

# W6100 Ethernet Shield User Guide

How to use the WIZnet Ethernet Library

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

Version 0.0.1



<http://www.wiznet.io>

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## 1. Overview

Arduino Ethernet Shield의 사용자를 위해 Arduino<sup>1</sup>는 배포하는 IDE에 Ethernet Library<sup>2</sup>를 포함하고 있다. 현재 배포되는 Arduino IDE는 ARDUINO 1.8.7<sup>3</sup>이며 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 Github<sup>4</sup>에서 개발되고 Release되며, W6100를 지원할 수 있도록 WIZnet Github<sup>5</sup>에서 추가 개발하여 현재 Pull Request를 통한 Release를 준비 중 이다.

이 문서는 W6100를 지원하는 Ethernet Library가 Arduino IDE에 포함되기 전, W6100 Ethernet Shield를 사용하는 사용자를 위해 WIZnet Github에서 Ethernet Library를 다운 받아 설치한 Arduino IDE에 적용하는 방법을 기술한다.

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<sup>1</sup> <https://www.arduino.cc/>

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

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

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

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

## 2. Download

WIZnet Github에는 Arduino Ethernet Library V2.0.0에서 Fork하여 W6100를 지원할 수 있도록 개발한 Library가 있다. 아래와 같이 Download한다.

### 2.1 WIZnet Github

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

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

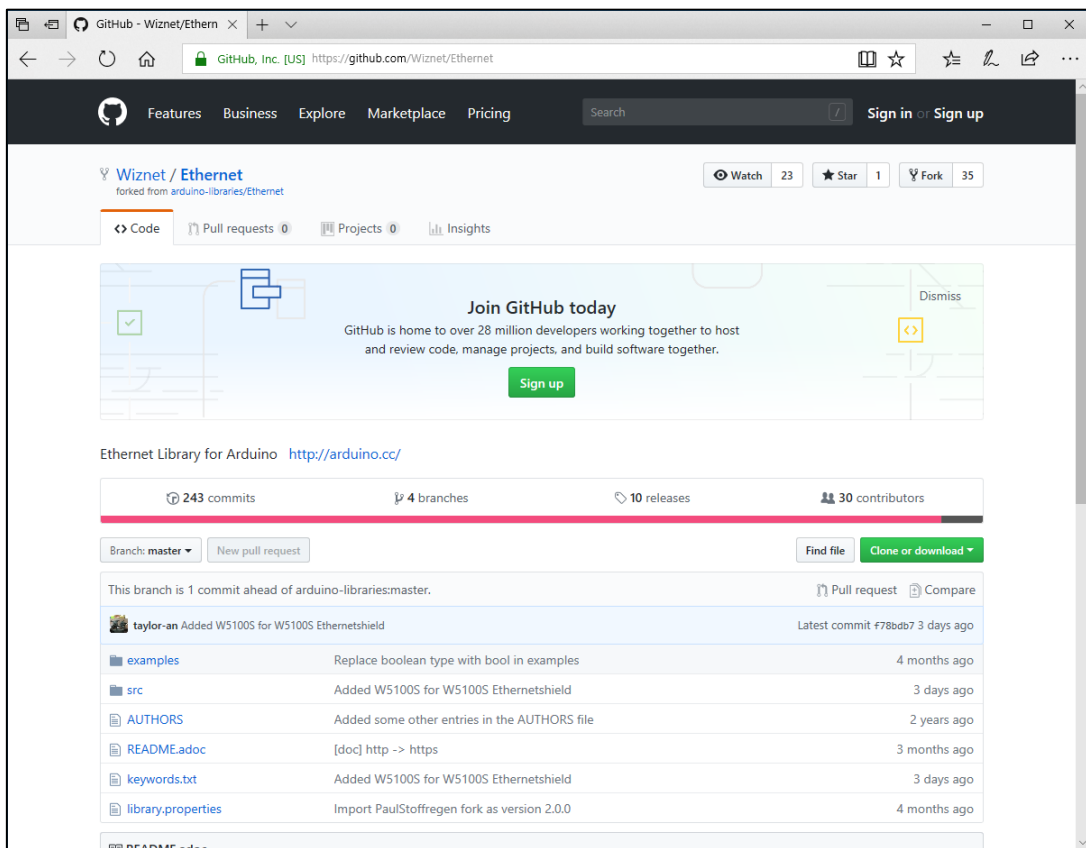


Figure 2-1 WIZnet Github

## 2.2 Clone or download

Clone or download를 선택 한다.

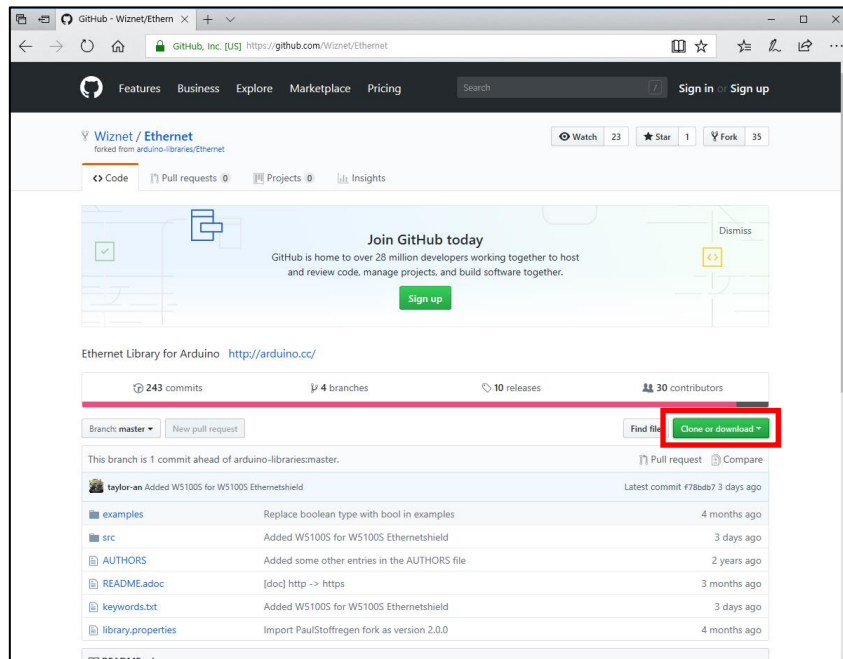


Figure 2-2 Clone or download

## 2.2 Download ZIP

Download ZIP을 선택하여 ZIP으로 압축된 Source Code를 저장한다.

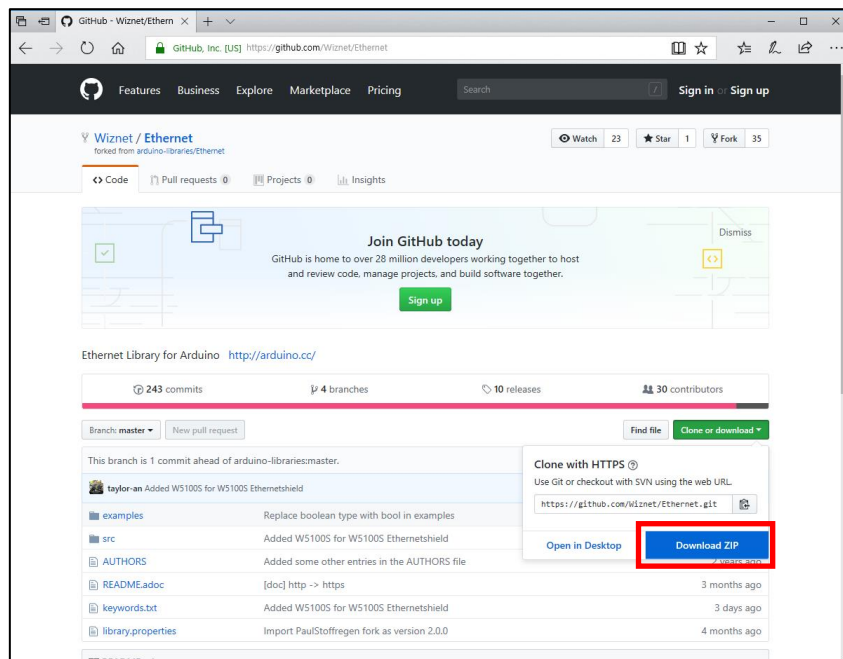


Figure 2-3 Download ZIP

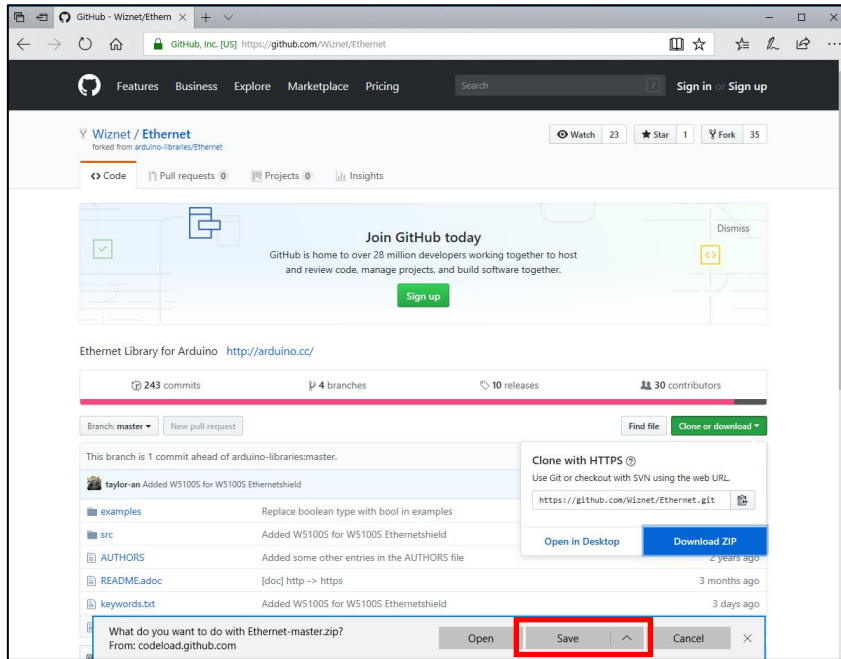


Figure 2-4 Save

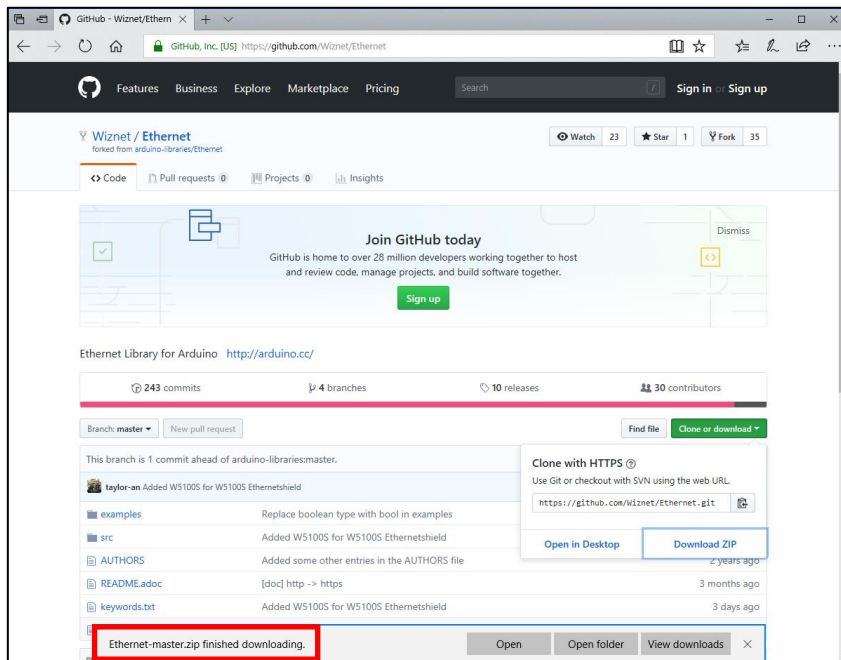


Figure 2-5 Downloading

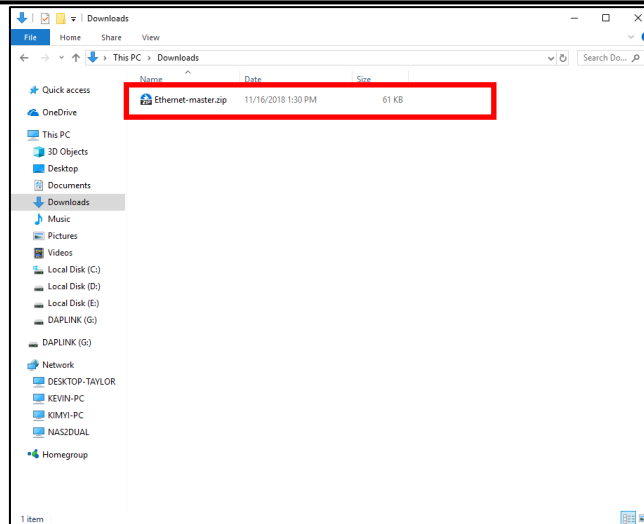


Figure 2-6 Download Complete



### 3. Location

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

경로는 일반적인 경우 다음과 같다.

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

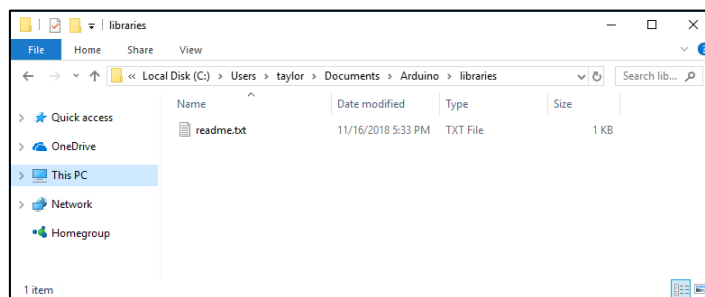


Figure 3-1 Default user Libraries

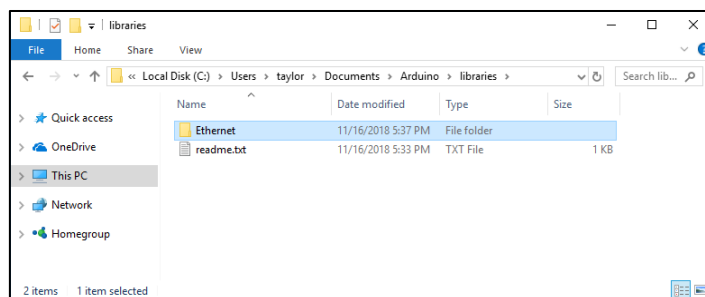


Figure 3-2 Copy to default user Libraries

## 4. Example

복사한 Ethernet Library는 Arduino IDE에서 Example을 실행하여 정상 동작을 확인할 수 있다. 아래는 Ethernet Library의 Example 중 ChatServer를 Arduino UNO Board에 W6100 Ethernet Shield로 실행한 예이다. 다른 Example은 Arduino Site<sup>6</sup>(RESOURCES > TUTORIAL > EXAMPLE FROM LIBRARYIES > Ethernet Library)를 참조하라.

### 4.1 ChatServer

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

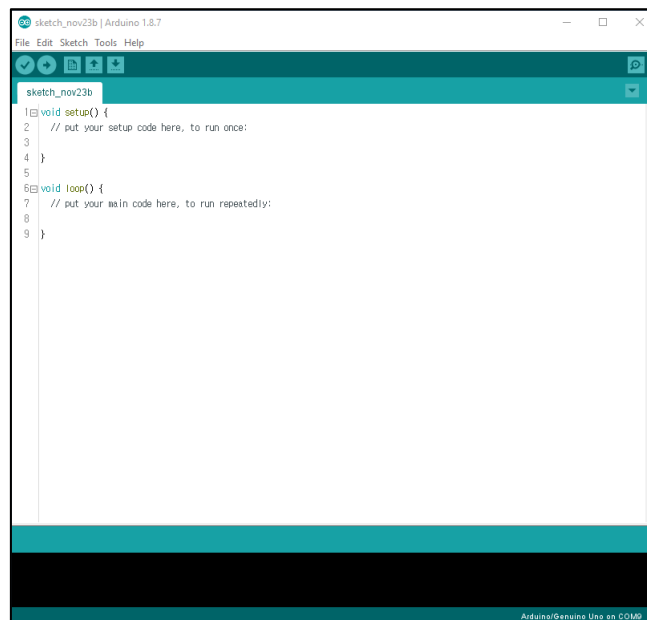


Figure 4-1 Arduino IDE

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

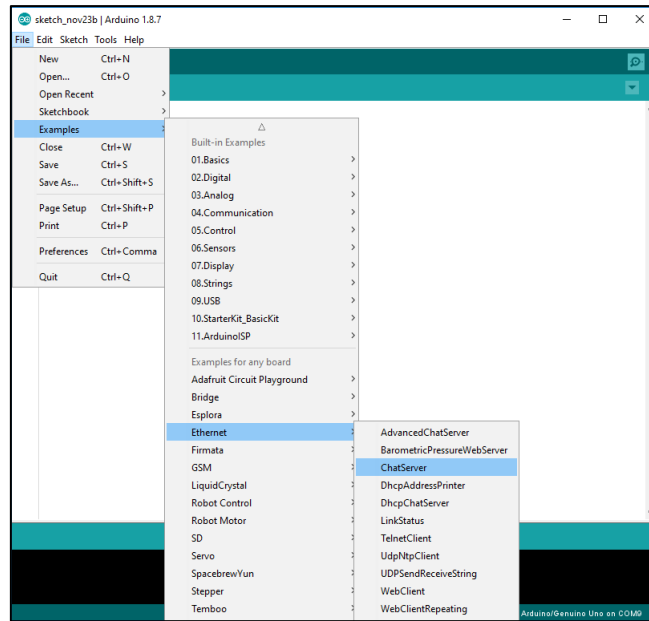
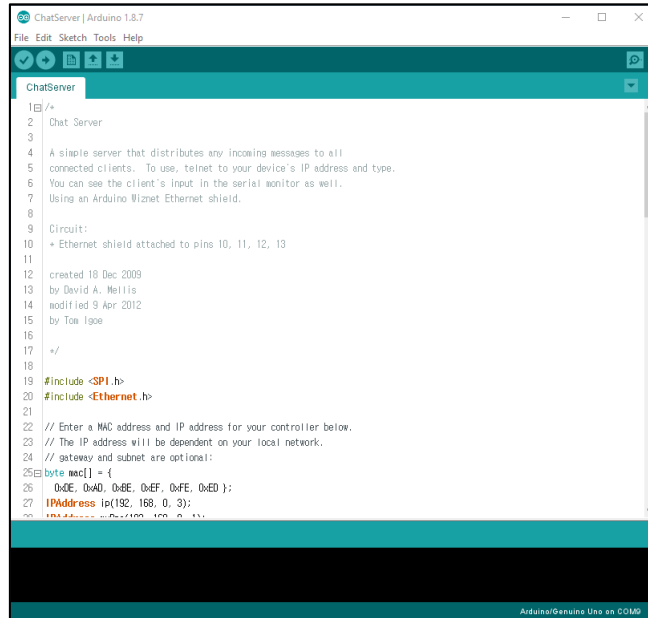


Figure 4-2 Ethernet ChatServer

## 4.2 Set Network

Chatserver Example을 실행하기 위해 사용자의 환경에 맞춰 W6100 Ethernet Shield의 Network(IP, DNS, GATEWAY, SUBNET, PORT)를 설정한다.

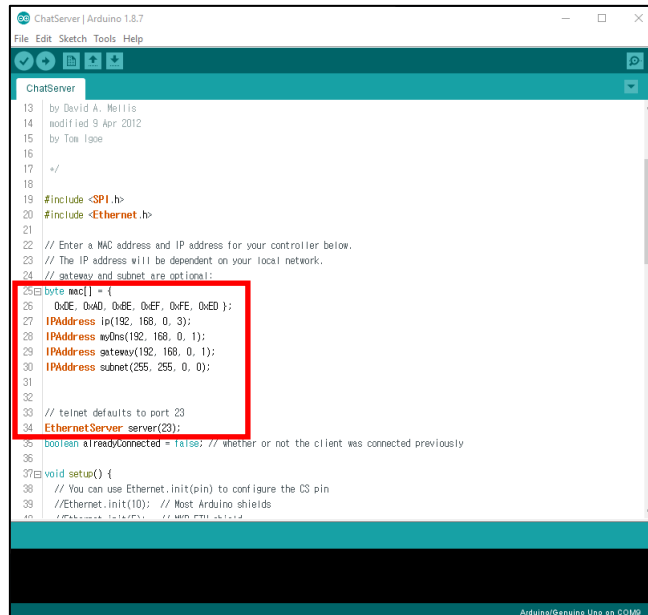


```

1 // */
2 Chat Server
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 18 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 gateway(192, 168, 0, 1);
29 // IPAddress subnet(255, 255, 0, 0);
30
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); // WIZnet shields

```

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>
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22 // Enter a MAC address and IP address for your controller below.
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29 IPAddress subnet(255, 255, 0, 0);
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33 EthernetServer server(23);
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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); // WIZnet 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.

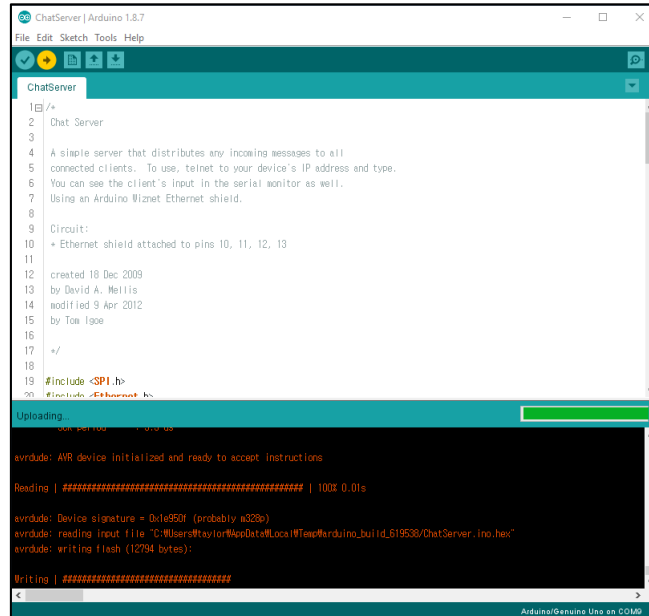


Figure 4-5 Uploading

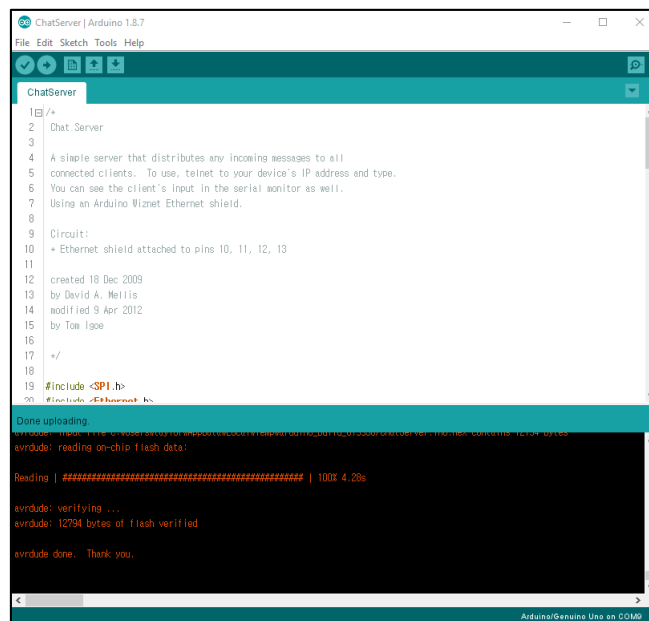


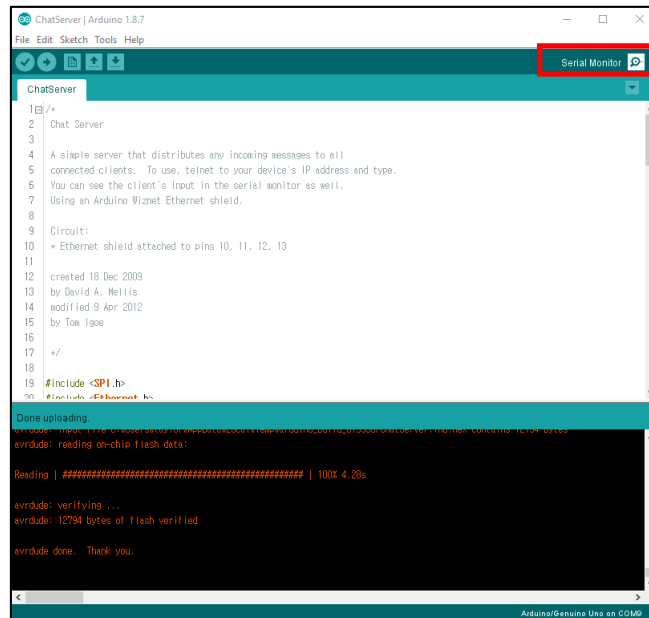
Figure 4-6 Done Uploading

#### 4.4 Run

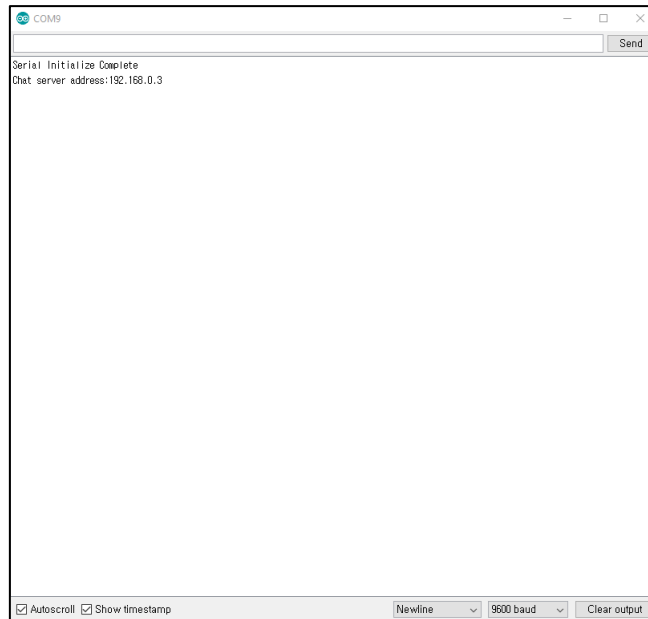
Example ChatServer는 Arduino Board가 EthernetShield를 사용하여 TCP Client에서 수신한 String을 Serial Monitor에 출력하고, TCP Client에 전송한다. Serial Monitor를 통해 TCP Client 접속과 수신한 String를 확인할 수 있다.

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

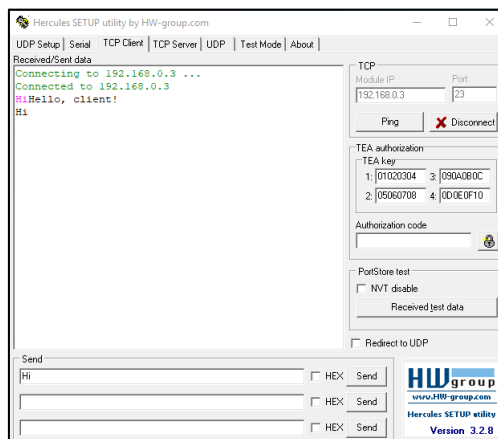
'Figure 4-4 Set Network'에 따라 TCP Client가 접속할 Sever IP는 192.168.0.3이며, Port는 23이다.



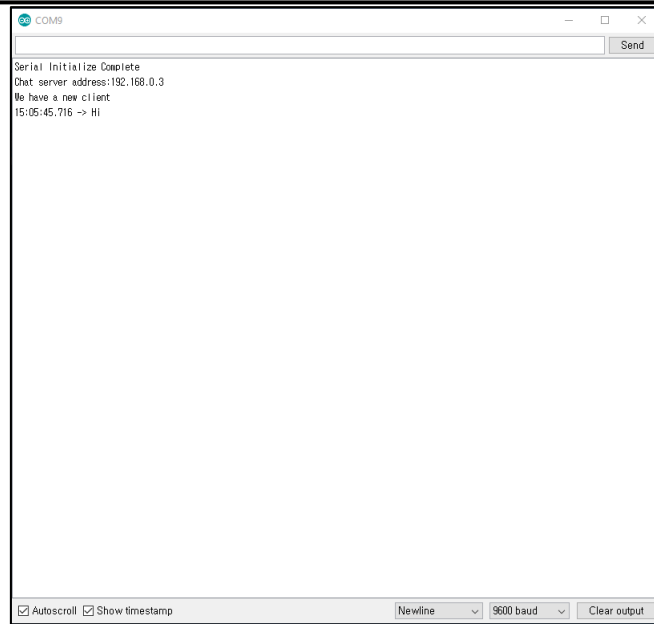
**Figure 4-7 Run Serial Monitor**



**Figure 4-8 Serial Monitor**



**Figure 4-9 TCP Client mode Hercules**



**Figure 4-10 String from Client**