

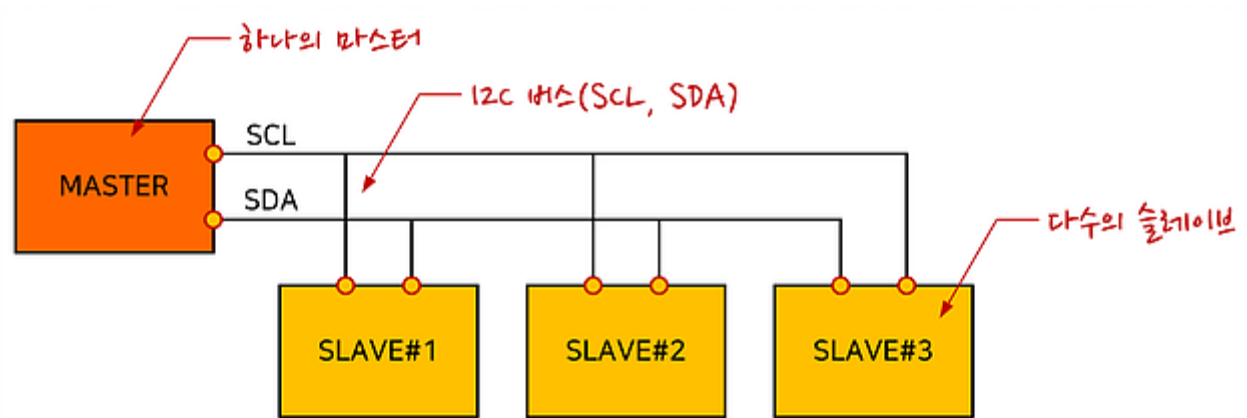
# 비접촉식 온도센서 실험

# MLX90614

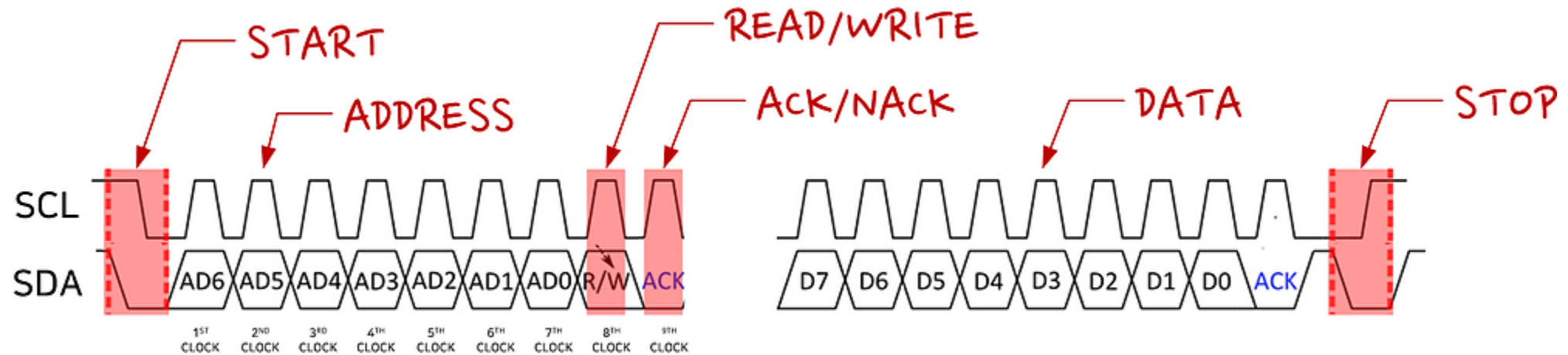
- 비접촉식 온도센서 모듈
- FOV 90°
- 측정범위 : -70°C ~ 380°C
- 인터페이스 : I2C



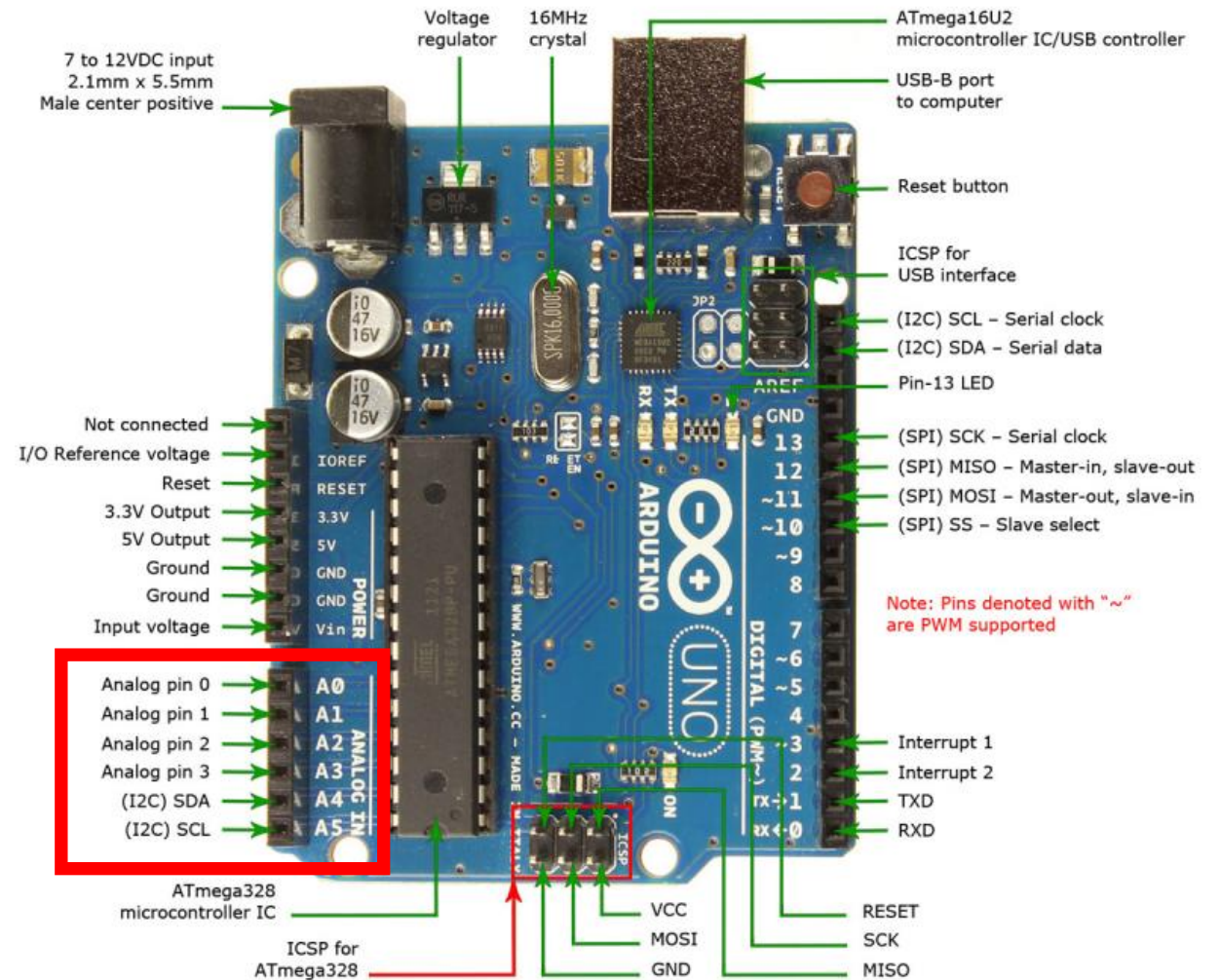
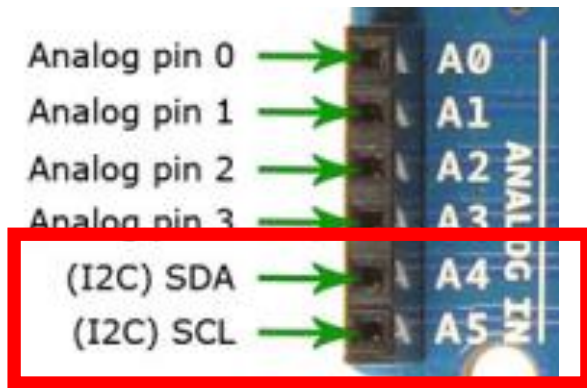
# I2C 통신



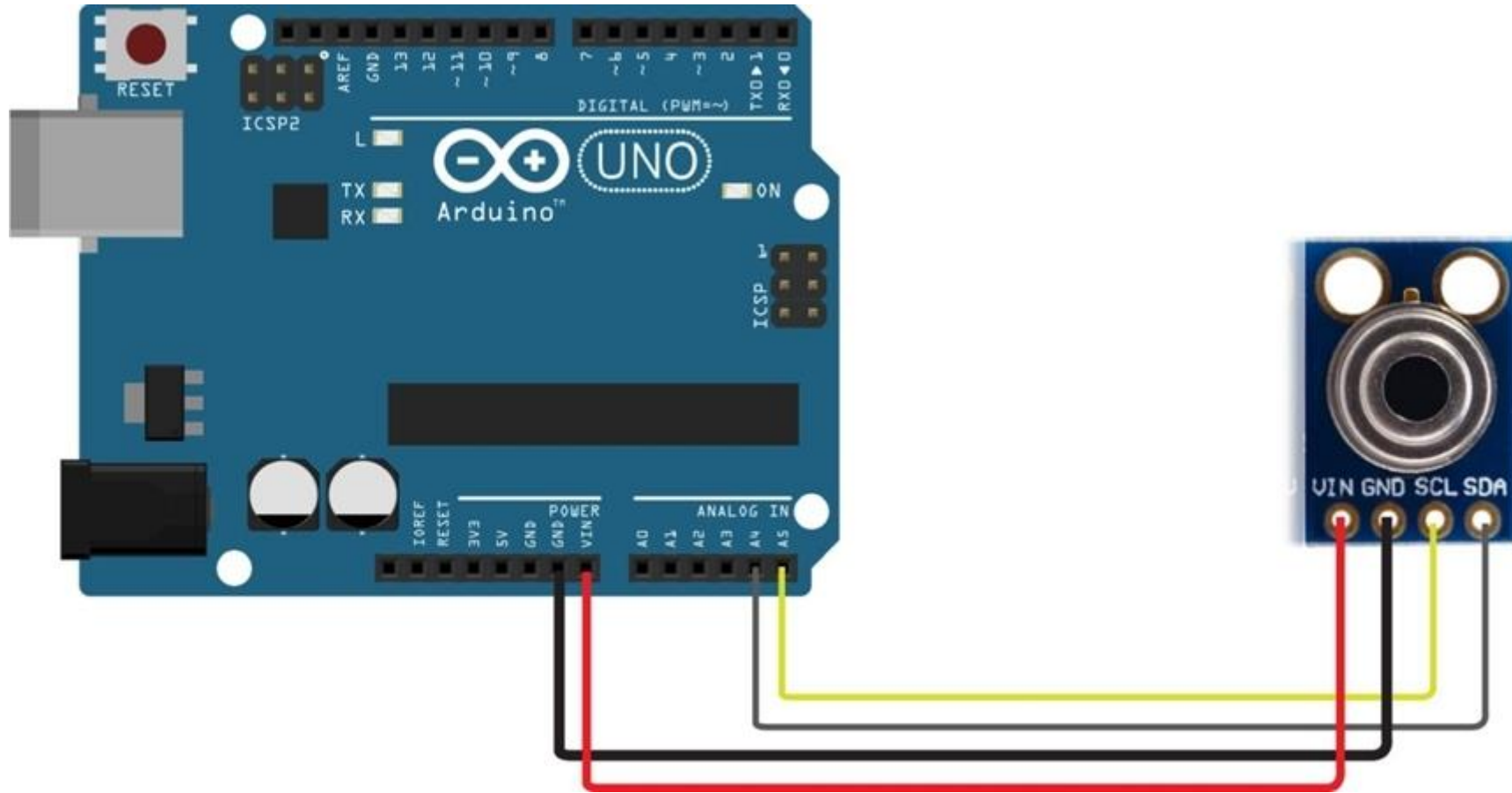
# I2C 통신



# 아두이노의 I2C통신

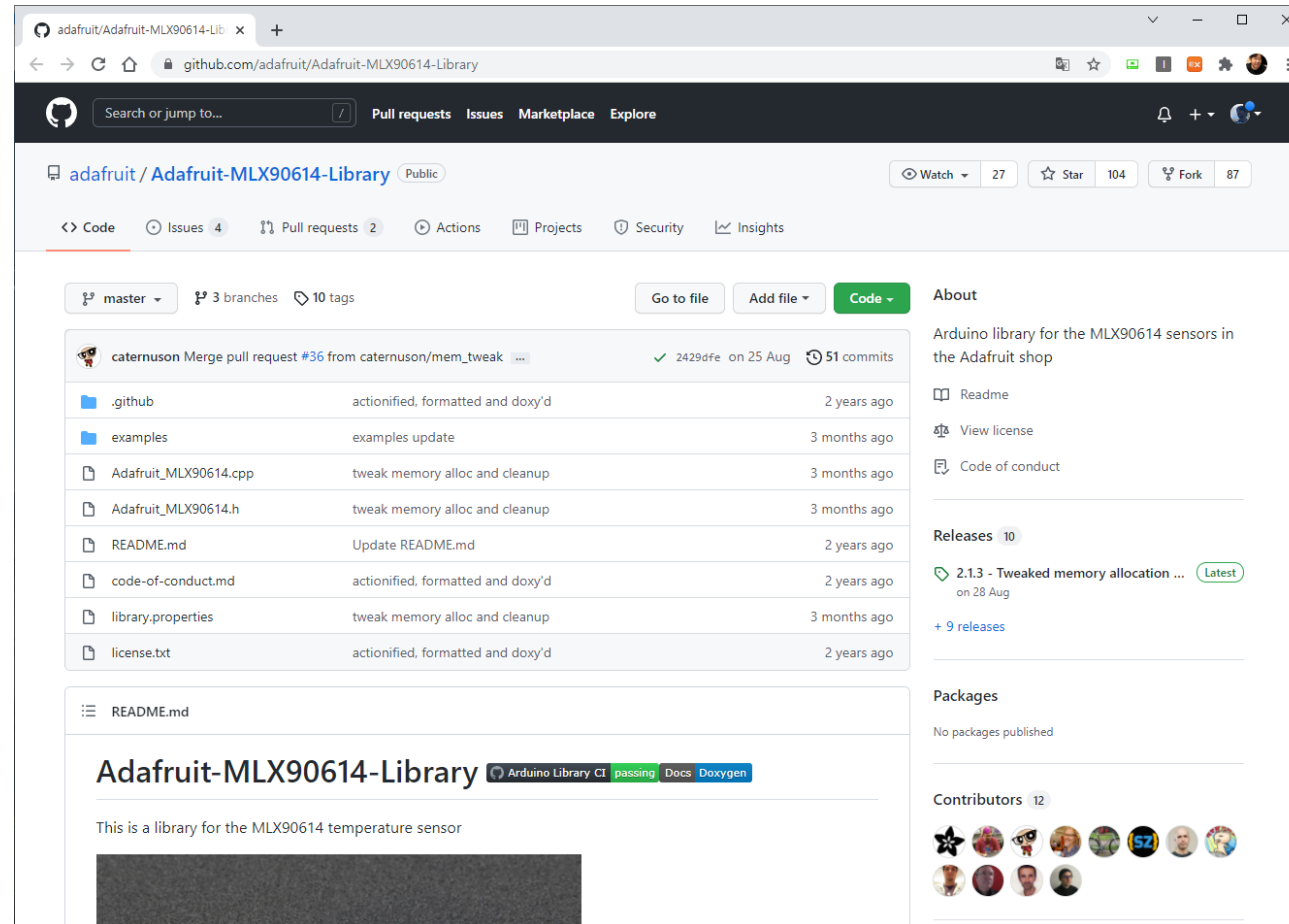


# MLX90614 테스트



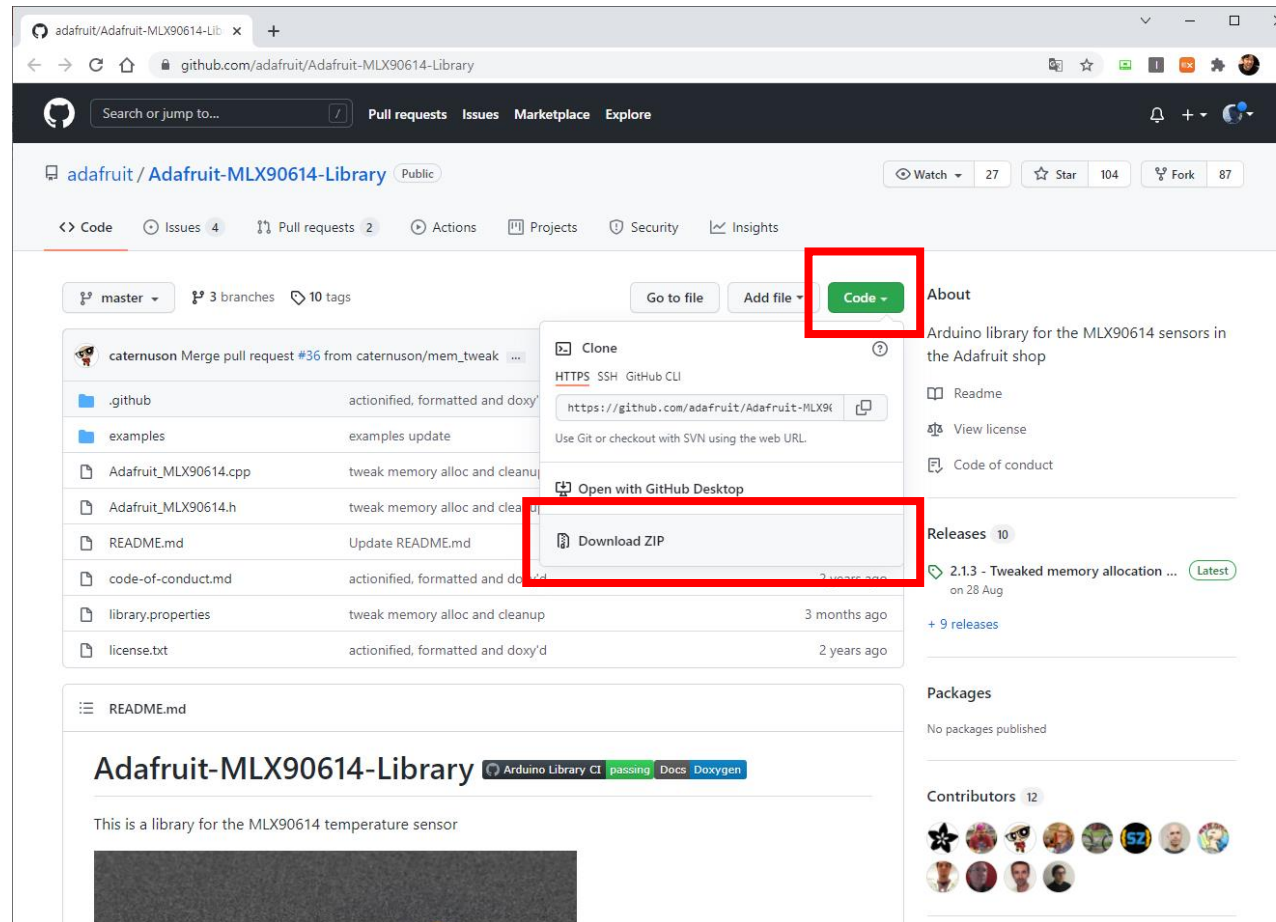
# MLX90614 라이브러리 사용

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



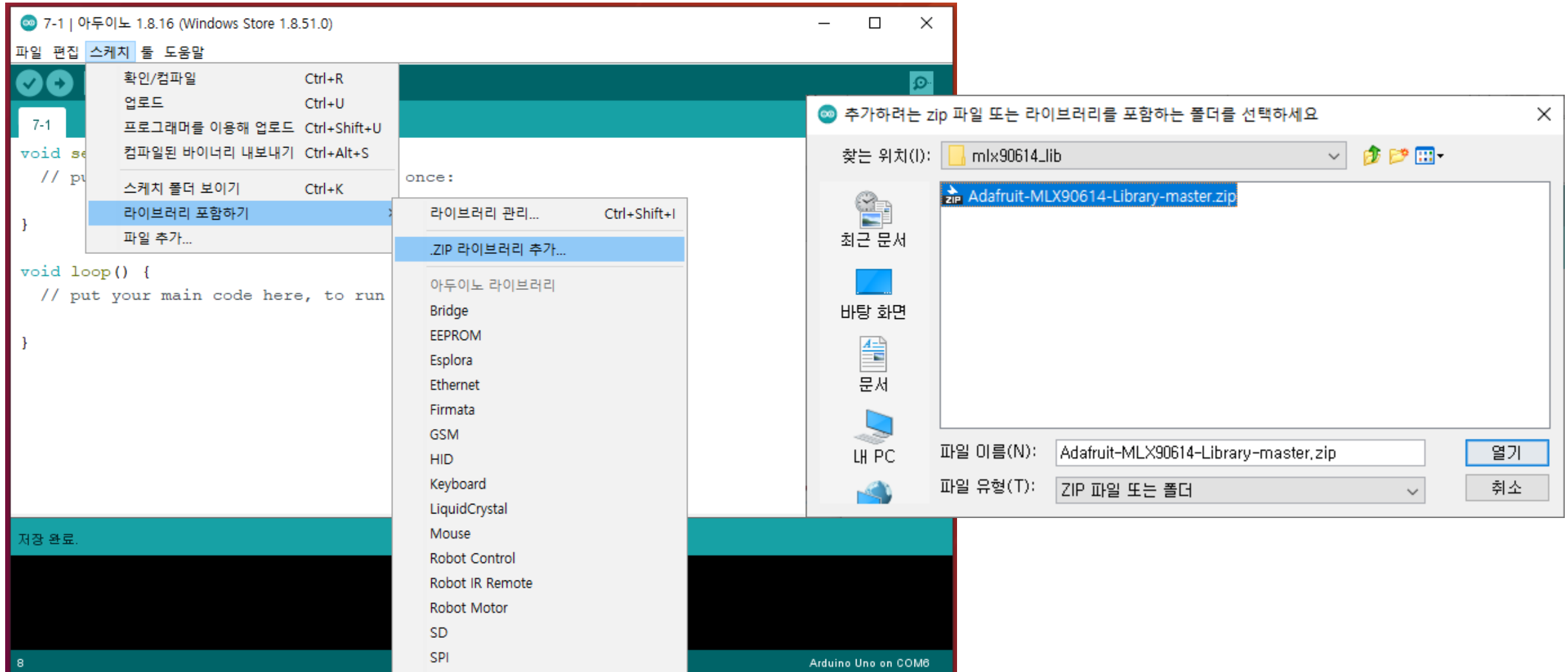
# MLX90614 라이브러리 사용

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

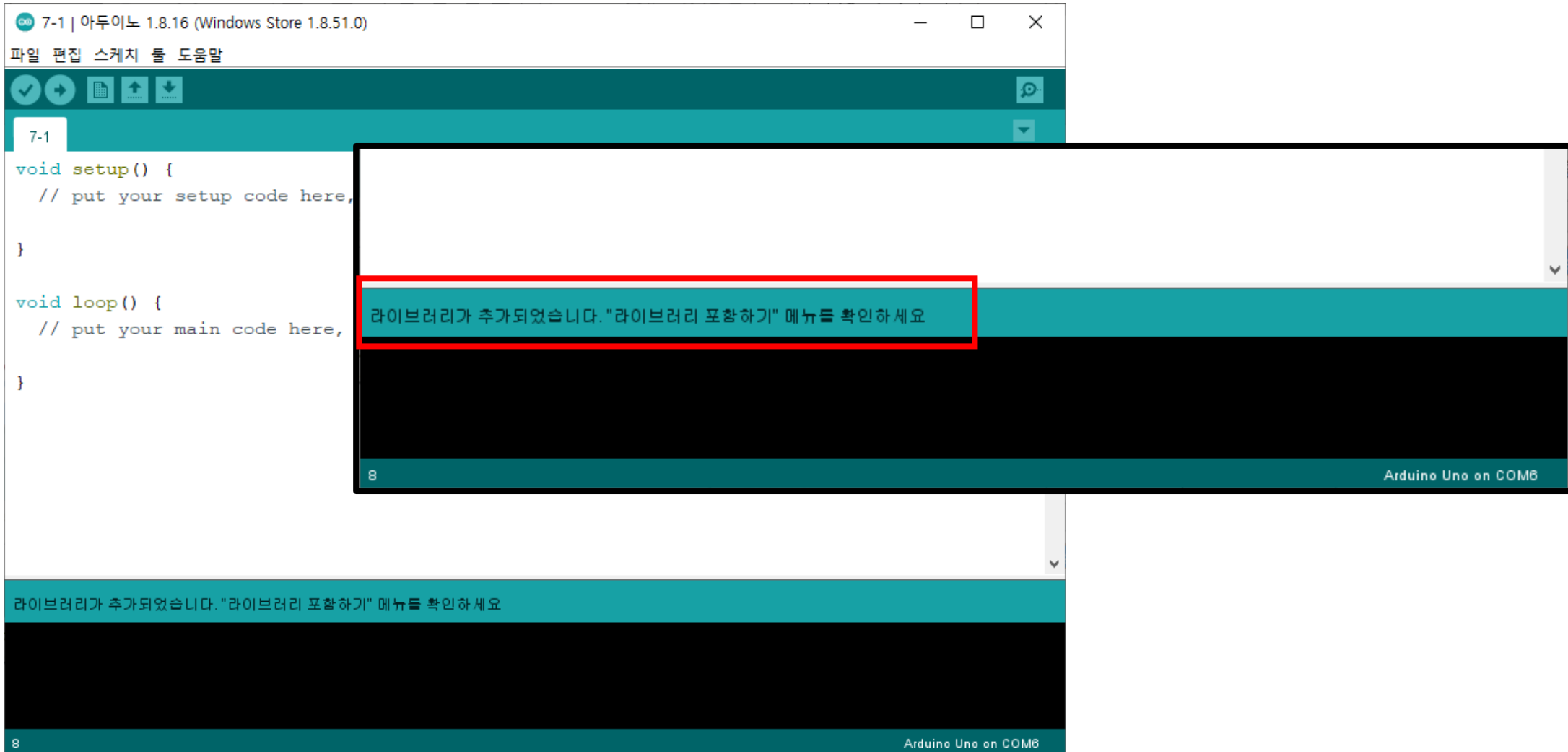




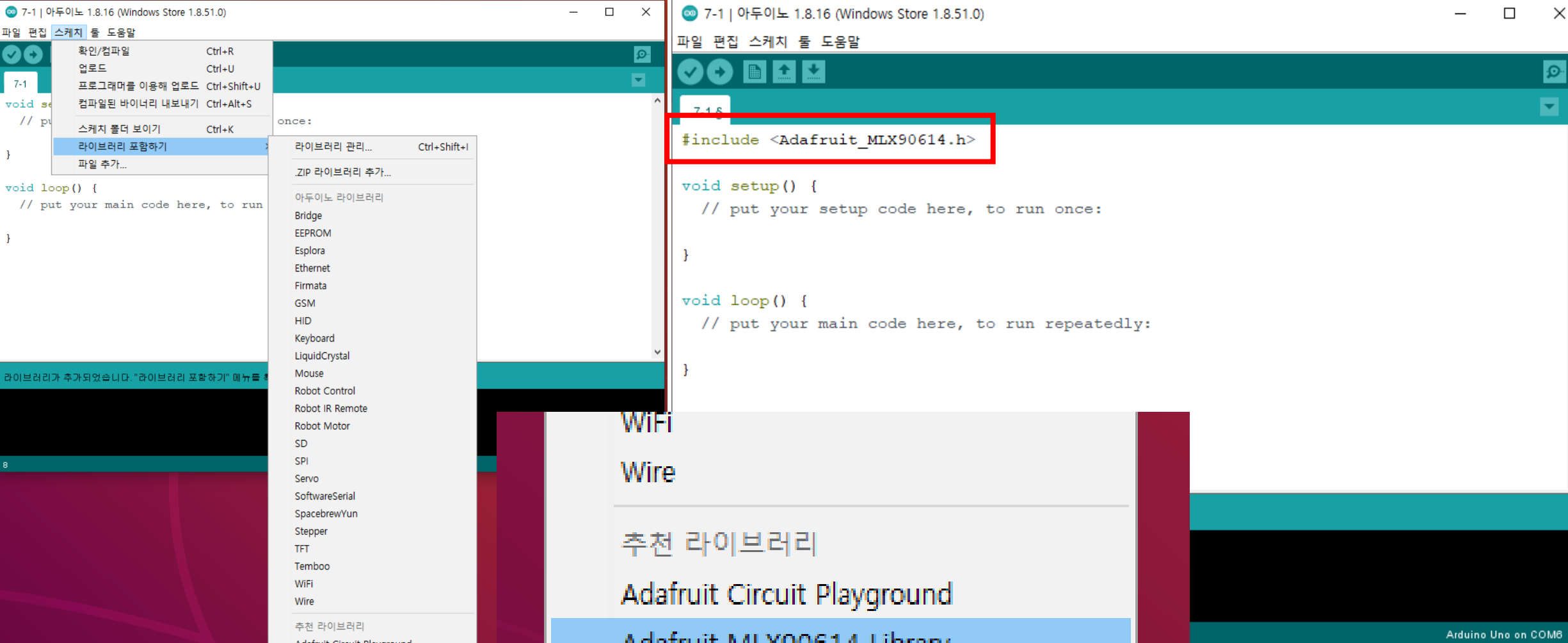
# MLX90614 라이브러리 사용



# MLX90614 라이브러리 사용



# MLX90614 라이브러리 사용



7-1 | 아두이노 1.8.16 (Windows Store 1.8.51.0)

파일 편집 스케치 툴 도움말

확인/컴파일 Ctrl+R  
업로드 Ctrl+U  
프로그래머를 이용해 업로드 Ctrl+Shift+U  
컴파일된 바이너리 내보내기 Ctrl+Alt+S  
스케치 폴더 보기 Ctrl+K  
라이브러리 포함하기  
파일 추가...

라이브러리 관리... Ctrl+Shift+I

.ZIP 라이브러리 추가...

아두이노 라이브러리

- Bridge
- EEPROM
- Esplora
- Ethernet
- Firmata
- GSM
- HID
- Keyboard
- LiquidCrystal
- Mouse
- Robot Control
- Robot IR Remote
- Robot Motor
- SD
- SPI
- Servo
- SoftwareSerial
- SpacebrewYun
- Stepper
- TFT
- Temboo
- WiFi
- Wire

추천 라이브러리

- Adafruit Circuit Playground
- Adafruit MLX90614 Library

7-1 | 아두이노 1.8.16 (Windows Store 1.8.51.0)

파일 편집 스케치 툴 도움말

7-16

```
#include <Adafruit_MLX90614.h>
```

```
void setup() {  
    // put your setup code here, to run once:  
}
```

```
void loop() {  
    // put your main code here, to run repeatedly:  
}
```

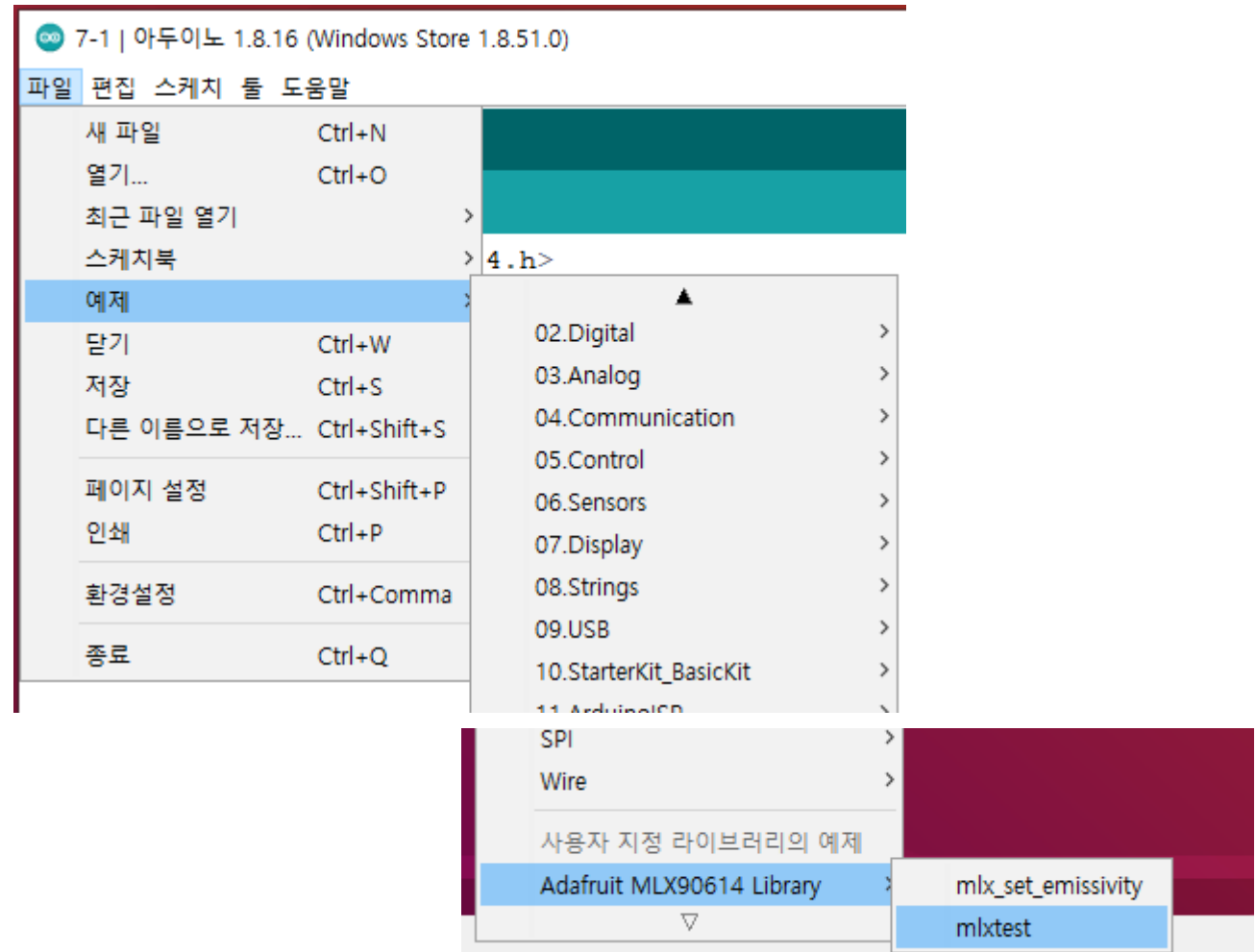
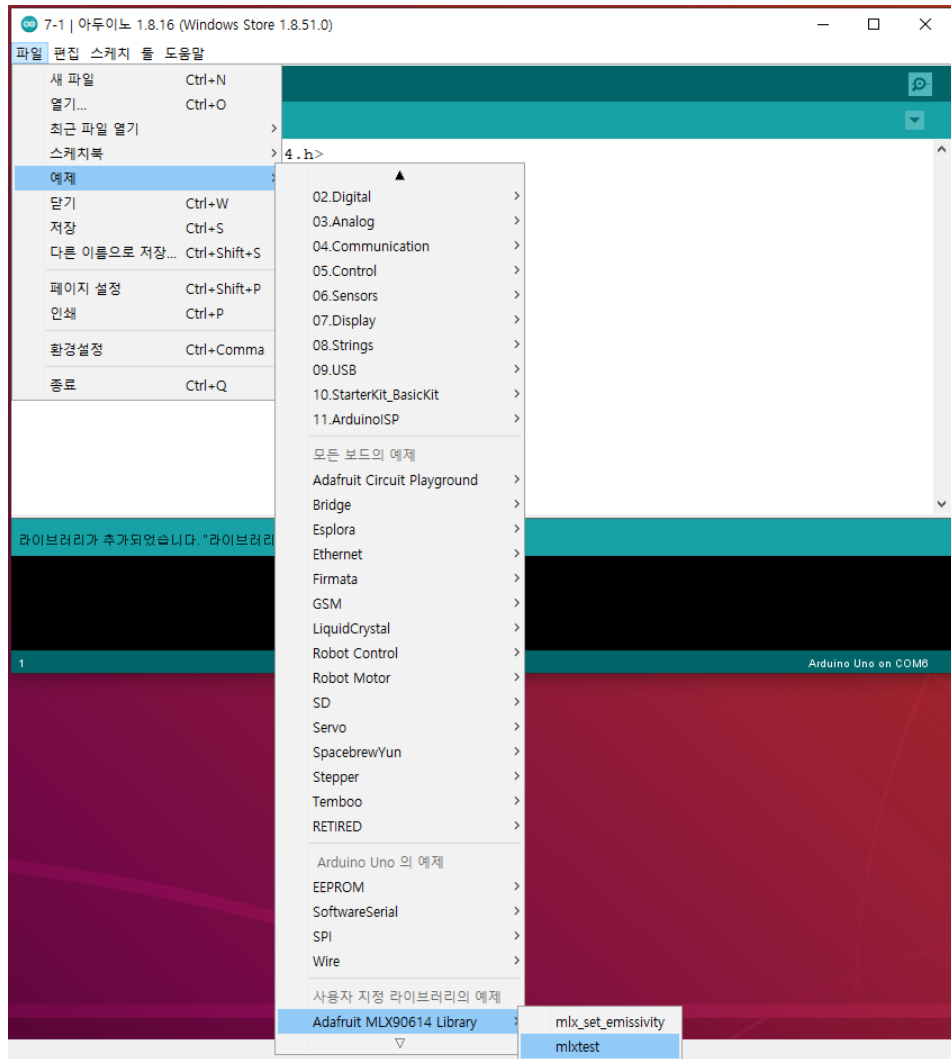
추천 라이브러리

Adafruit Circuit Playground

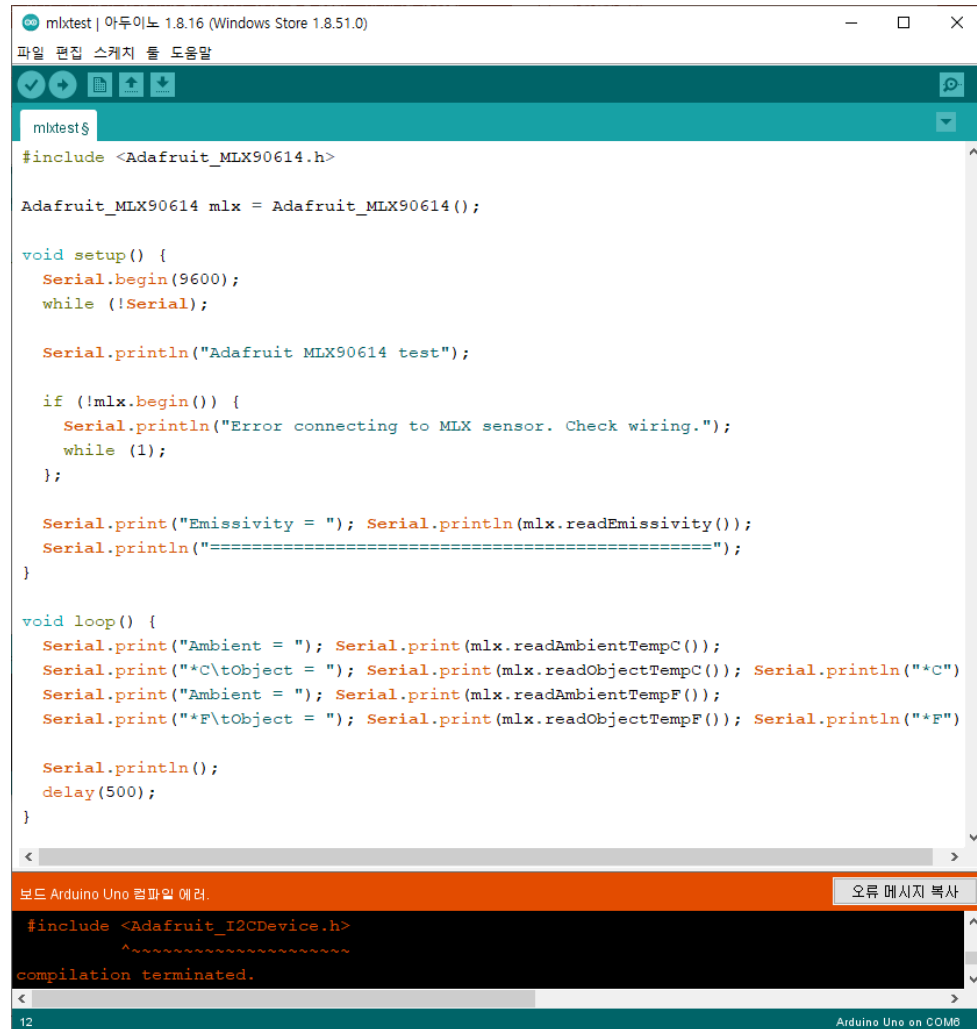
Adafruit MLX90614 Library

Arduino Uno on COM8

# MLX90614 라이브러리 예제 테스트



# MLX90614 라이브러리 예제 테스트



```
mlxtest | 아두이노 1.8.16 (Windows Store 1.8.51.0)
파일 편집 스케치 툴 도움말
mlxtest$
#include <Adafruit_MLX90614.h>

Adafruit_MLX90614 mlx = Adafruit_MLX90614();

void setup() {
  Serial.begin(9600);
  while (!Serial);

  Serial.println("Adafruit MLX90614 test");

  if (!mlx.begin()) {
    Serial.println("Error connecting to MLX sensor. Check wiring.");
    while (1);
  };

  Serial.print("Emissivity = "); Serial.println(mlx.readEmissivity());
  Serial.println("=====");
}

void loop() {
  Serial.print("Ambient = "); Serial.print(mlx.readAmbientTempC());
  Serial.print("C\tObject = "); Serial.print(mlx.readObjectTempC()); Serial.println("C");
  Serial.print("Ambient = "); Serial.print(mlx.readAmbientTempF());
  Serial.print("F\tObject = "); Serial.print(mlx.readObjectTempF()); Serial.println("F");

  Serial.println();
  delay(500);
}
```

보드 Arduino Uno 컴파일 에러.

오류 메시지 복사

```
#include <Adafruit_I2CDevice.h>
^~~~~~
compilation terminated.
```

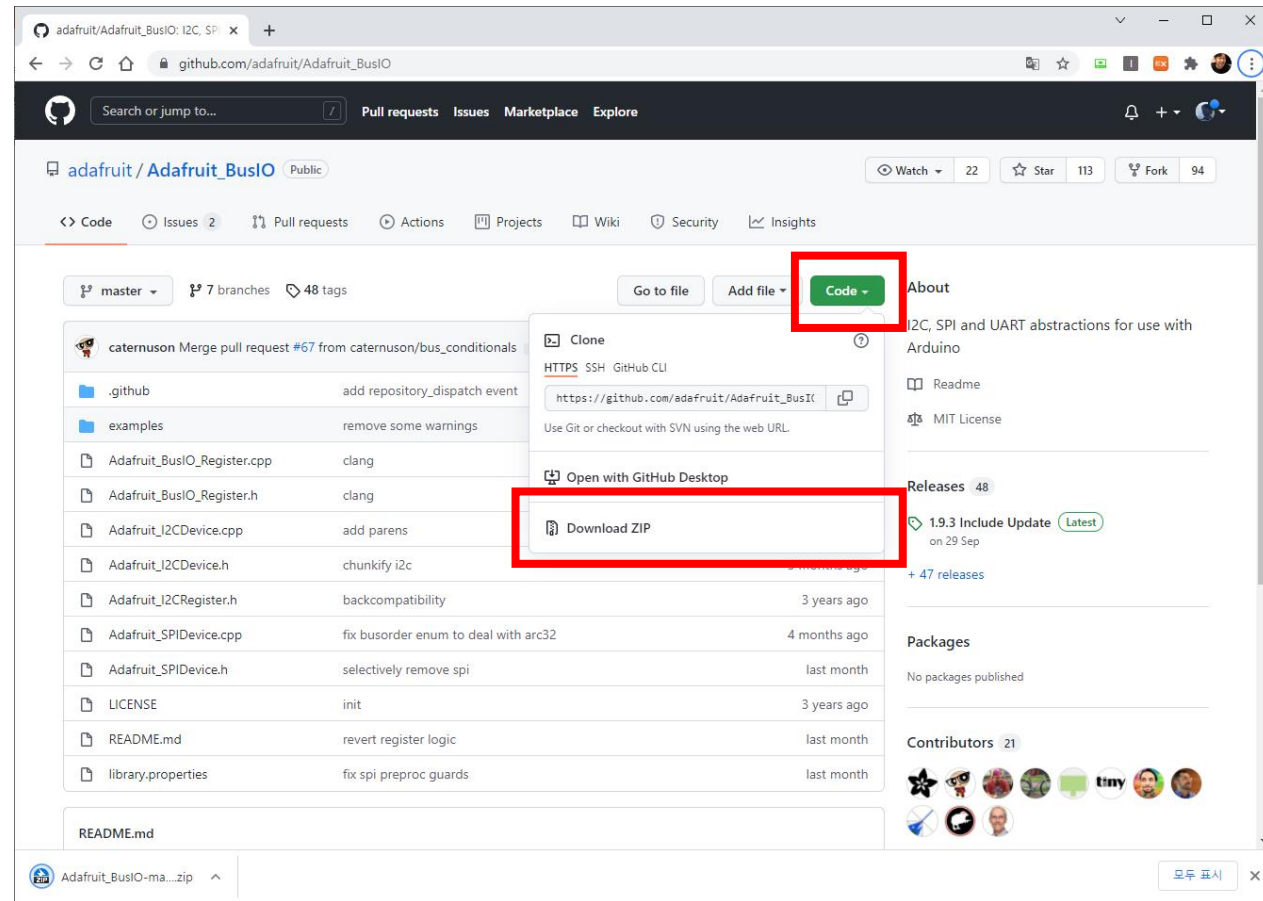
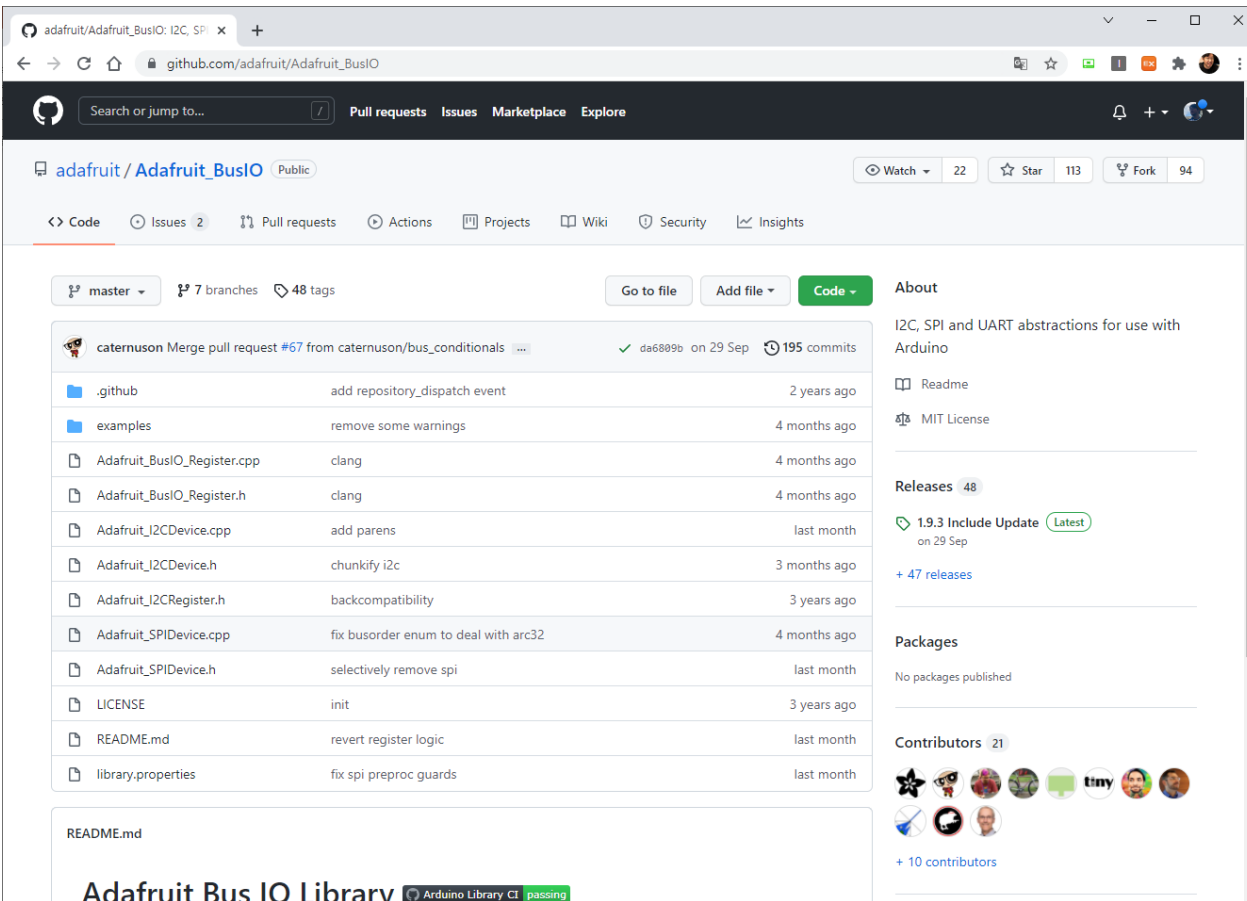
12 Arduino Uno on COM8

보드 Arduino Uno 컴파일 에러.

```
#include <Adafruit_I2CDevice.h>
^~~~~~
compilation terminated.
```

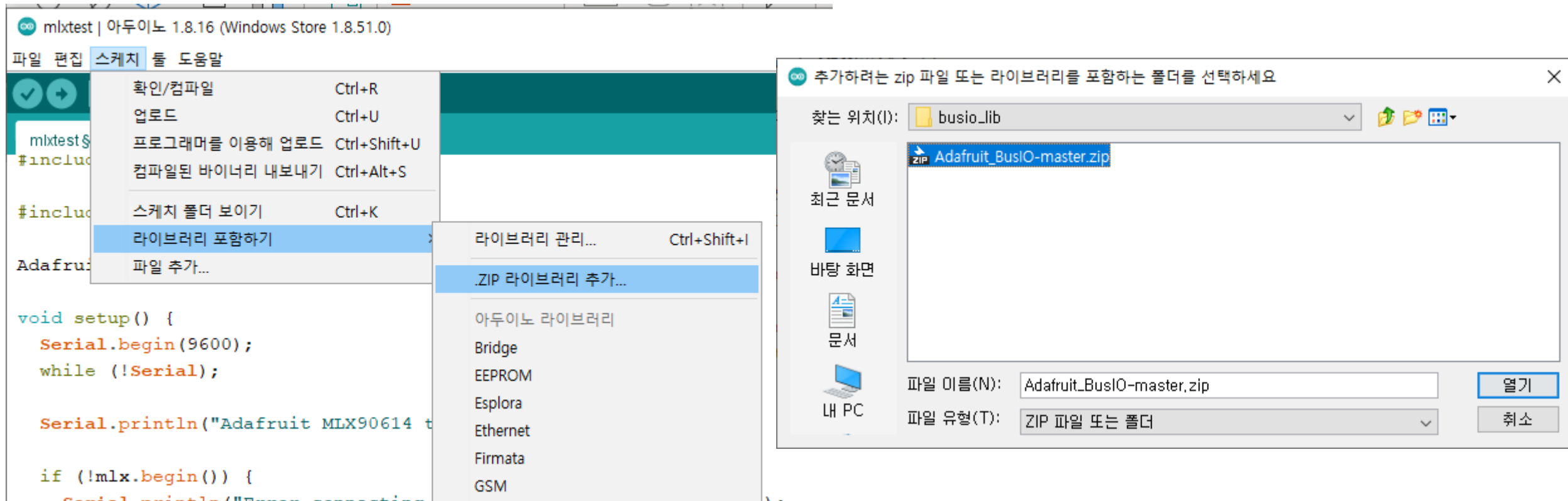
# MLX90614 라이브러리 예제 테스트

- [https://github.com/adafruit/Adafruit\\_BusIO](https://github.com/adafruit/Adafruit_BusIO) 라이브러리 다운로드



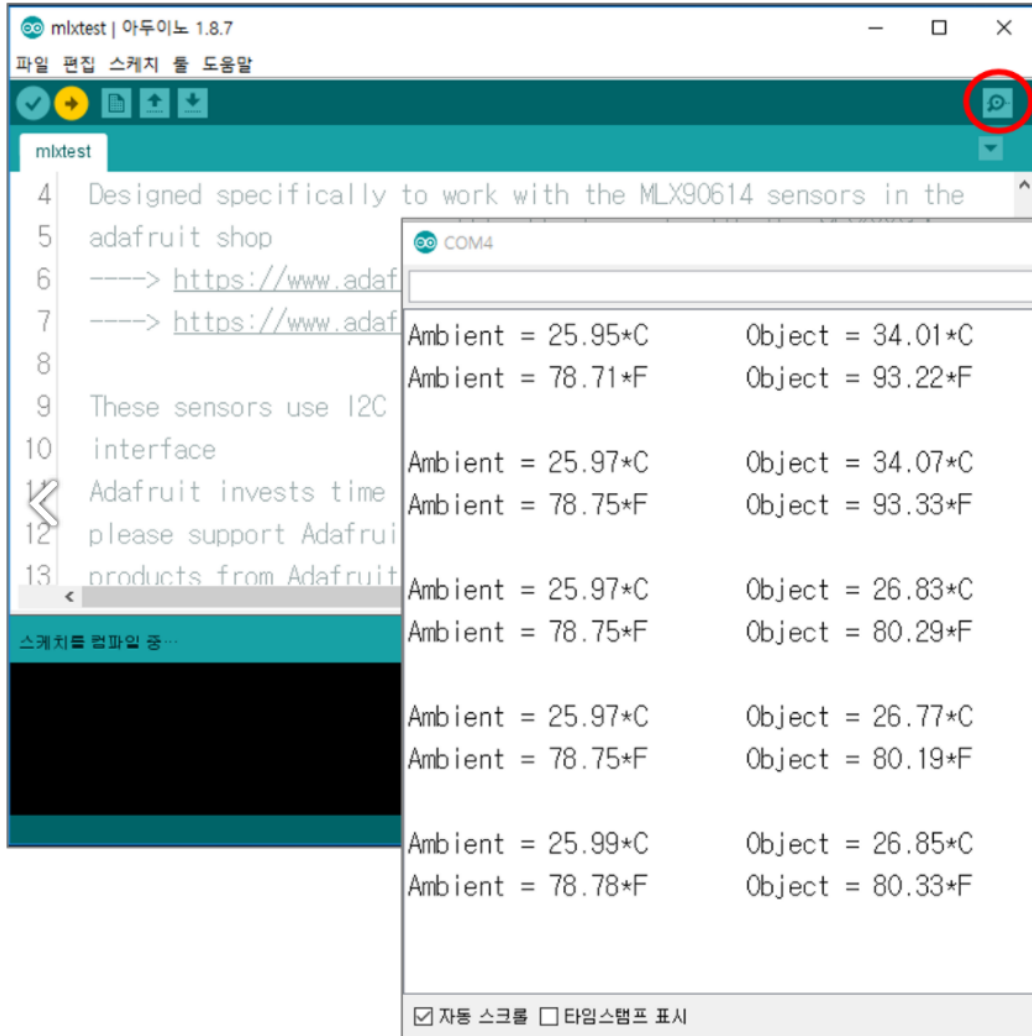
# MLX90614 라이브러리 예제 테스트

- [https://github.com/adafruit/Adafruit\\_BusIO](https://github.com/adafruit/Adafruit_BusIO) 라이브러리 추가



# MLX90614 라이브러리 예제 테스트

예제 7-1



The screenshot shows the Arduino IDE interface. The top window displays the 'mlxtest' sketch, which is a test program for the MLX90614 non-contact infrared thermometer. The code includes comments and two URLs for more information. The bottom window shows the serial monitor connected to COM4, displaying real-time temperature readings in both Celsius and Fahrenheit.

```
4 Designed specifically to work with the MLX90614 sensors in the
5 adafruit shop
6 ----> https://www.adafruit.com/product/247
7 ----> https://www.adafruit.com/product/247
8
9 These sensors use I2C
10 interface
11 Adafruit invests time and resources into
12 please support Adafruit and open-source
13 products from Adafruit
```

Ambient (C)	Object (C)	Ambient (F)	Object (F)
25.95	34.01	78.71	93.22
25.97	34.07	78.75	93.33
25.97	26.83	78.75	80.29
25.97	26.77	78.75	80.19
25.99	26.85	78.78	80.33





응용 : 체온 측정 출입 관리

# 전체 구성

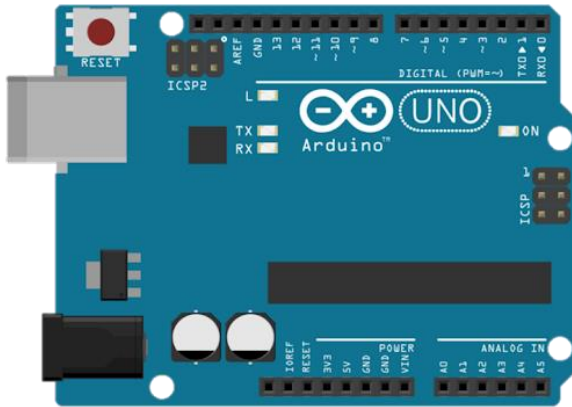
손(물체) 유무 감지  
(예제 6-1)



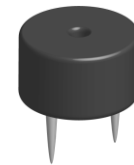
온도 측정  
(예제 7-1)



정보 출력(시리얼통신)



측정 완료 경고음 발생



LED 인디케이터

