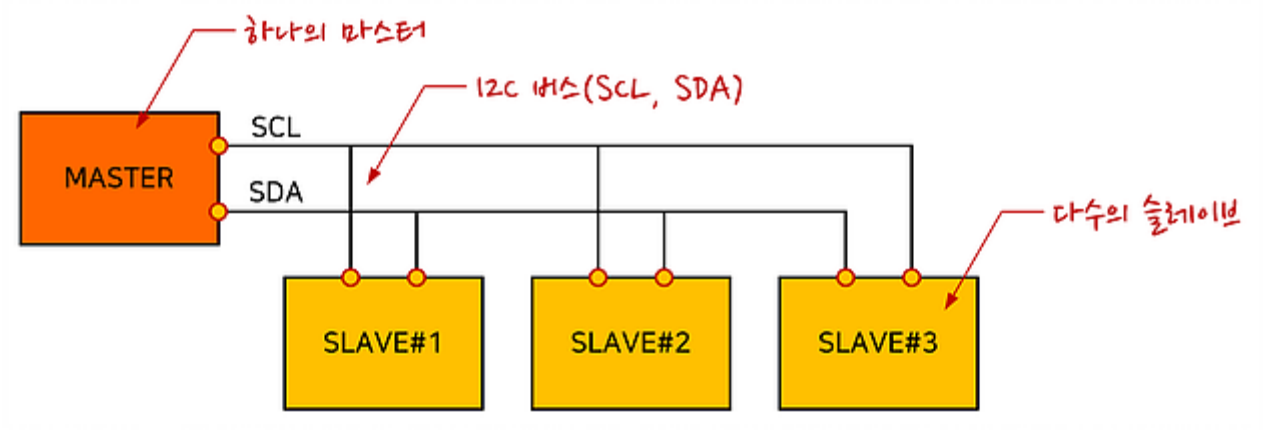
비접촉식 온도센서 실험

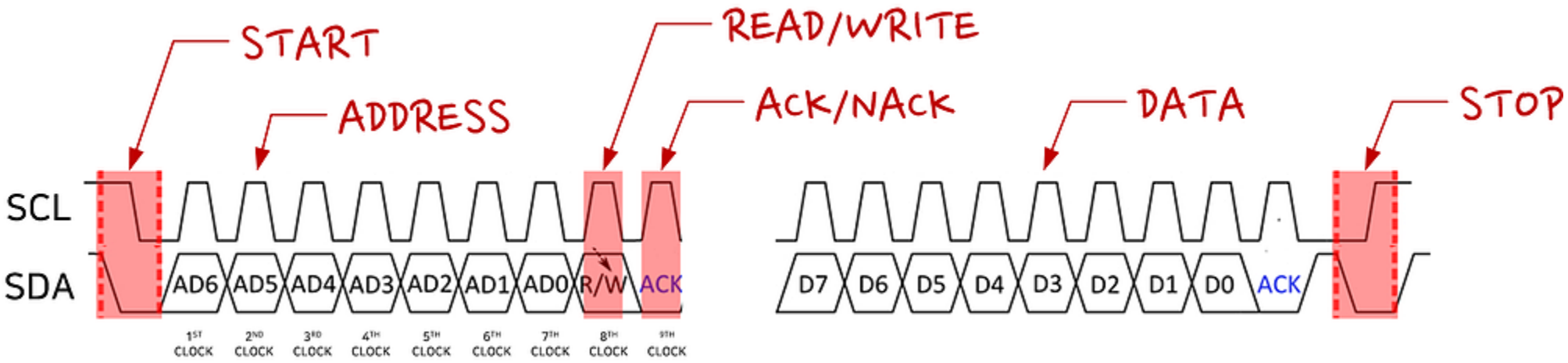
MLX90614

- 비접촉식 온도센서 모듈
- FOV 90°
- 측정범위 : -70°C ~ 380°C
- 인터페이스 : I2C

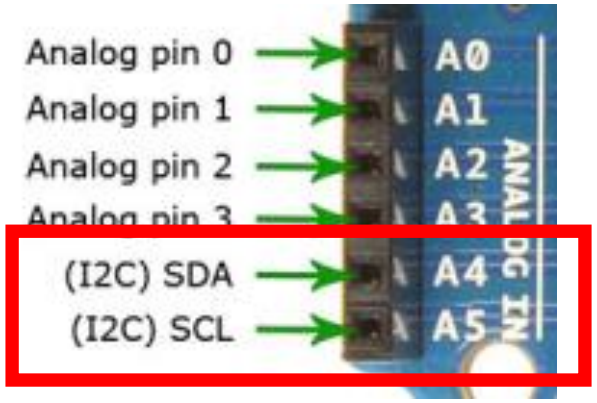
I2C 통신

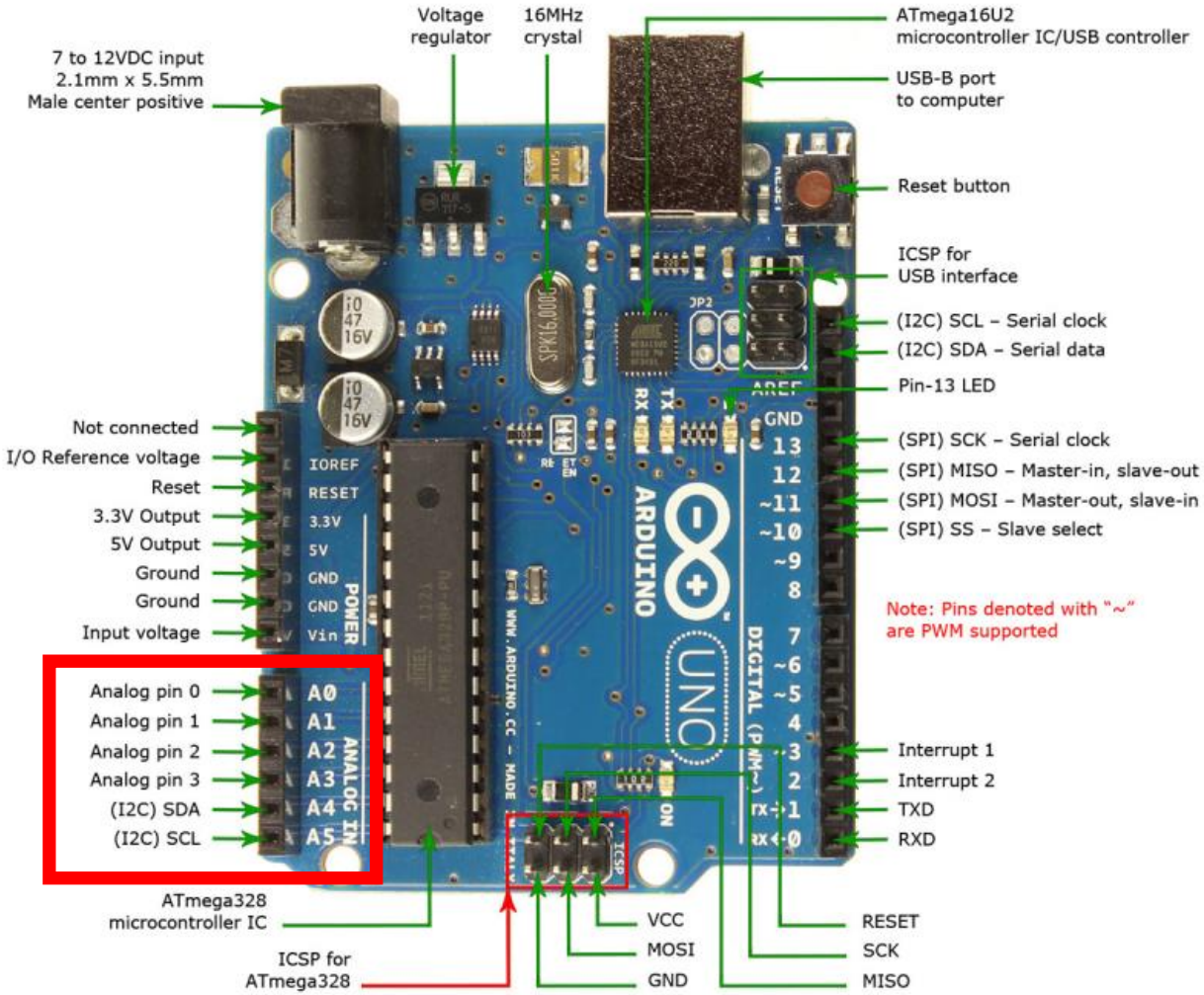

하나의 마스터
I2C 버스(SCL, SDA)
다수의 슬레이브
MASTER
SCL
SDA
SLAVE#1
SLAVE#2
SLAVE#3

I2C 통신

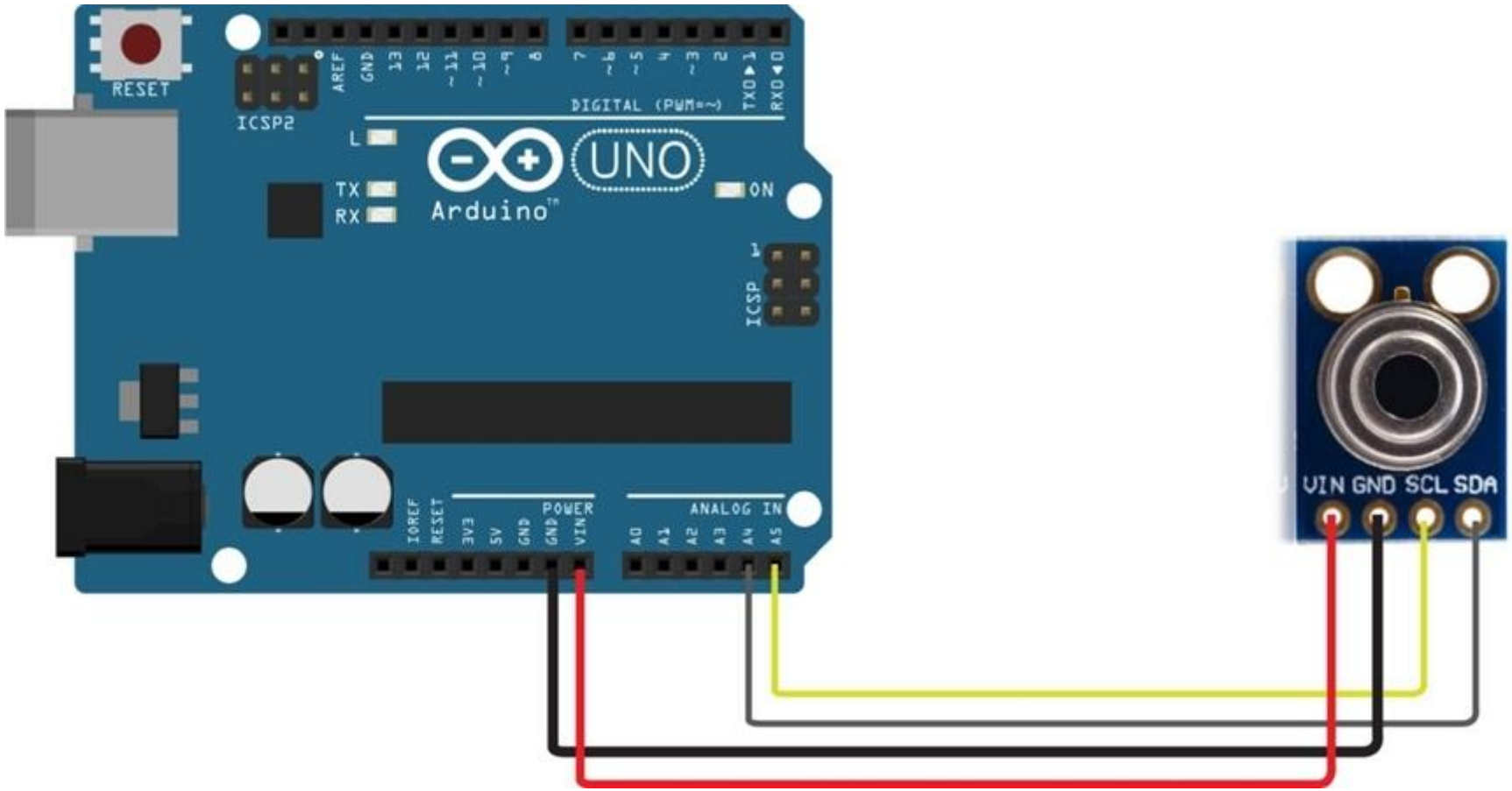

START
ADDRESS
READ/WRITE
ACK/NACK
DATA
STOP
SCL
SDA
AD6
AD5
AD4
AD3
AD2
AD1
AD0
R/W
ACK
D7
D6
D5
D4
D3
D2
D1
D0
ACK
1ST CLOCK
2ND CLOCK
3RD CLOCK
4TH CLOCK
5TH CLOCK
6TH CLOCK
7TH CLOCK
8TH CLOCK
9TH CLOCK

아두이노의 I2C통신


Analog pin 0
Analog pin 1
Analog pin 2
Analog pin 3
(I2C) SDA
(I2C) SCL
A0
A1
A2
A3
A4
A5
ANALOG IN

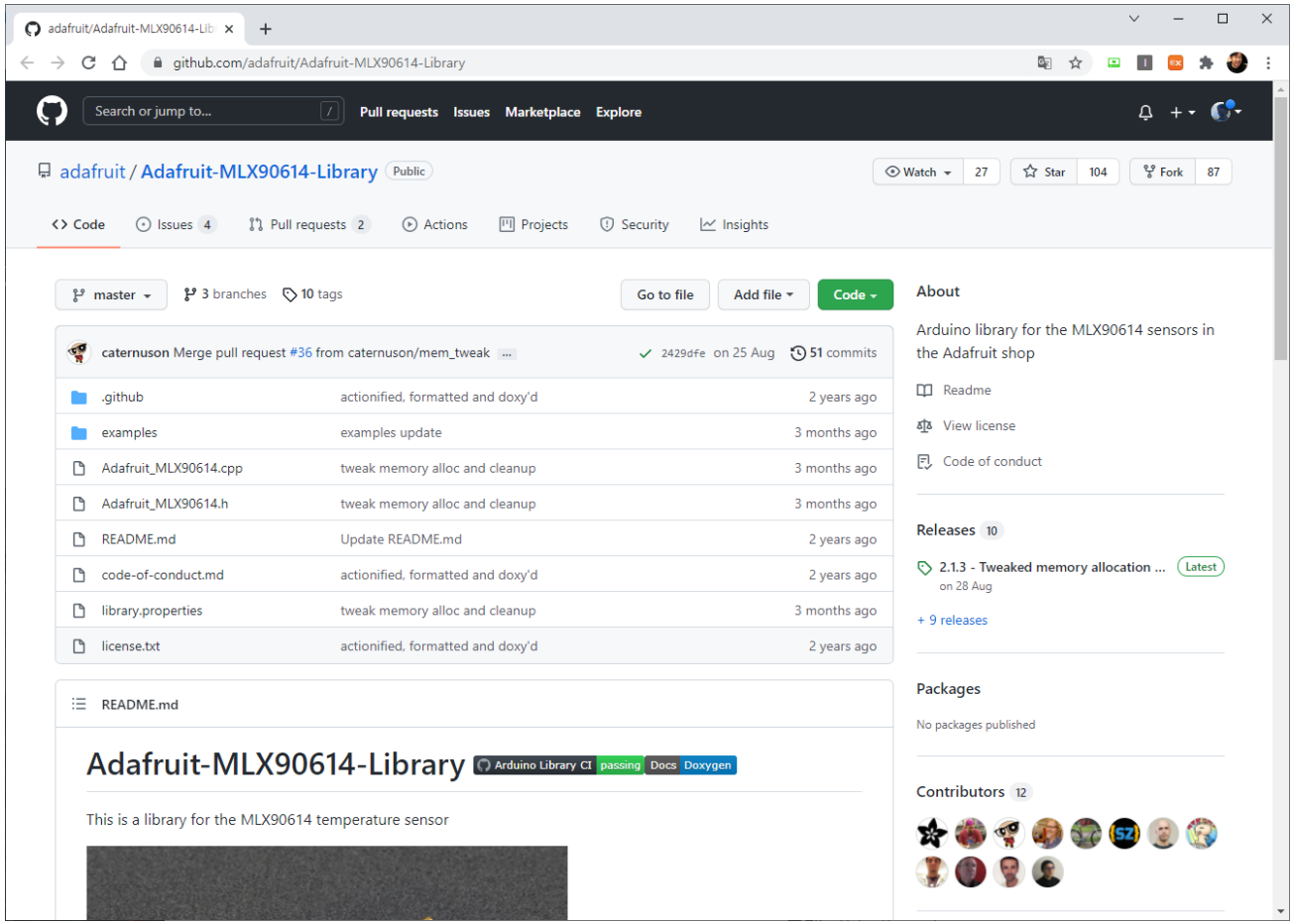

Voltage regulator
16MHz crystal
7 to 12VDC input
2.1mm x 5.5mm
Male center positive
ATmega16U2
microcontroller IC/USB controller
USB-B port
to computer
Reset button
ICSP for
USB interface
(I2C) SCL – Serial clock
(I2C) SDA – Serial data
Pin-13 LED
(SPI) SCK – Serial clock
(SPI) MISO – Master-in, slave-out
(SPI) MOSI – Master-out, slave-in
(SPI) SS – Slave select
Note: Pins denoted with "~"
are PWM supported
Interrupt 1
Interrupt 2
TXD
RXD
RESET
SCK
MISO
VCC
MOSI
GND
Not connected
I/O Reference voltage
Reset
3.3V Output
5V Output
Ground
Ground
Input voltage
IOREF
RESET
3.3V
5V
GND
GND
Vin
POWER
Analog pin 0
Analog pin 1
Analog pin 2
Analog pin 3
(I2C) SDA
(I2C) SCL
A0
A1
A2
A3
A4
A5
ANALOG IN
ATmega328
microcontroller IC
ICSP for
ATmega328
ARDUINO
UNC
DIGITAL (PWM~)

MLX90614 테스트



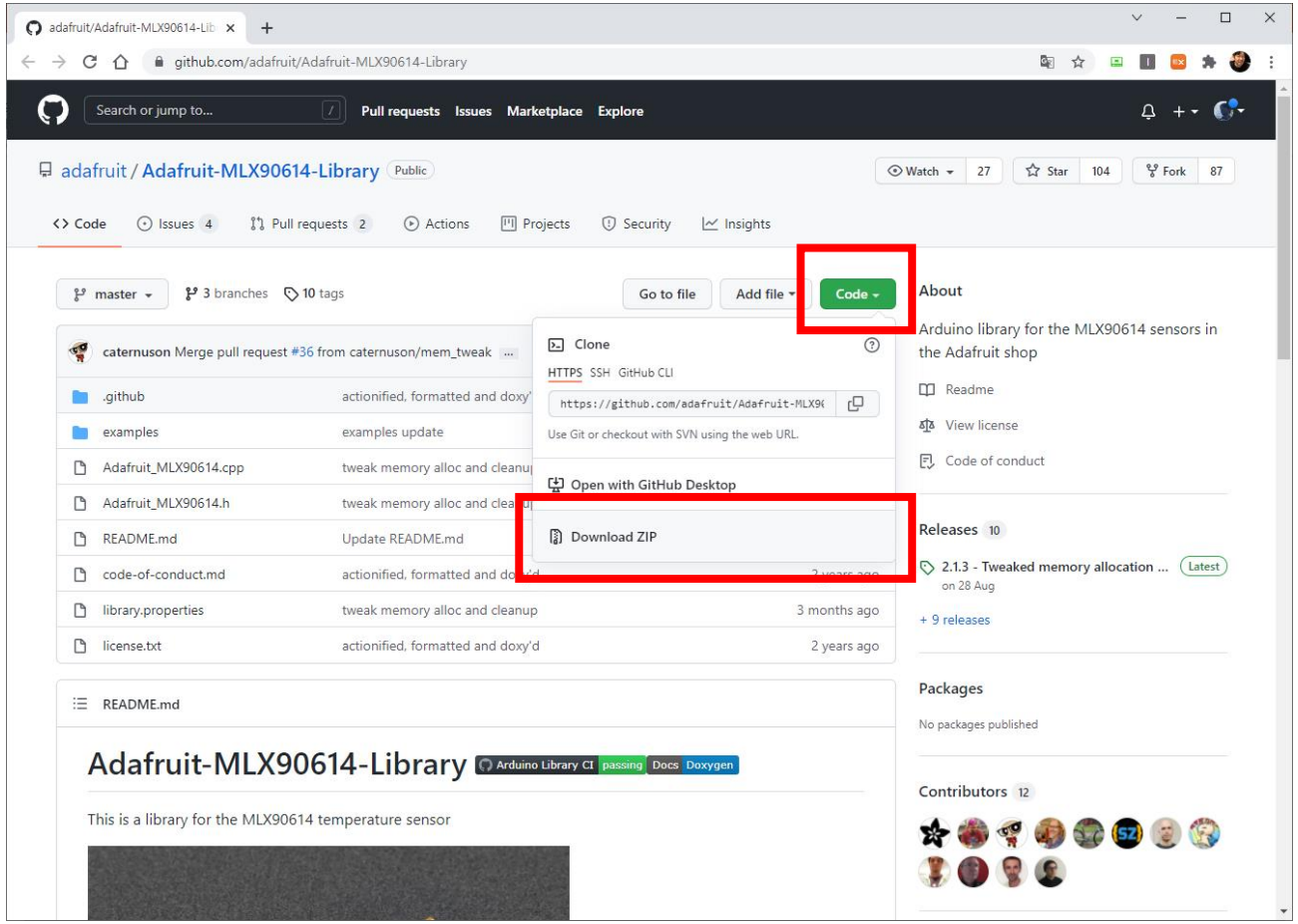
MLX90614 라이브러리 사용

- https://github.com/adafruit/Adafruit-MLX90614-Library

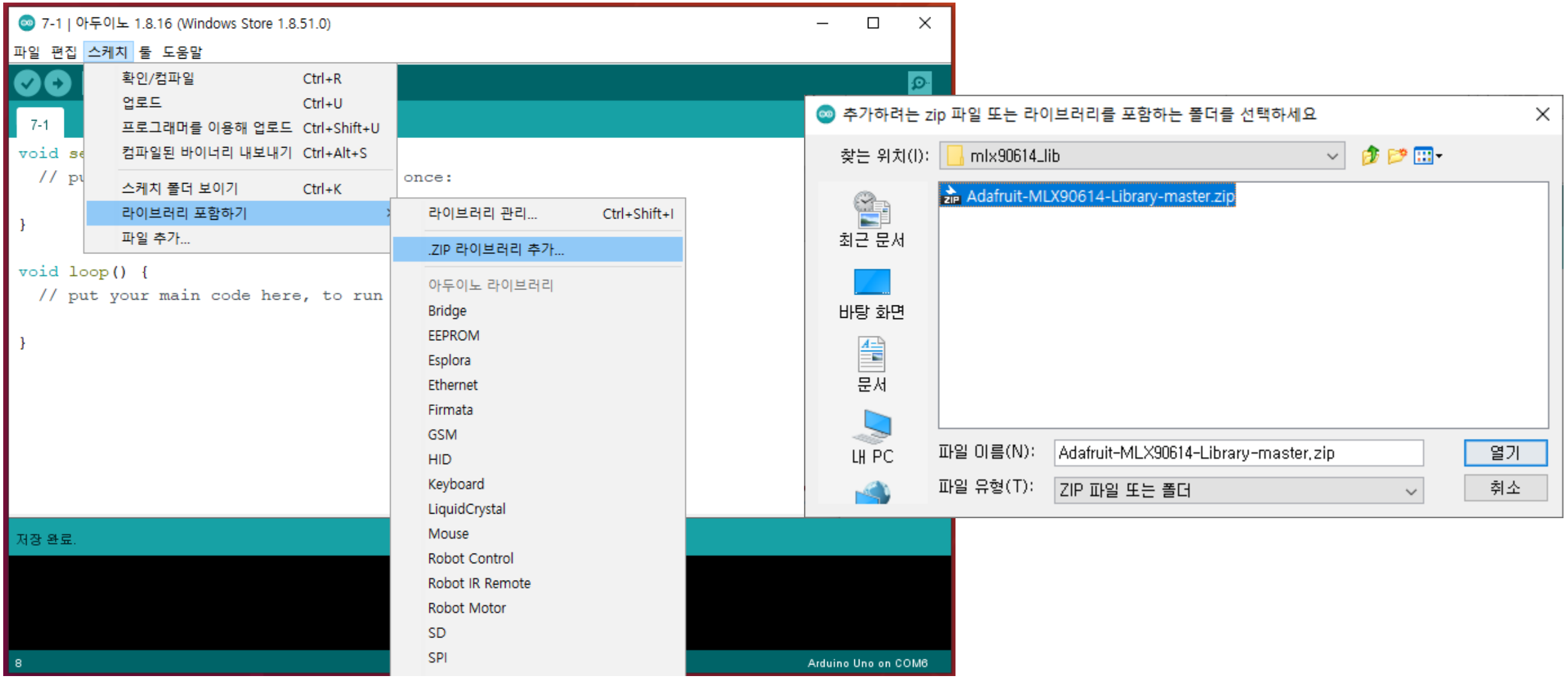


MLX90614 라이브러리 사용

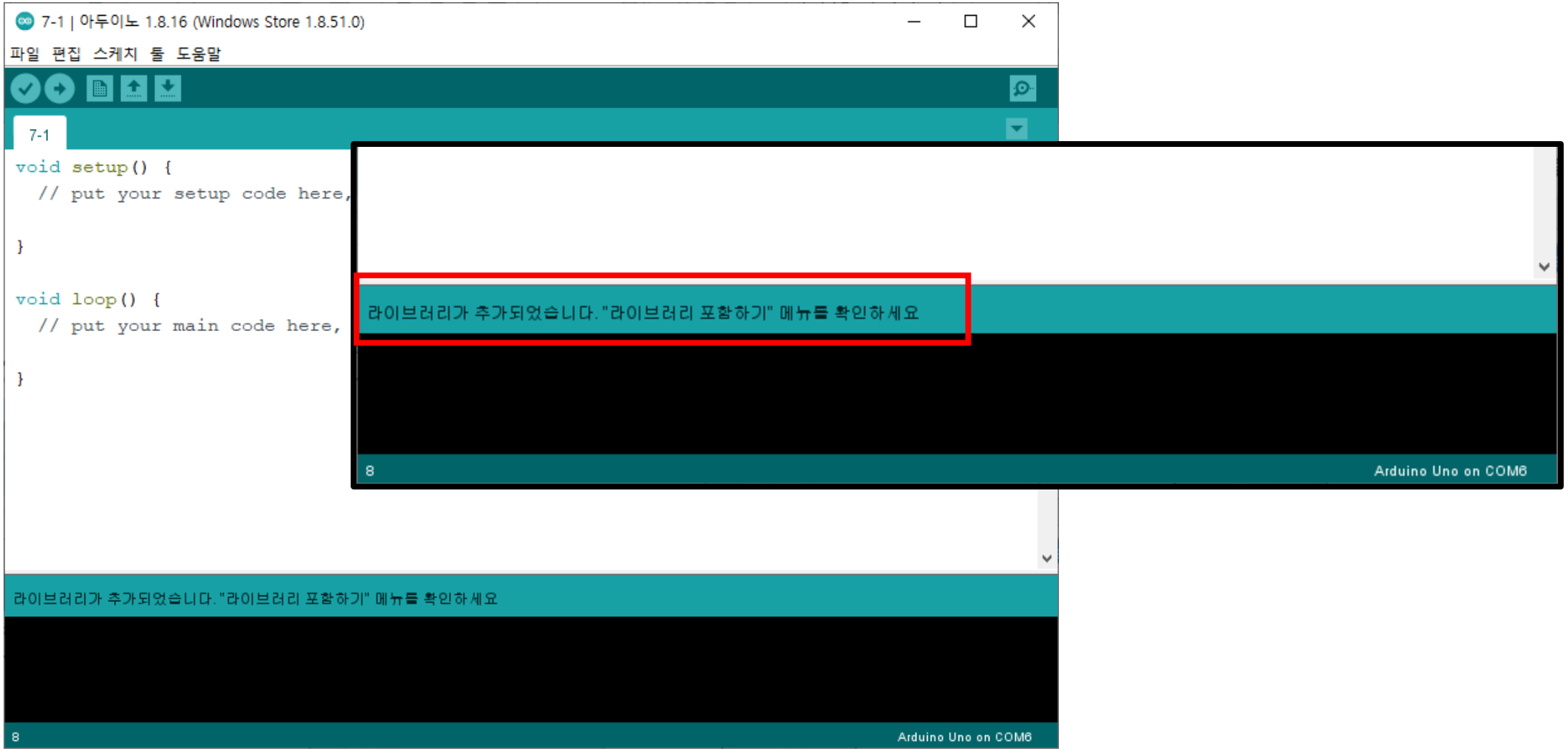
- https://github.com/adafruit/Adafruit-MLX90614-Library



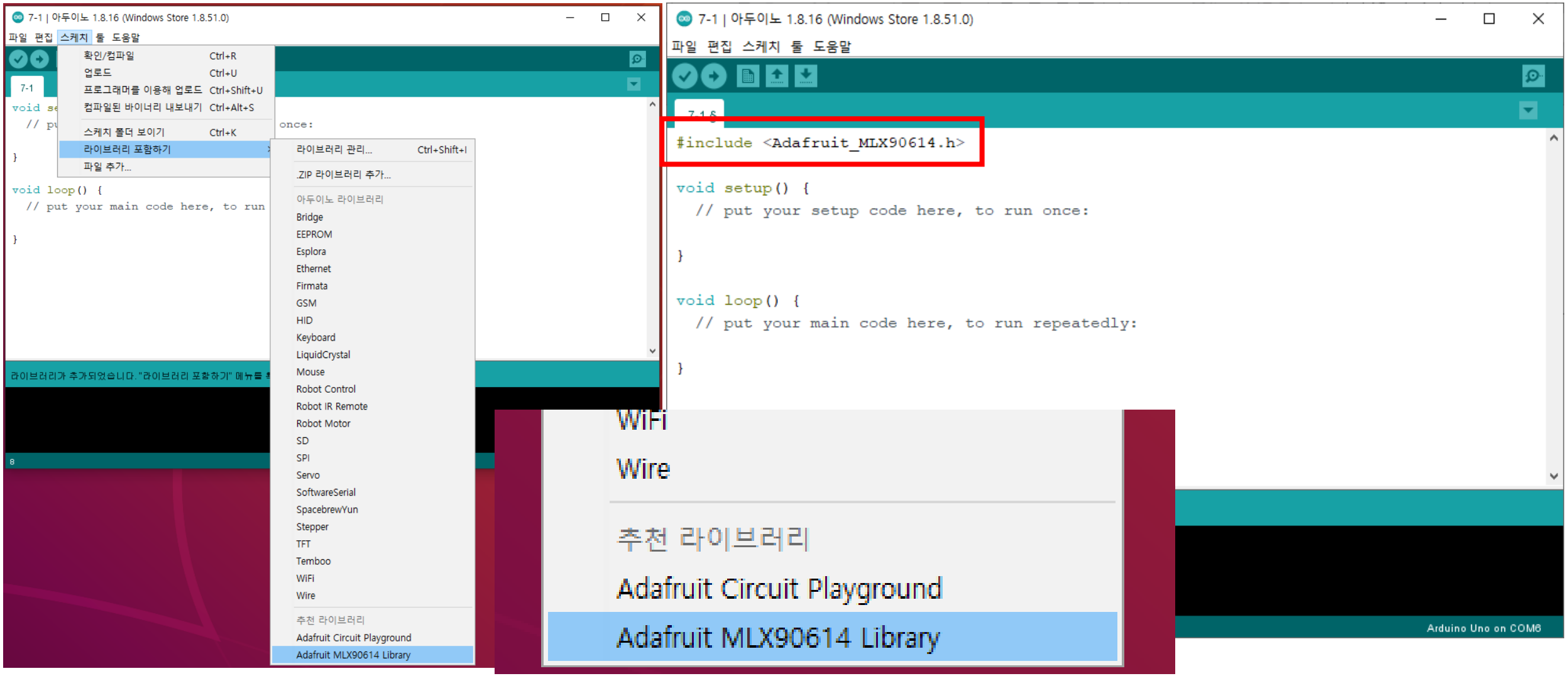
MLX90614 라이브러리 사용



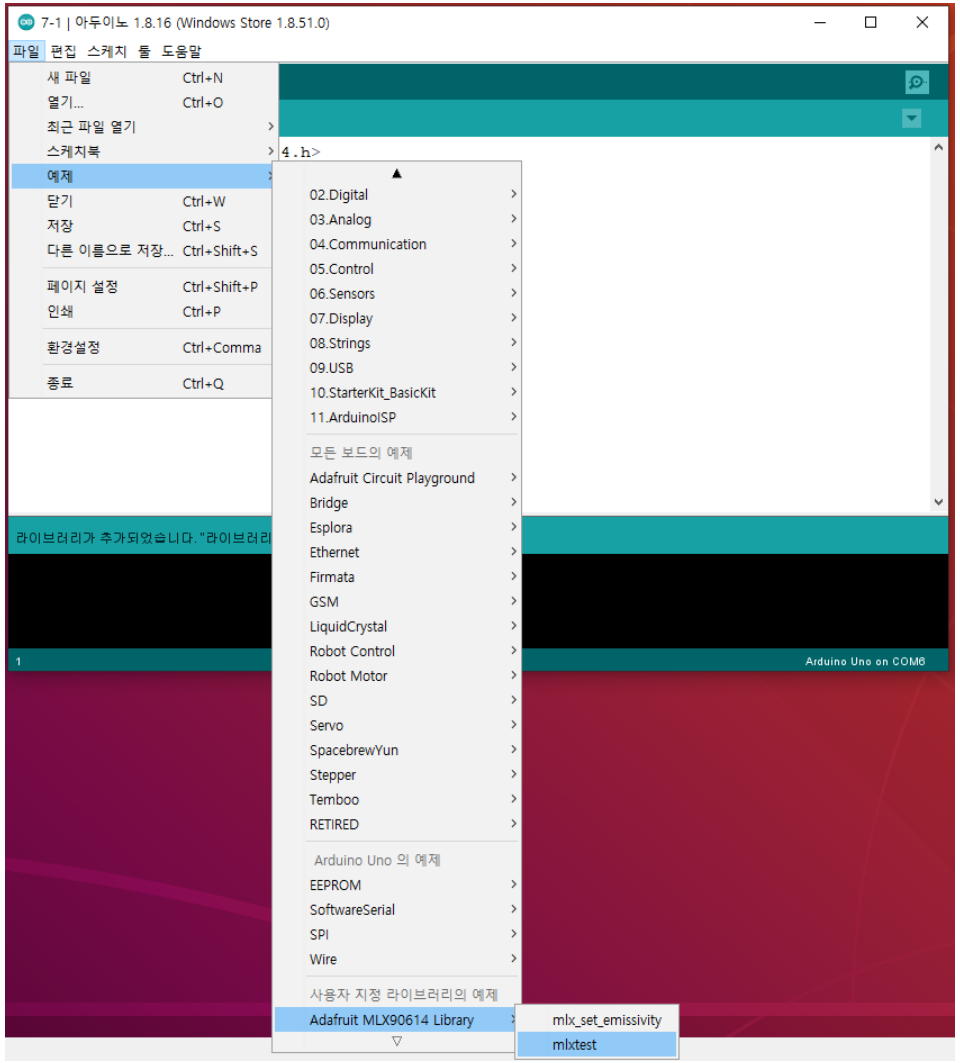
MLX90614 라이브러리 사용

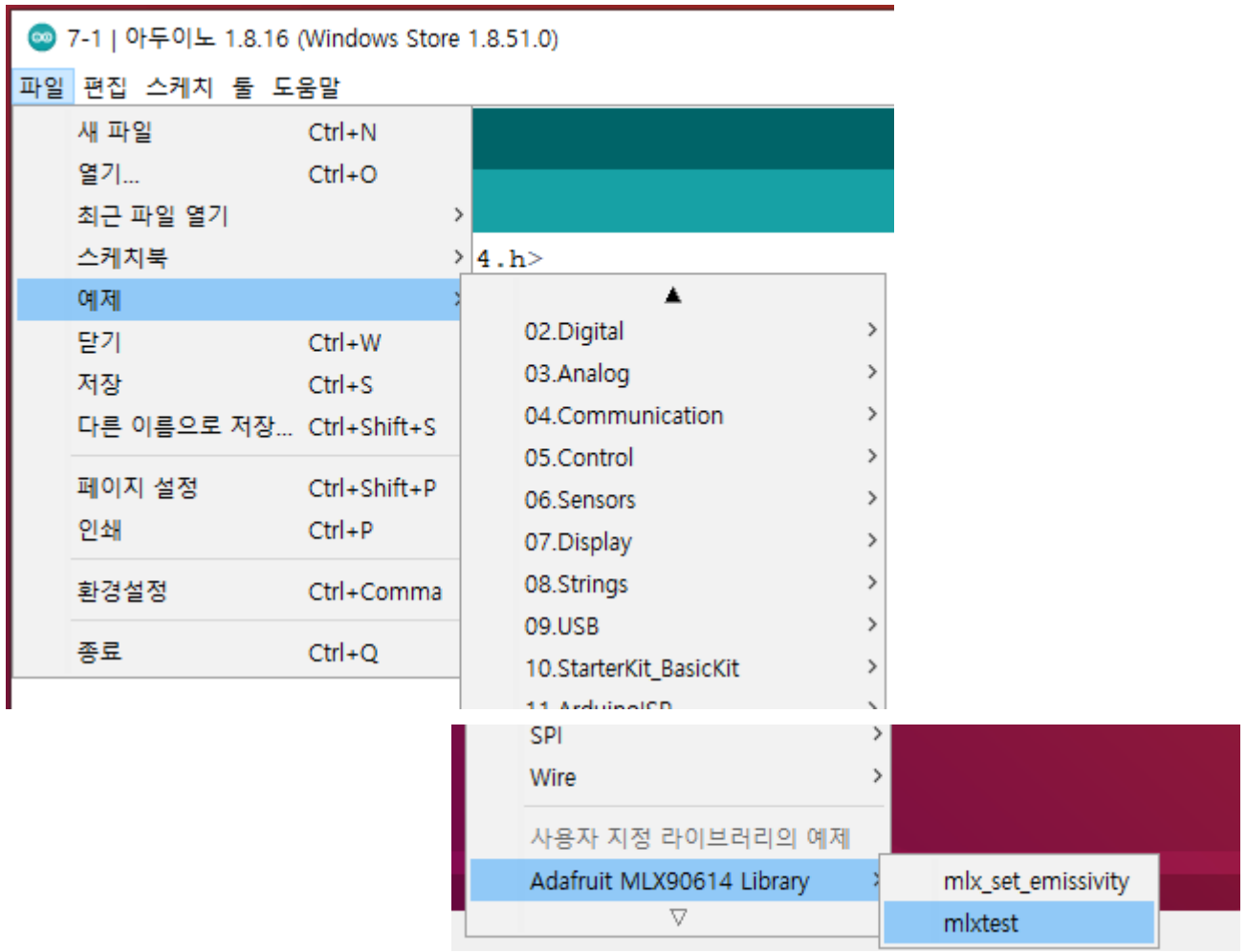


MLX90614 라이브러리 사용

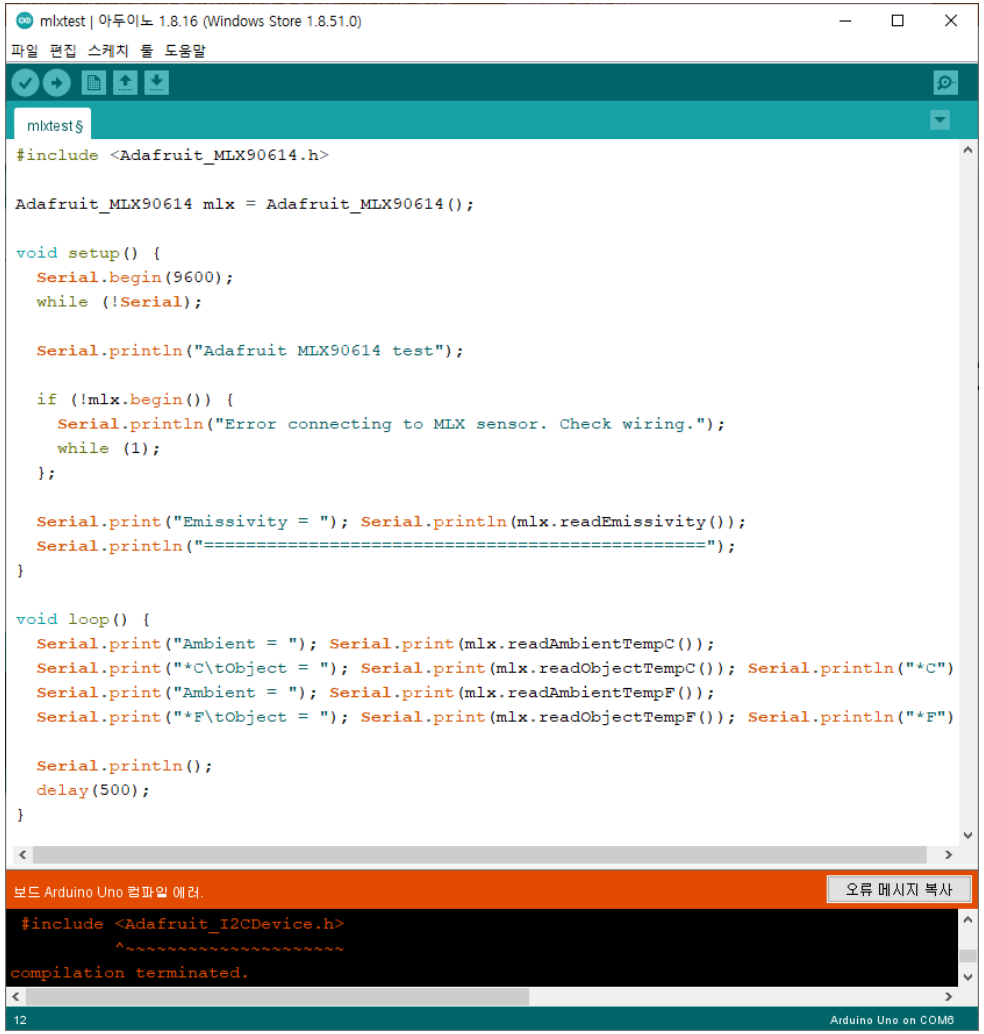


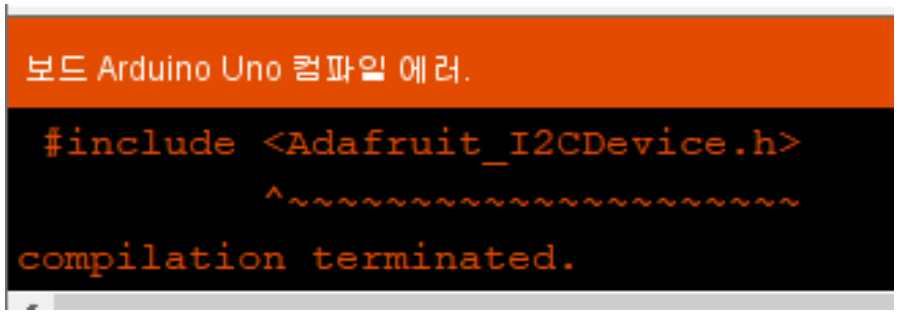
MLX90614 라이브러리 예제 테스트





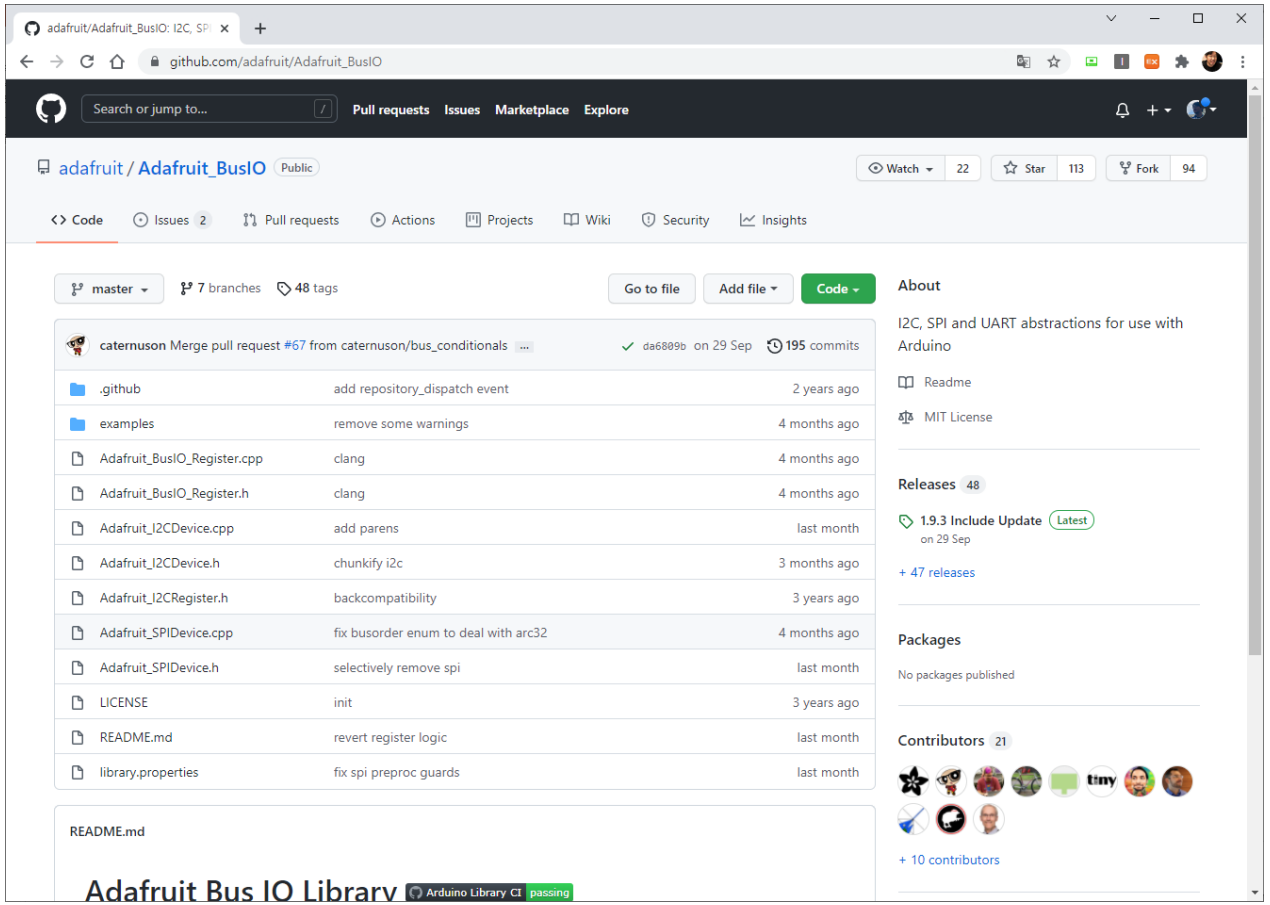
MLX90614 라이브러리 예제 테스트

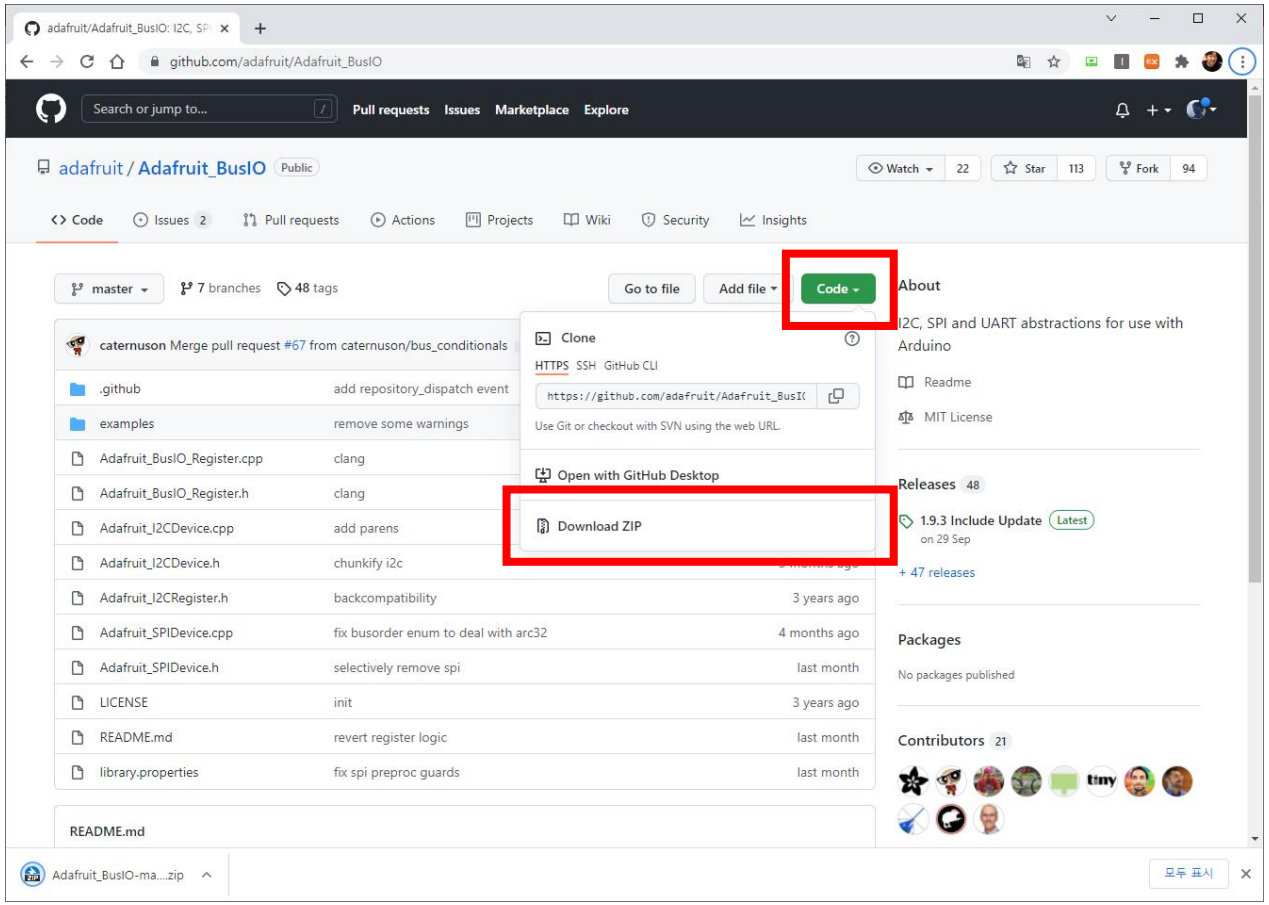




MLX90614 라이브러리 예제 테스트

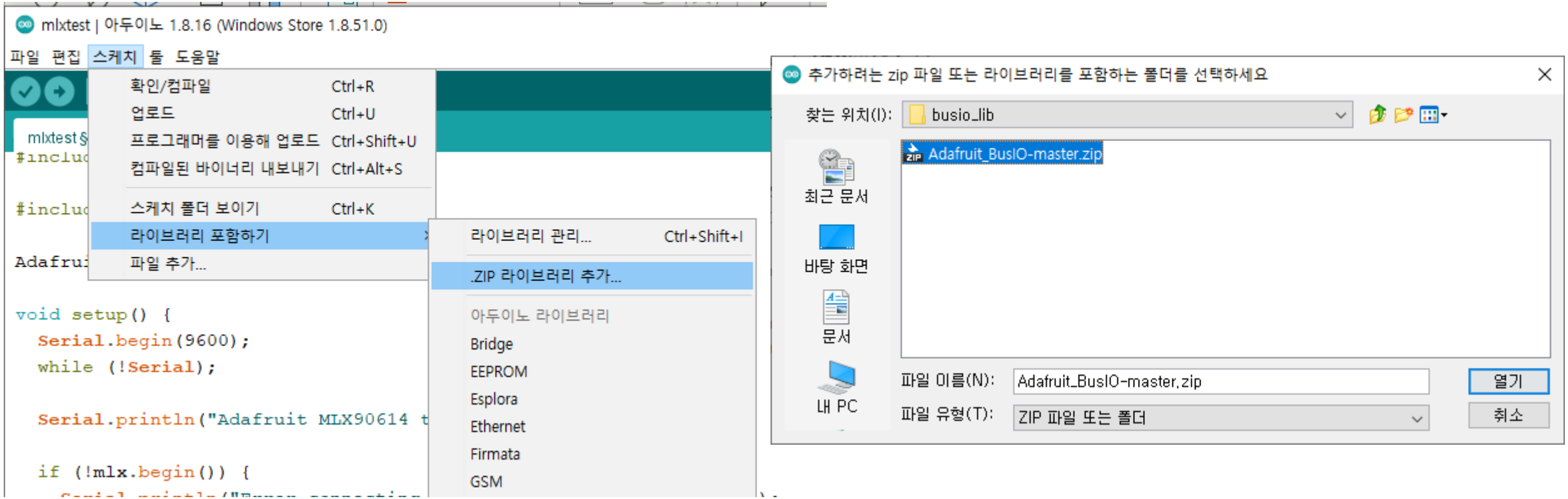
- https://github.com/adafruit/Adafruit_BusIO 라이브러리 다운로드



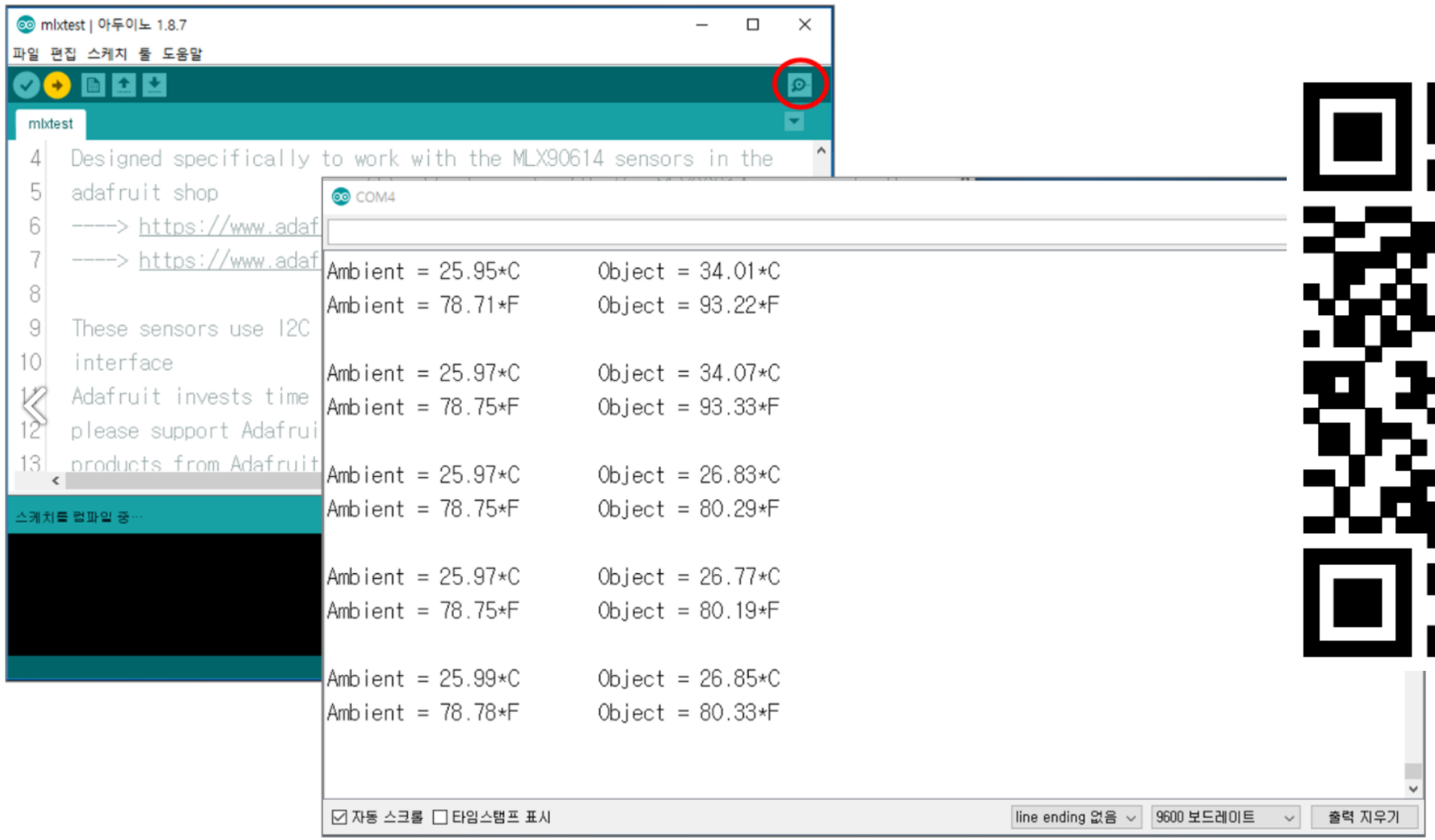


MLX90614 라이브러리 예제 테스트

- https://github.com/adafruit/Adafruit_BusIO 라이브러리 추가



MLX90614 라이브러리 예제 테스트

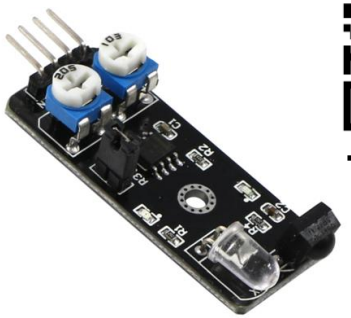


예제 7-1

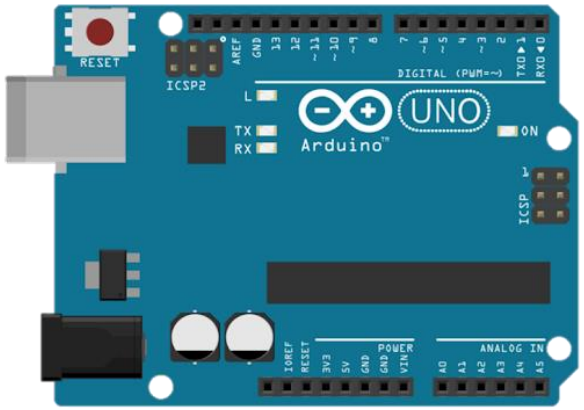
응용 : 체온 측정 출입 관리

전체 구성

손(물체) 유무 감지
(예제 6-1)

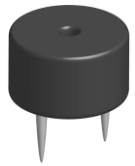


온도 측정
(예제 7-1)



정보 출력(시리얼통신)

측정 완료 경고음 발생



LED 인디케이터