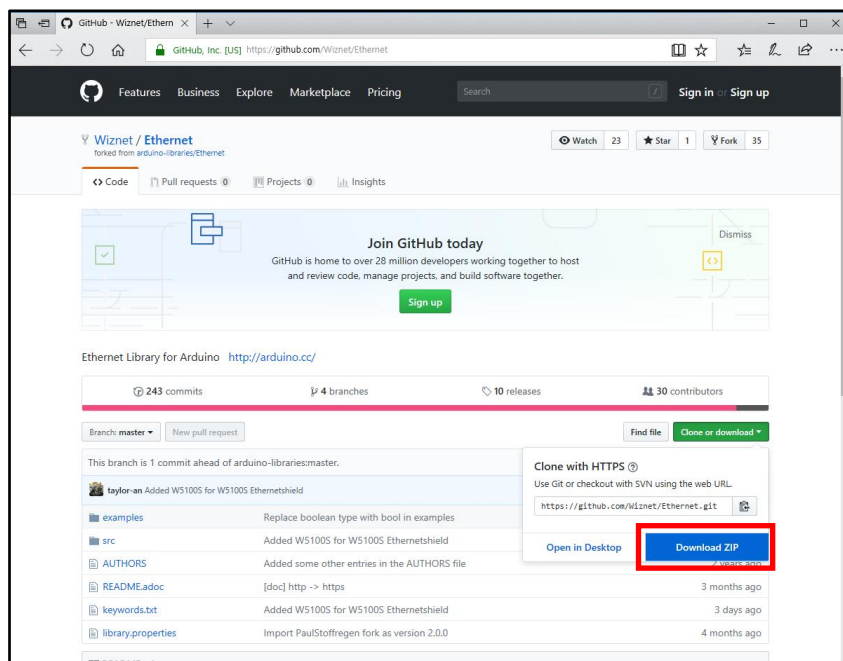


Figure 2-3 Download ZIP

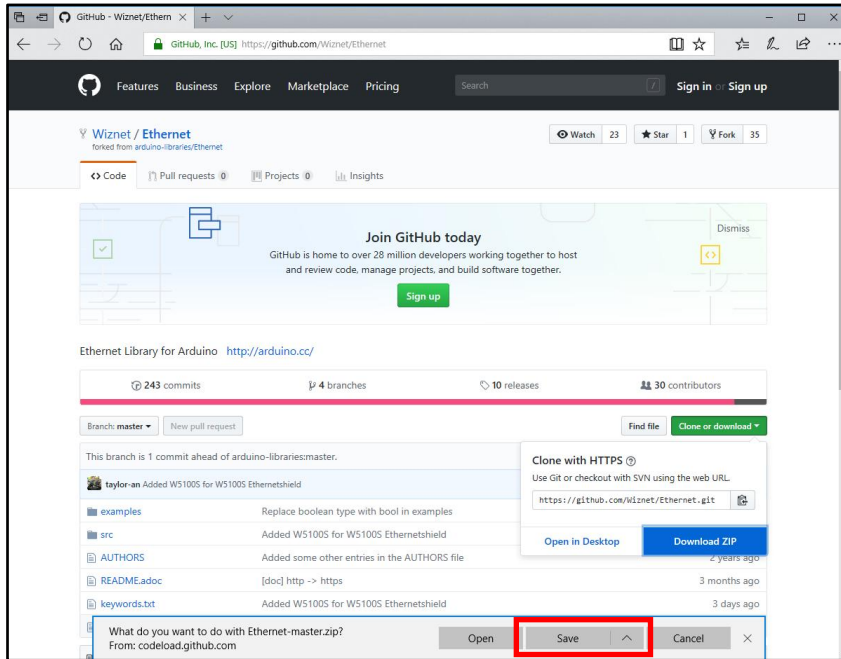


Figure 2-4 Save

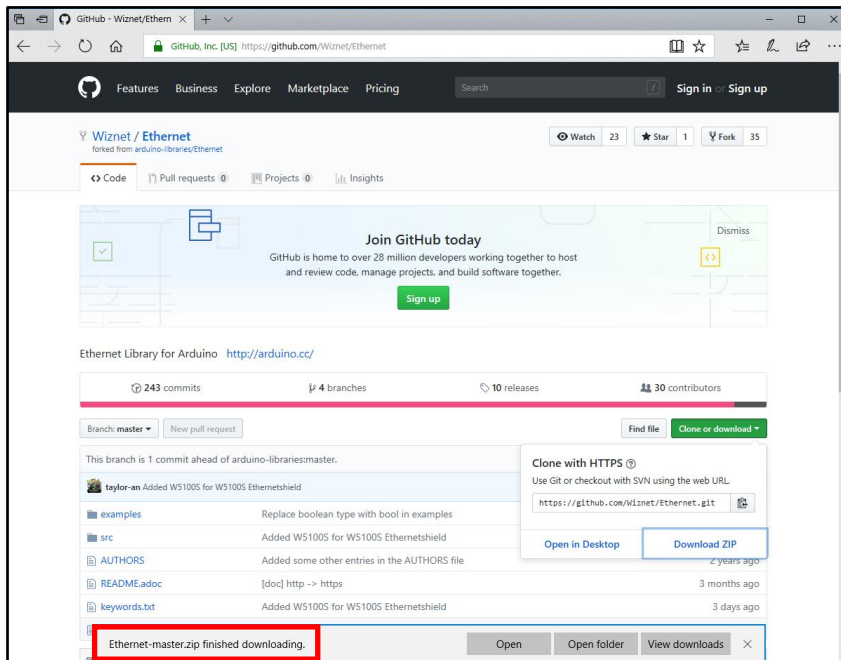


Figure 2-5 Downloading

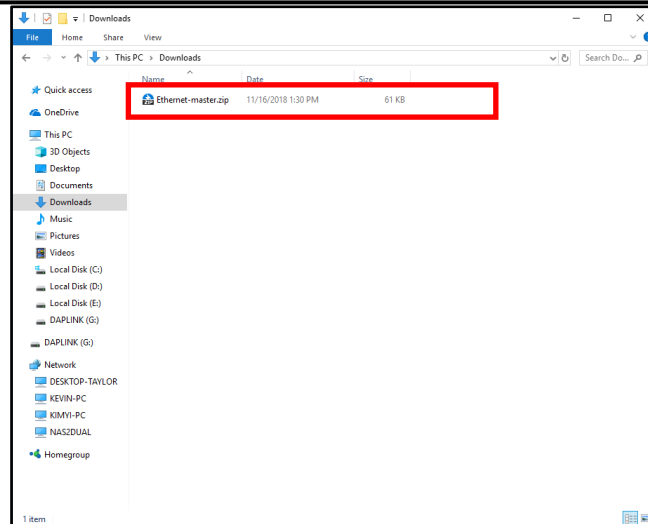


Figure 2-6 Download Complete

3. Location

Download한 Ethernet Library Source는 압축을 풀어 사용자의 Arduino Library directory에 복사한다.

경로는 일반적인 경우 다음과 같다.

“C:\Users\YOURID\Documents\Arduino\libraries”

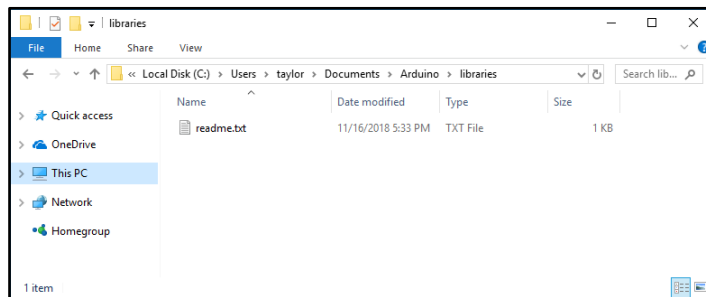


Figure 3-1 Default user Libraries

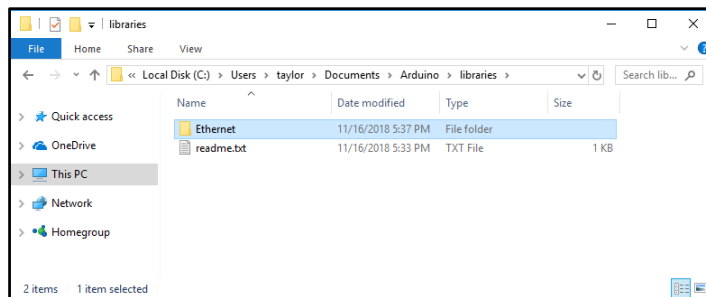


Figure 3-2 Copy to default user Libraries

4. Example

복사한 Ethernet Library는 Arduino IDE에서 Example을 실행하여 정상 동작을 확인할 수 있다. 아래는 Ethernet Library의 Example 중 ChatServer를 Arduino UNO Board에 W5100S Ethernet Shield로 실행한 예이다. 다른 Example은 Arduino Site⁶(RESOURCES > TUTORIAL > EXAMPLE FROM LIBRARYIES > Ethernet Library)를 참조하라.

4.1 ChatServer

Arduino IDE를 실행하여 File -> Examples -> Ethernet -> ChatServer를 선택 한다.

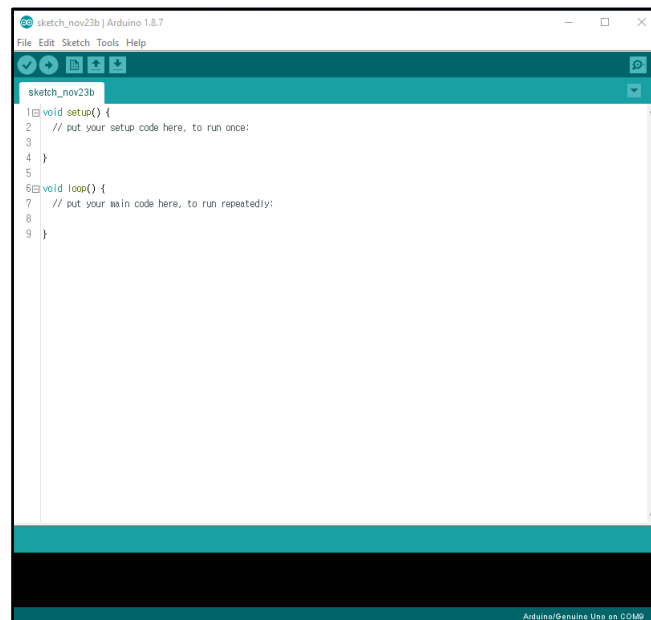


Figure 4-1 Arduino IDE

⁶ <https://www.arduino.cc/en/Tutorial/LibraryExamples>

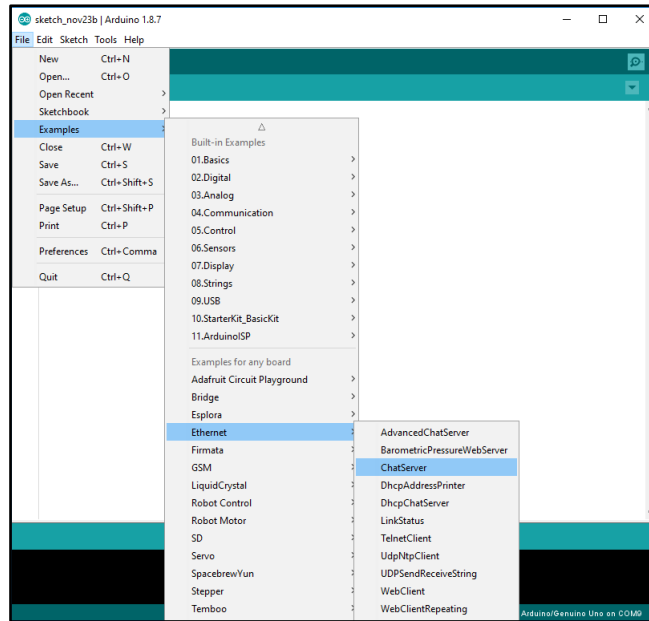


Figure 4-2 Ethernet ChatServer

4.2 Set Network

Chatserver Example을 실행하기 위해 사용자의 환경에 맞춰 W5100S Ethernet Shield의 Network(IP, DNS, GATEWAY, SUBNET, PORT)를 설정한다.

```

1  #include <SPI.h>
2  #include <Ethernet.h>
3
4  A simple server that distributes any incoming messages to all
5  connected clients. To use, telnet to your device's IP address and type.
6  You can see the client's input in the serial monitor as well.
7  Using an Arduino WIZnet Ethernet shield.
8
9  Circuit:
10 + Ethernet shield attached to pins 10, 11, 12, 13
11
12 created 10 Dec 2009
13 by David A. Mellis
14 modified 9 Apr 2012
15 by Tom Igoe
16
17 */
18
19 #include <SPI.h>
20 #include <Ethernet.h>
21
22 // Enter a MAC address and IP address for your controller below.
23 // The IP address will be dependent on your local network.
24 // gateway and subnet are optional:
25 byte mac[] = {
26   0xDE, 0xAD, 0xBE, 0xEF, 0xFE, 0xED };
27 IPAddress ip(192, 168, 0, 3);
28 //IPAddress ip(192, 168, 0, 1);
  
```

Figure 4-3 ChatServer

```

13 by David A. Mellis
14 modified 9 Apr 2012
15 by Tom Igoe
16
17 */
18
19 #include <SPI.h>
20 #include <Ethernet.h>
21
22 // Enter a MAC address and IP address for your controller below.
23 // The IP address will be dependent on your local network.
24 // gateway and subnet are optional:
25 byte mac[] = {
26   0xDE, 0xAD, 0xBE, 0xEF, 0xFE, 0xED };
27 IPAddress ip(192, 168, 0, 3);
28 IPAddress noDns(192, 168, 0, 1);
29 IPAddress gateway(192, 168, 0, 1);
30 IPAddress subnet(255, 255, 0, 0);
31
32 // telnet defaults to port 23
33 EthernetServer server(23);
34
35 boolean clientConnected = false; // whether or not the client was connected previously
36
37 void setup() {
38   // You can use Ethernet.init(pin) to configure the CS pin
39   //Ethernet.init(10); // Most Arduino shields
40   //Ethernet.init(5); // W5200 based shields
  
```

Figure 4-4 Set Network

4.3 Uploading

Network를 설정하고 Arduino Board에 Uploading한다. 사용자는 Uploading하기에 앞서 반드시 Board가 Arduino IDE에서 사용 가능한 상태인지 확인한다.

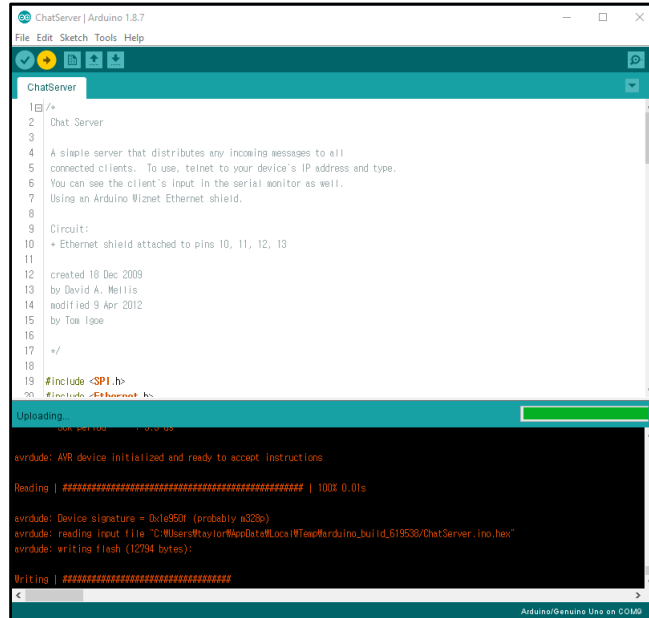


Figure 4-5 Uploading

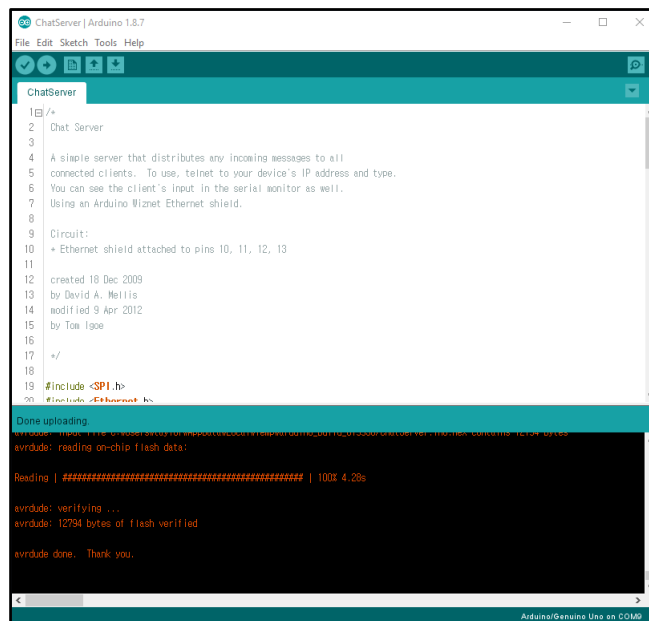


Figure 4-6 Done Uploading

4.4 Run

Example ChatServer는 Arduino Board가 EthernetShield를 사용하여 TCP Client에서 수신한 String을 Serial Monitor에 출력하고, TCP Client에 전송한다. Serial Monitor를 통해 TCP Client 접속과 수신한 String를 확인할 수 있다.

사용자는 TCP Client를 실행하여 설정한 Network 정보로 Arduino Board의 EthernetShield에 접속하고, String을 전송한다. 아래는 Hercules를 실행하여 TCP Client로 접속하고, String 'Hi'를 전송한 예이다.

'Figure 4-4 Set Network'에 따라 TCP Client가 접속할 Sever IP는 192.168.0.3이며, Port는 23이다.

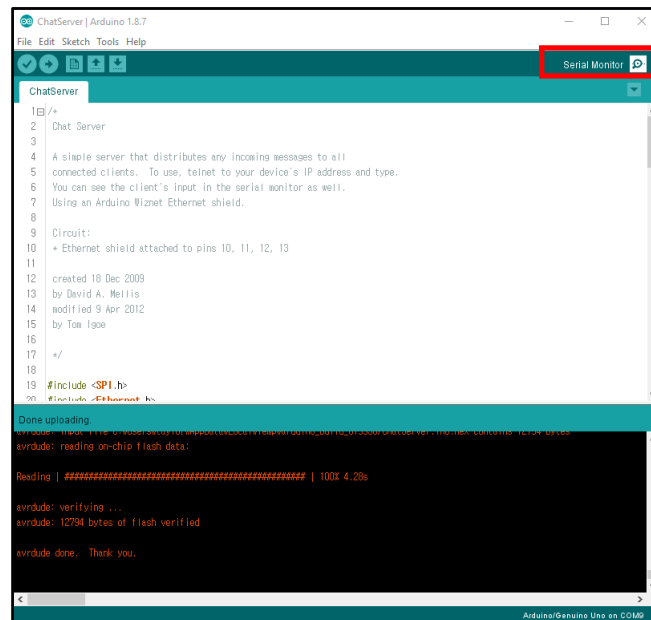


Figure 4-7 Run Serial Monitor

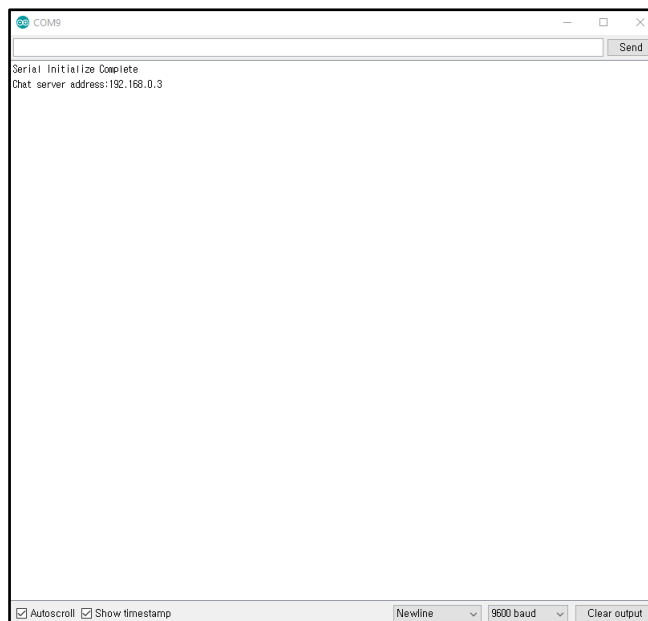


Figure 4-8 Serial Monitor

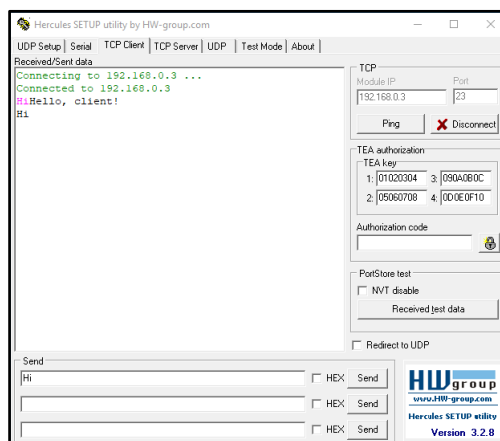


Figure 4-9 TCP Client mode Hercules

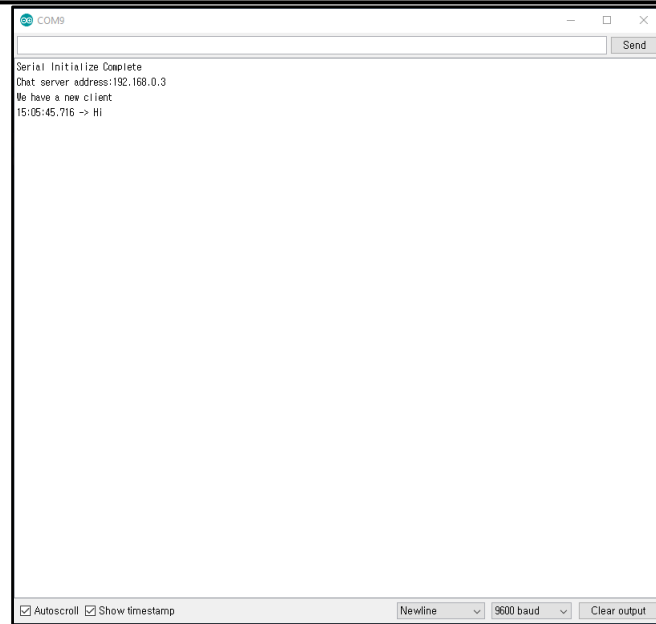


Figure 4-10 String from Client