



Let's make IoT mood lamp (feat. **Arduino**)

WIZnet Wiki & Forum



<http://wizwiki.net>

<https://forum.wiznet.io>

<http://wiznetacademy.com/>

권혁주



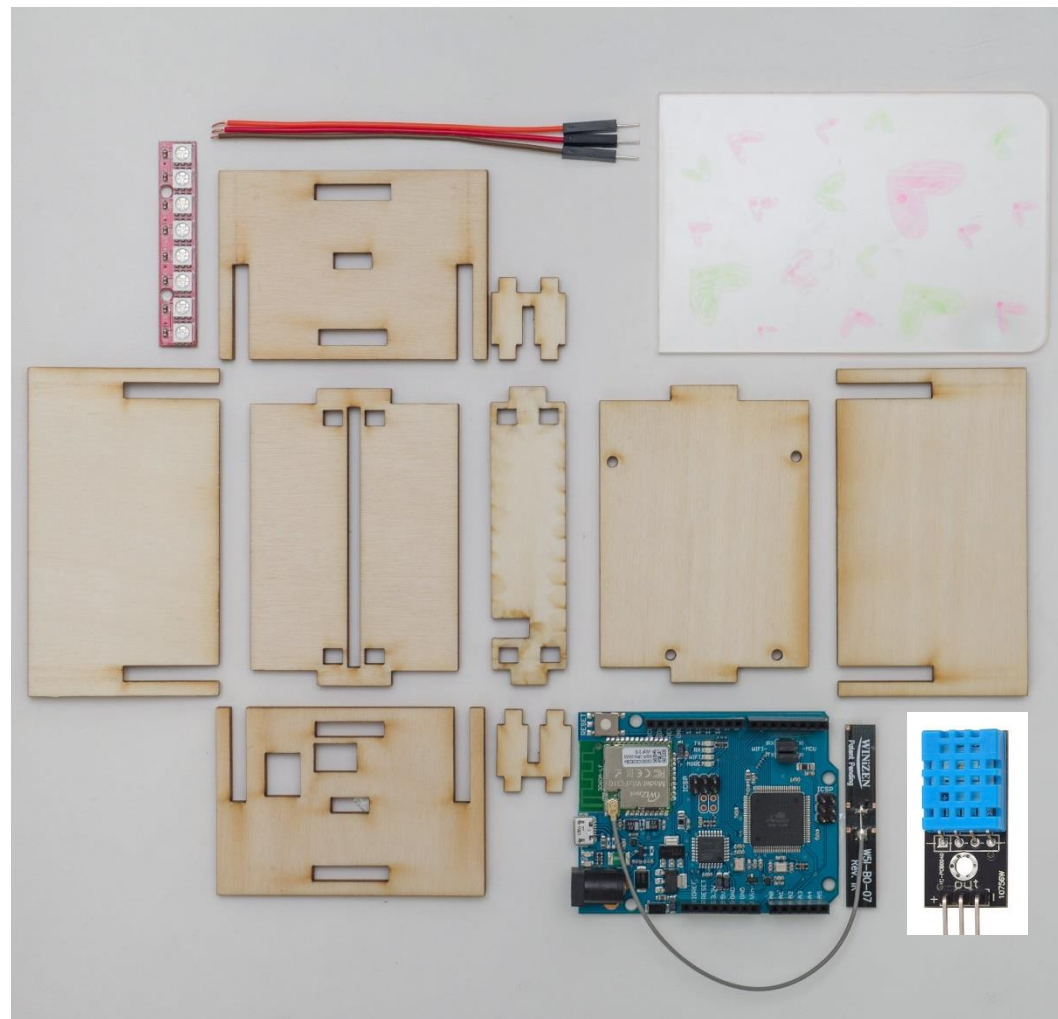
마스터 부제목 스타일 편집

Contents

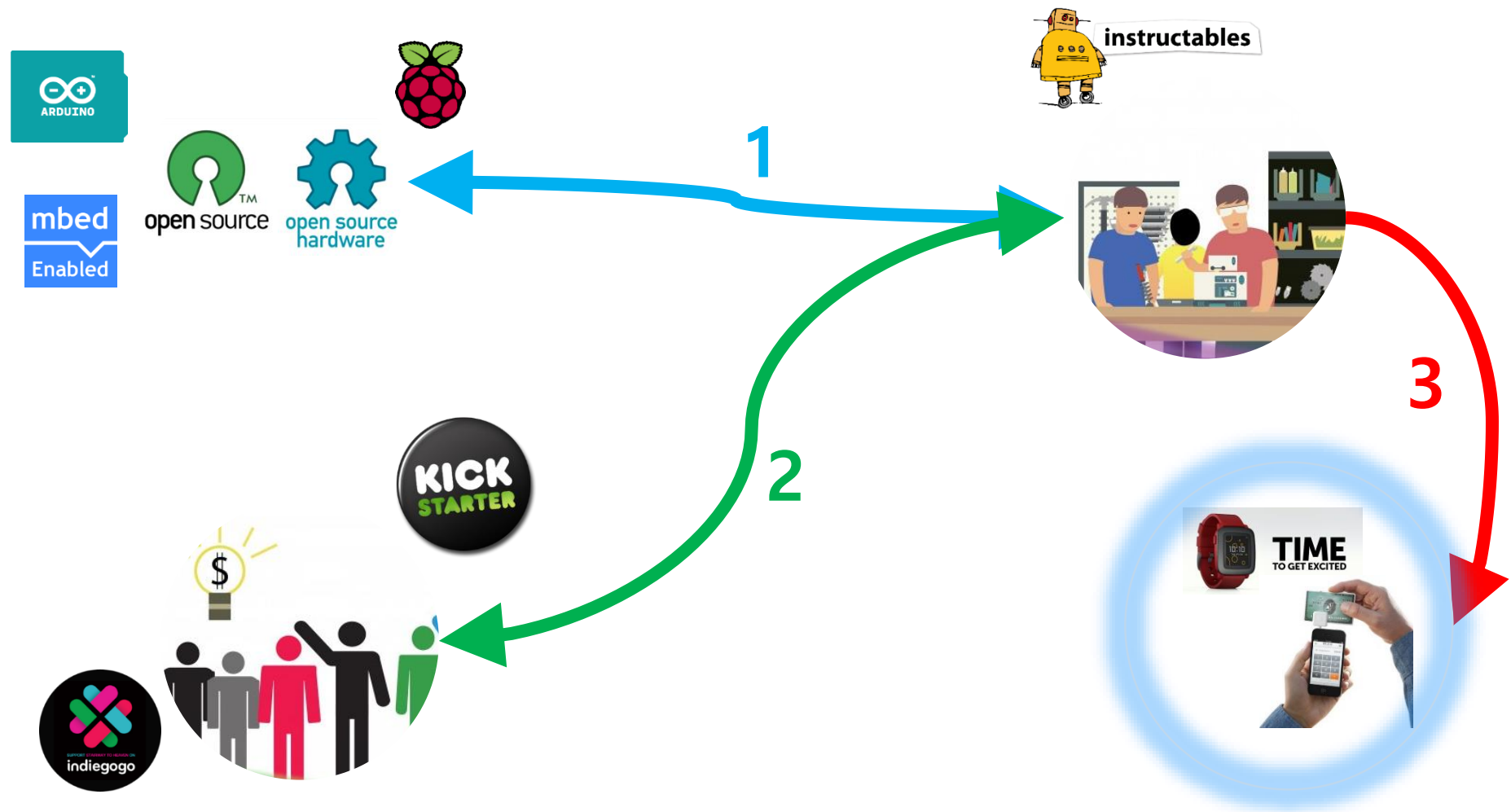
1. Intro
2. WS2812 RGB LED
3. DHT11
4. Blynk

Intro

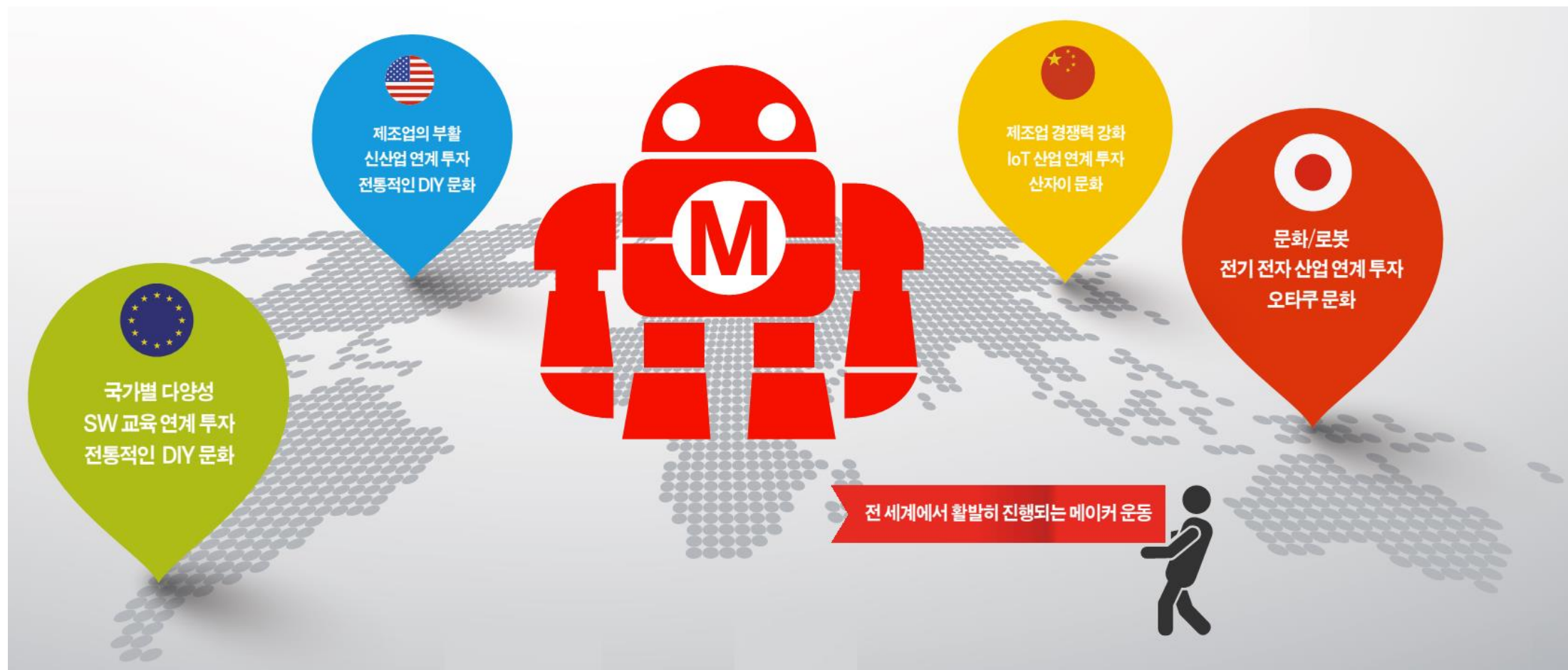
IoT mood lamp



Makers



Trend of world



Arduino



Open Source

무료로 사용하고 수정하고 재배포 할 수 있는 소프트웨어 및 하드웨어 자원, 주로 소프트웨어 및 하드웨어,

Electronics

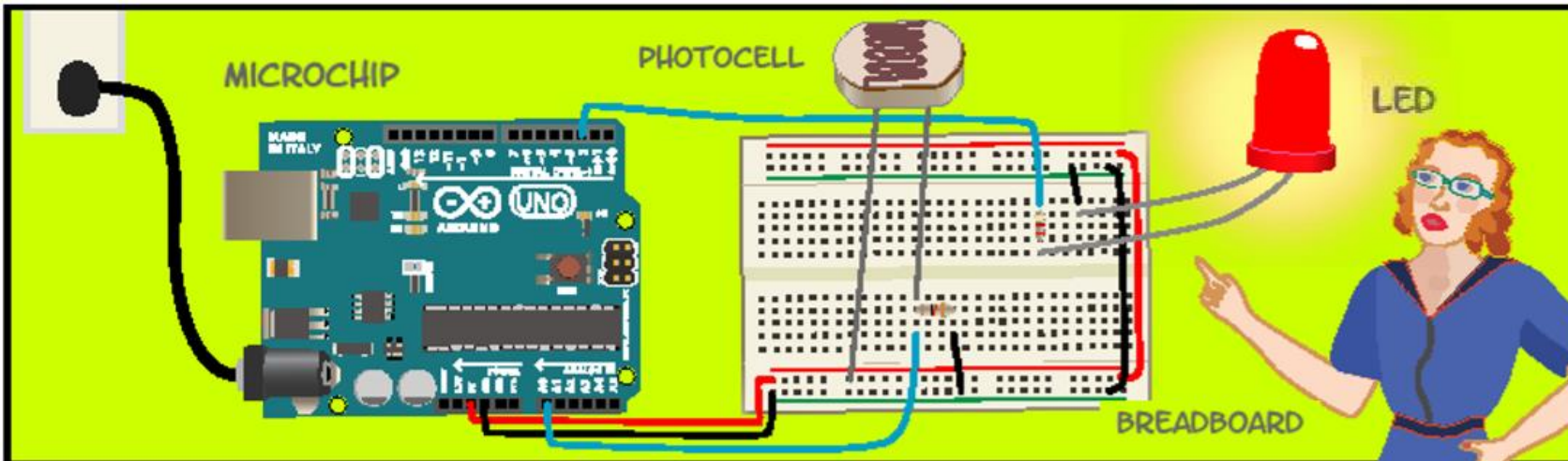
전자의 흐름으로 만들어진 전기 에너지를 이용하는 기술

Prototype

다른 것들에 대한 기준이나 표준이 될 수 있는 원래의 형태

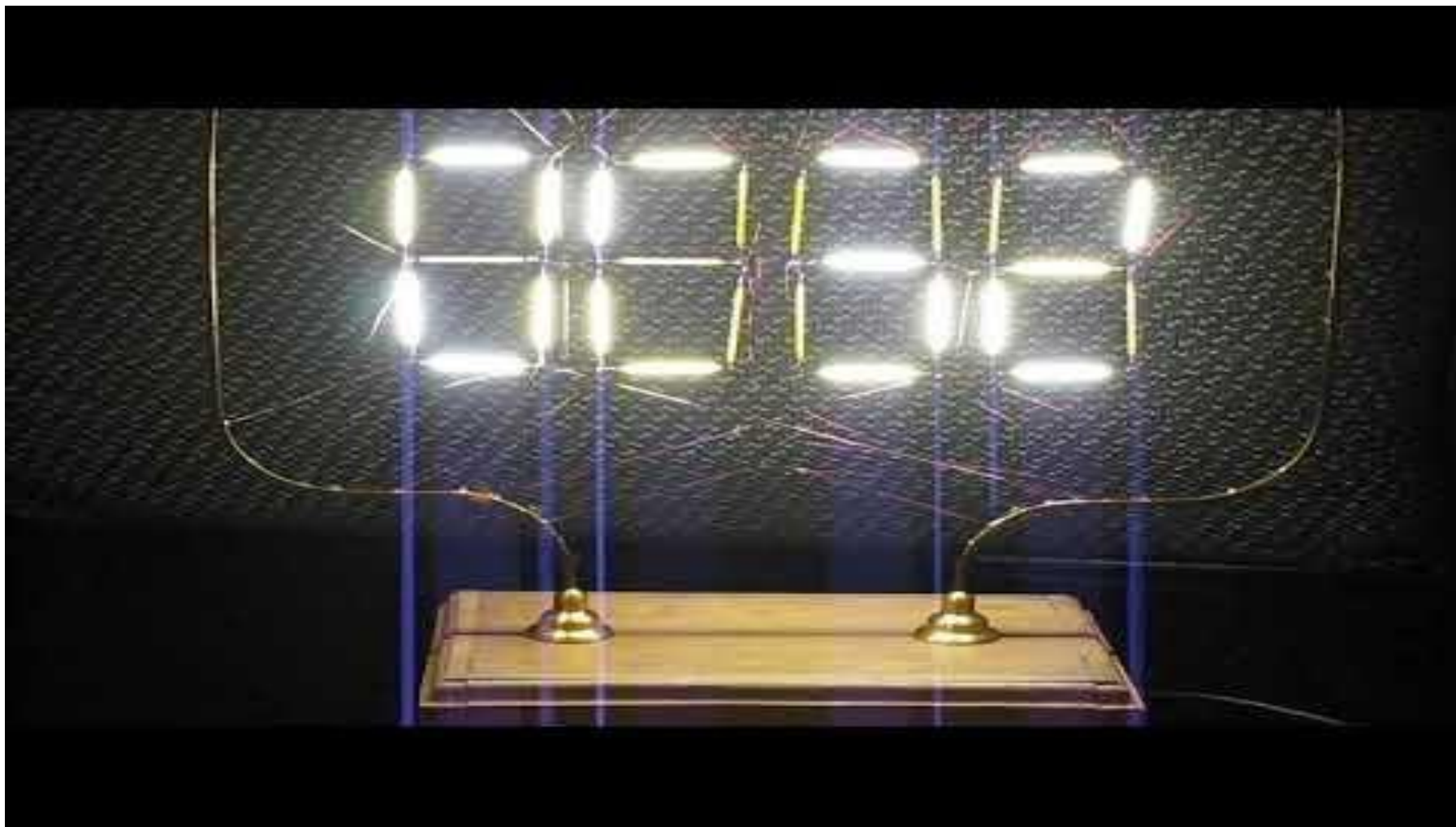
Platform

다른 소프트웨어가 실행될 수 있는 소프트웨어 프레임 워크와 하드웨어 아키텍처

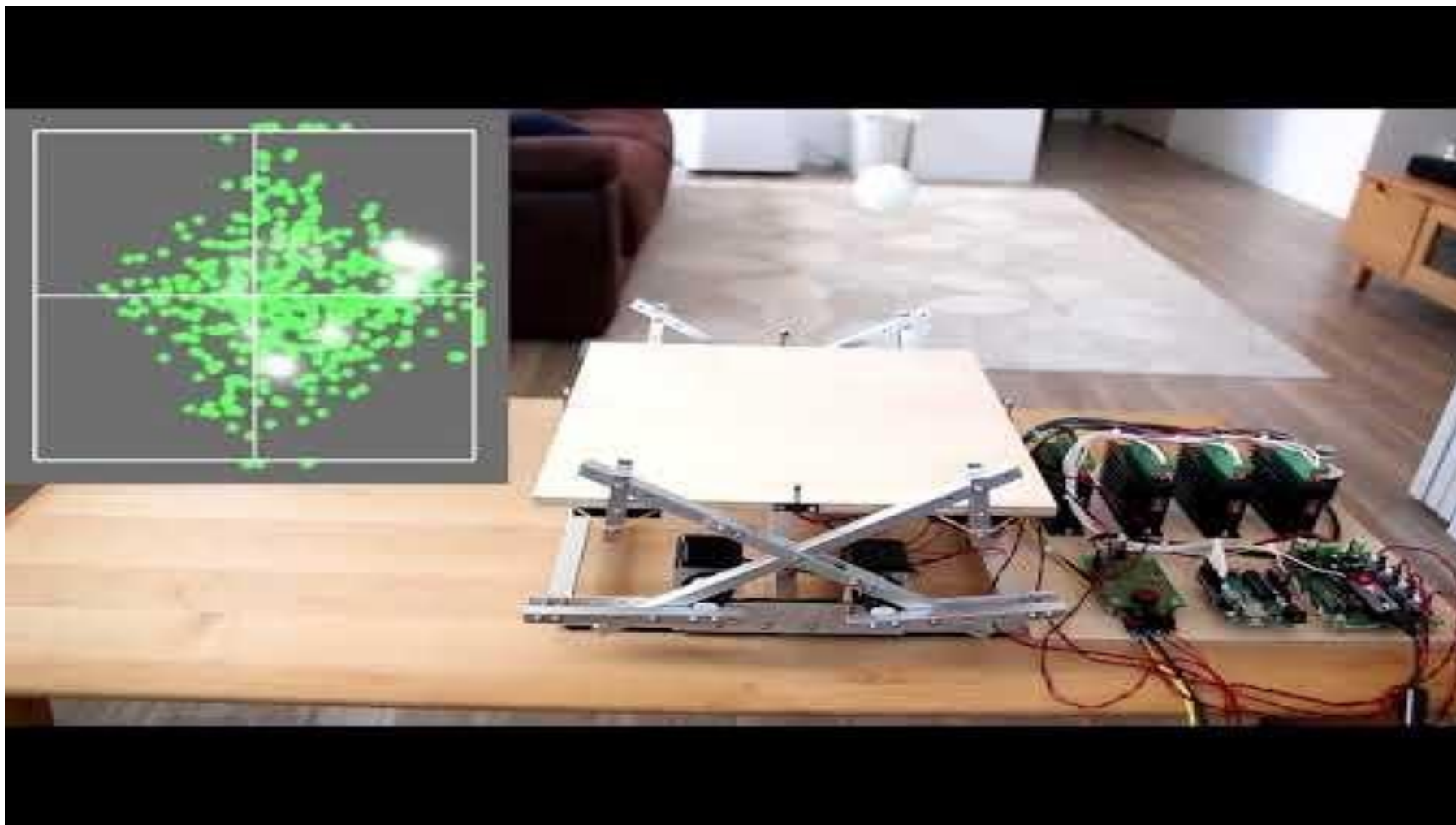


아두이노에는 여러분의 프로그램을 돌릴 수 있는 매우 작은 컴퓨터인 마이크로칩(MICROCHIP)이 들어 있습니다. 여러분은 아두이노에 센서를 연결할 수 있으며 그것을 이용해 상태를 측정할 수 있습니다.(예를 들어 방이 얼마나 밝은지를 측정하는 것처럼요) 또한 이러한 상황에 따라 다른 물체를 어떻게 반응하게 할 것인가도 제어할 수 있습니다.(예를 들어 방이 어두워지면 LED가 켜지게 하는 것이죠.)

Arduino



Arduino



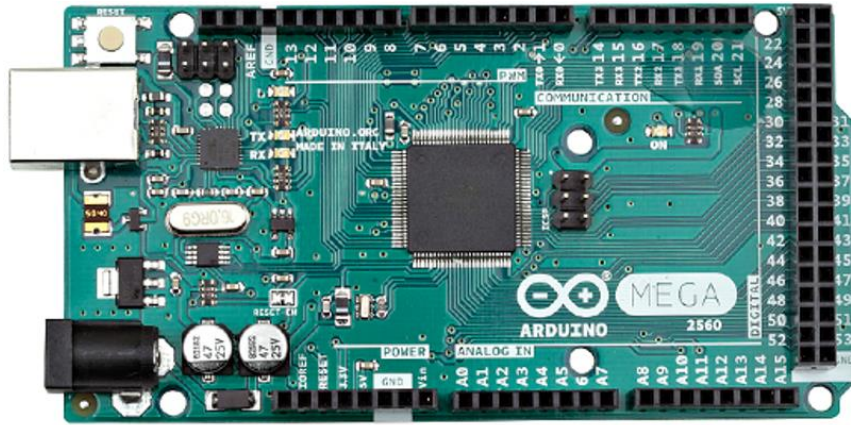
Arduino



Arduino



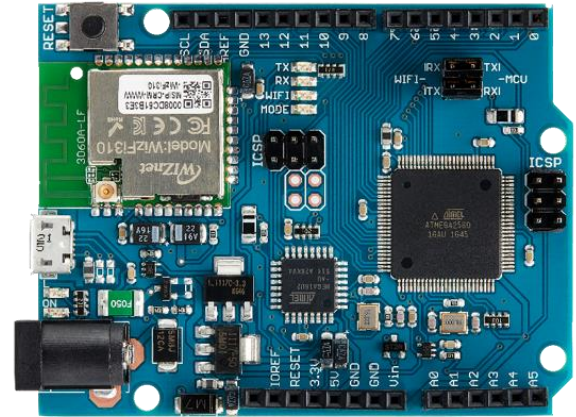
WizArduino MEGA WiFi



Arduino MEGA 2560

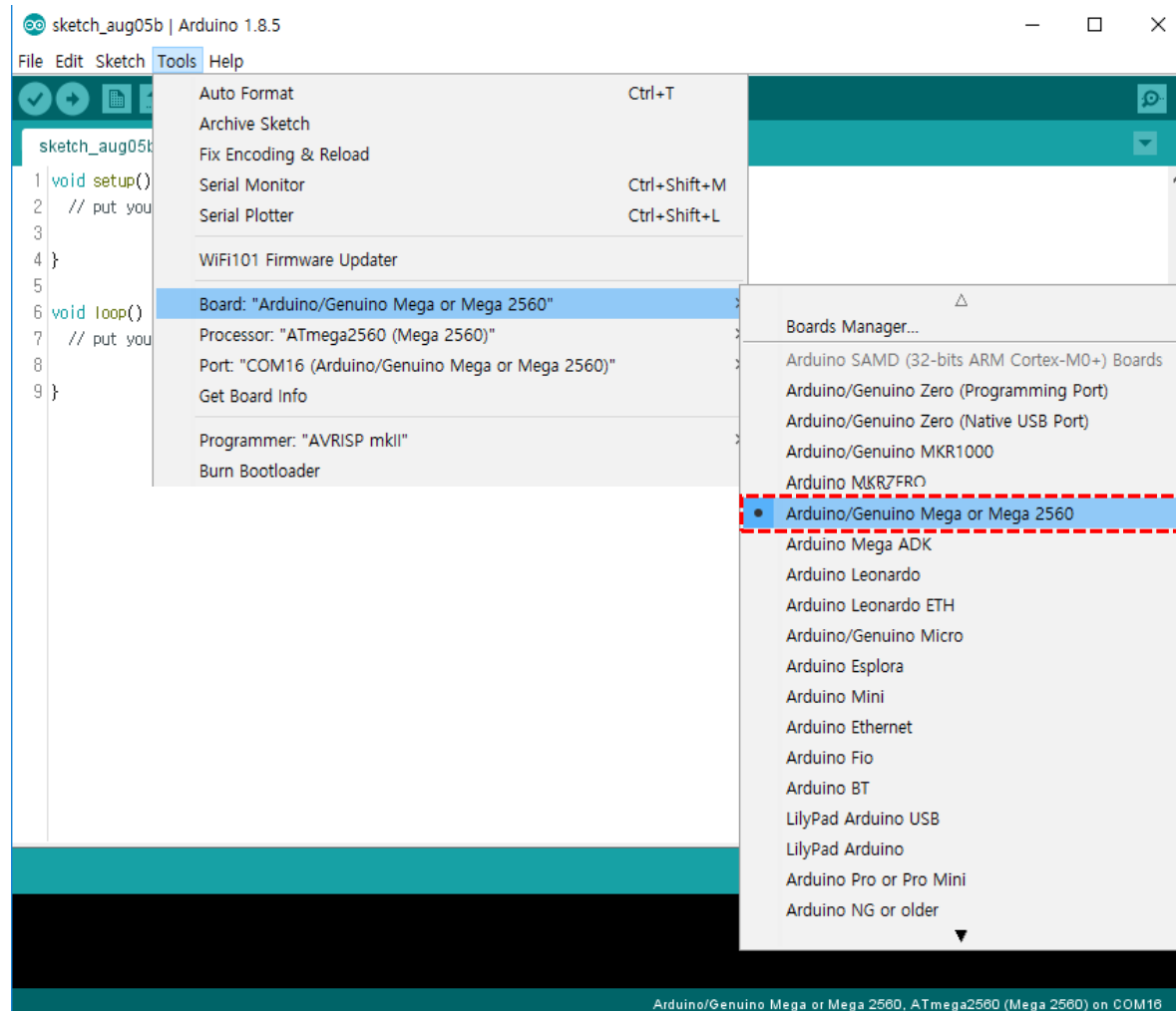


WizFi310

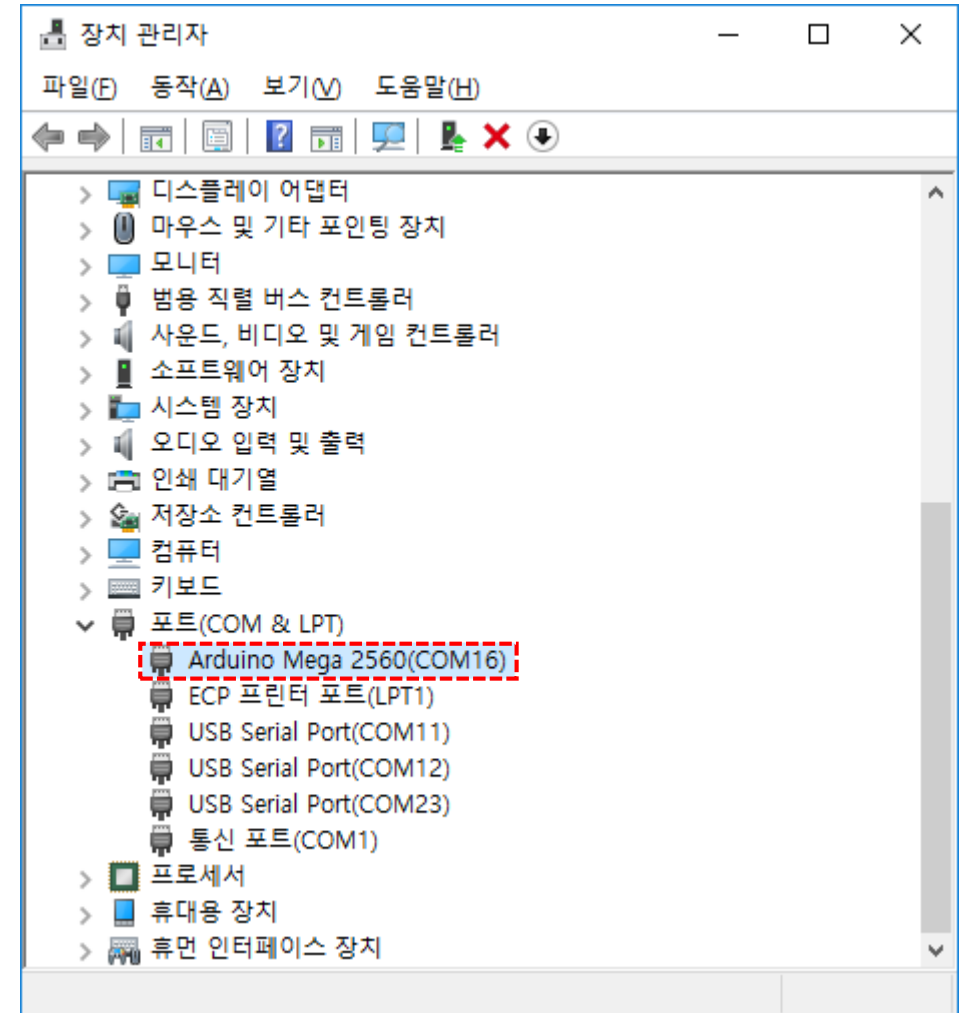
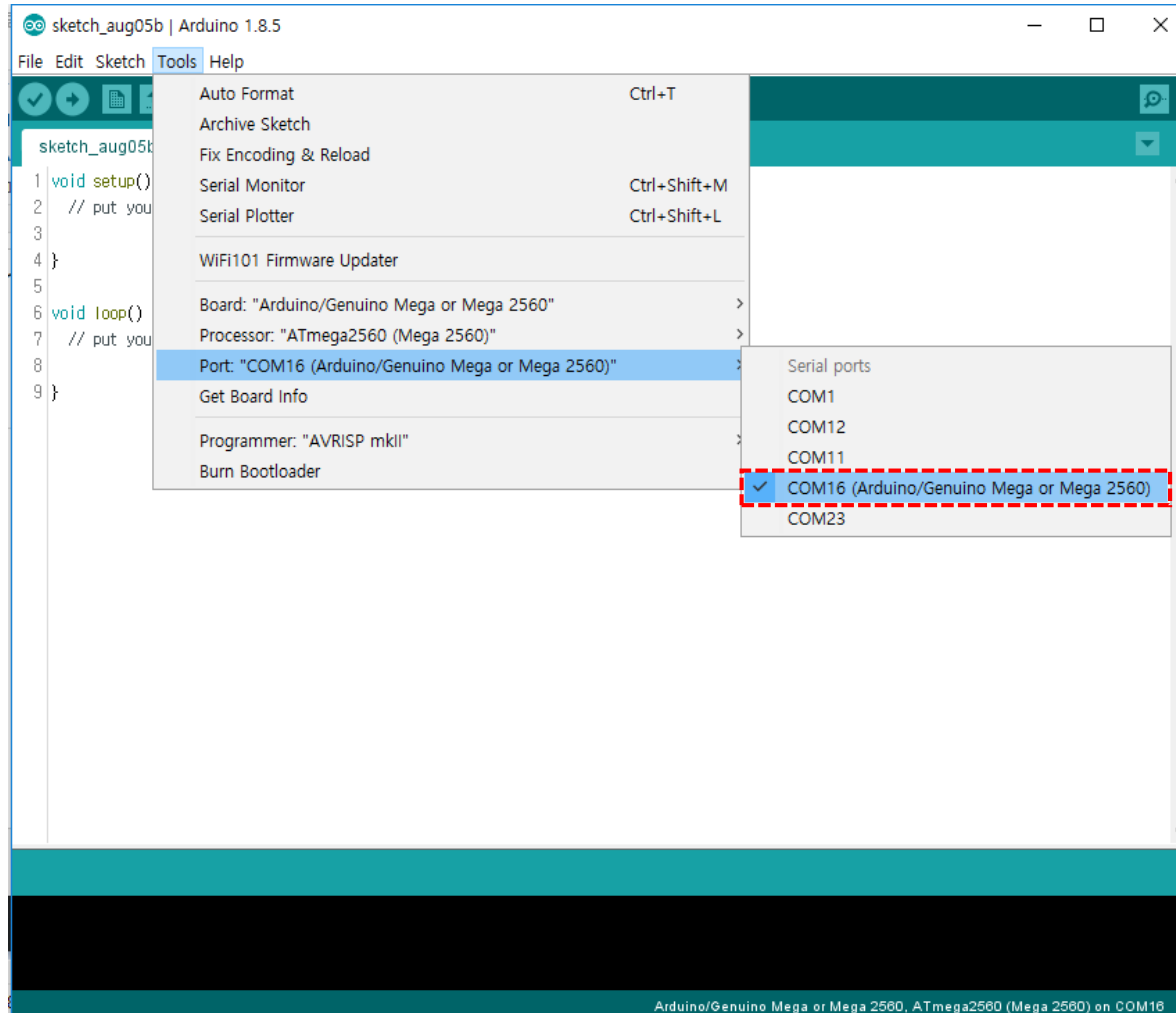


WizArduino MEGA WIFI

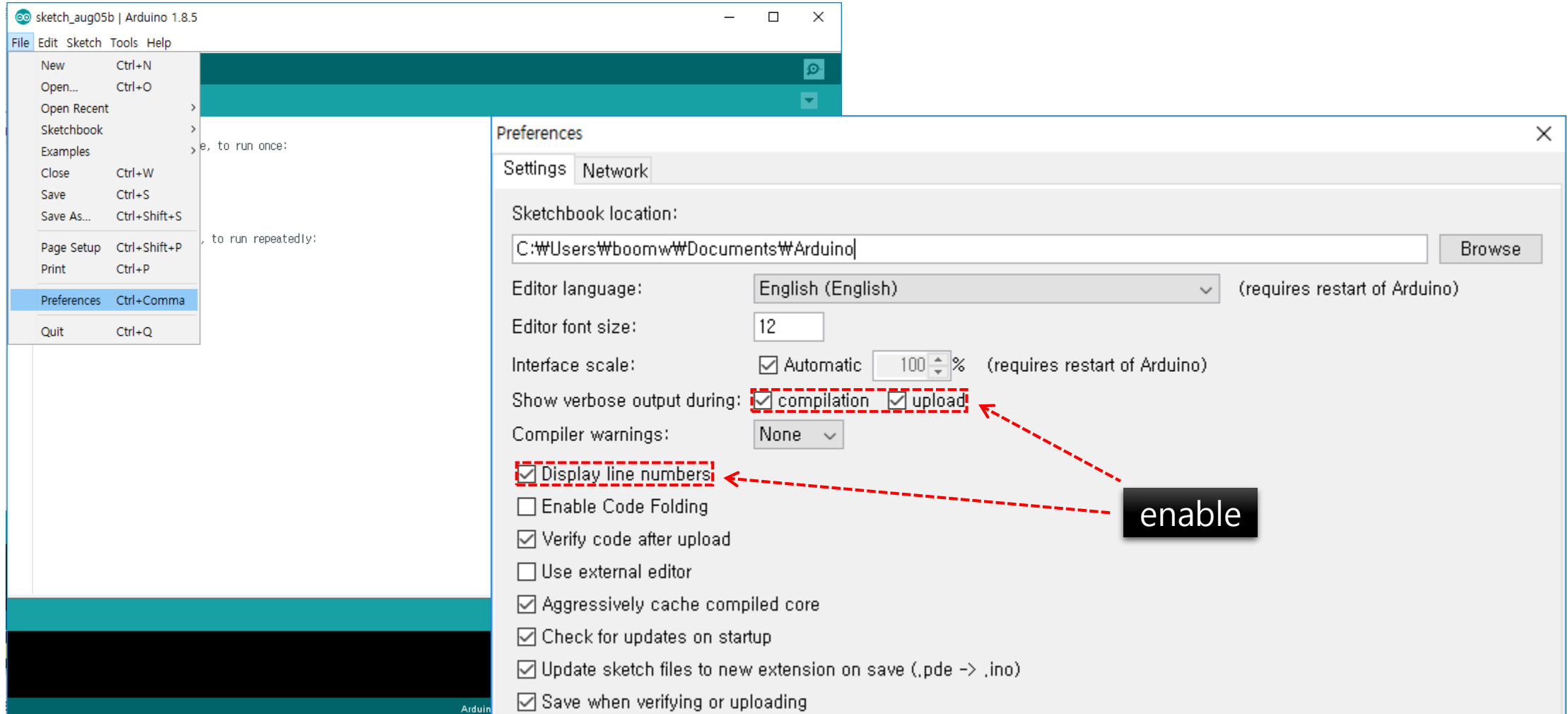
Getting started(Board)



Getting started(Port)



Getting started(Settings)



Getting started(blink)

The image shows two side-by-side screenshots of the Arduino IDE 1.8.5 interface.

Left Screenshot: The 'File' menu is open, and the 'Examples' submenu is displayed. The 'Blink' example is highlighted under the '01.Basics' category. The menu path is: File > Examples > 01.Basics > Blink.

Right Screenshot: The 'Blink' sketch is open in the editor. The code is as follows:

```
24
25 // the setup function runs once when you press reset or power the board
26 void setup() {
27   // initialize digital pin LED_BUILTIN as an output.
28   pinMode(LED_BUILTIN, OUTPUT);
29 }
30
31 // the loop function runs over and over again forever
32 void loop() {
33   digitalWrite(LED_BUILTIN, HIGH);   // turn the LED on (HIGH is the voltage level)
34   delay(1000);                       // wait for a second
35   digitalWrite(LED_BUILTIN, LOW);    // turn the LED off by making the voltage LOW
36   delay(1000);                       // wait for a second
37 }
```

At the bottom of the IDE, the board is set to 'Arduino/Genuino Mega or Mega 2560, ATmega2560 (Mega 2560) on COM7'.

Getting started(blink with circuit)

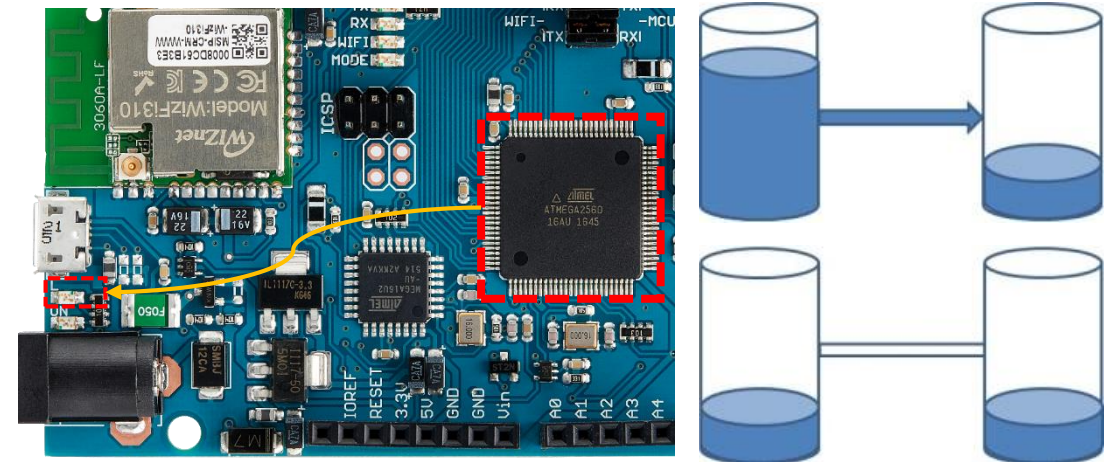
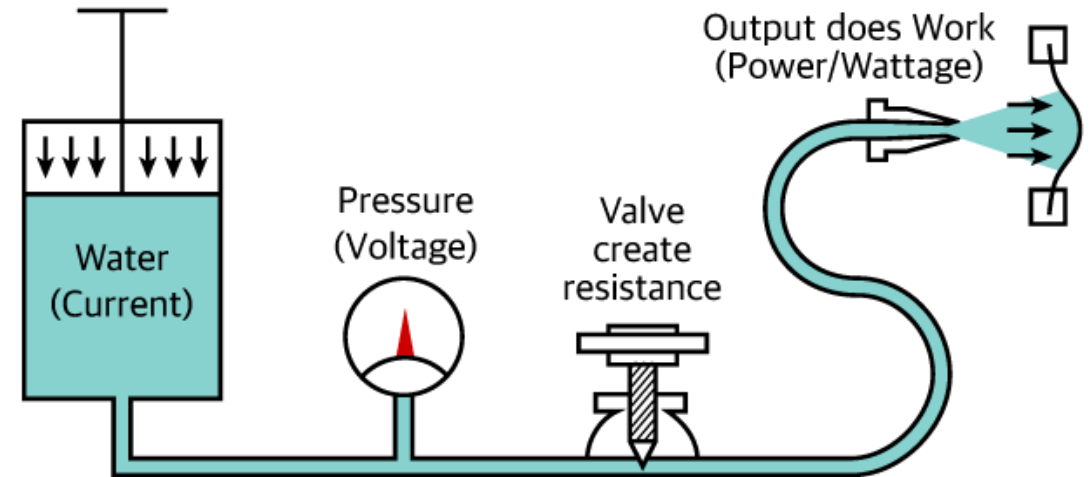
```
Blink | Arduino 1.8.5
File Edit Sketch Tools Help

[Checkmark] [Upload] [New] [Open] [Save] [Find]

Blink

24
25 // the setup function runs once when you press reset or power the board
26 void setup() {
27   // initialize digital pin LED_BUILTIN as an output.
28   pinMode(LED_BUILTIN, OUTPUT);
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33   digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is the voltage level)
34   delay(1000); // wait for a second
35   digitalWrite(LED_BUILTIN, LOW); // turn the LED off by making the voltage LOW
36   delay(1000); // wait for a second
37 }
```

28 Arduino/Genuino Mega or Mega 2560, ATmega2560 (Mega 2560) on COM7



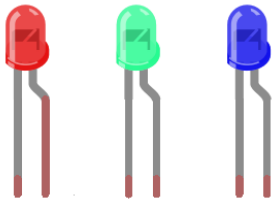
Exercise 0

- » **Change the blink rate to 500ms.**
 - **Hint : See the 33th and 35th line of the code.**

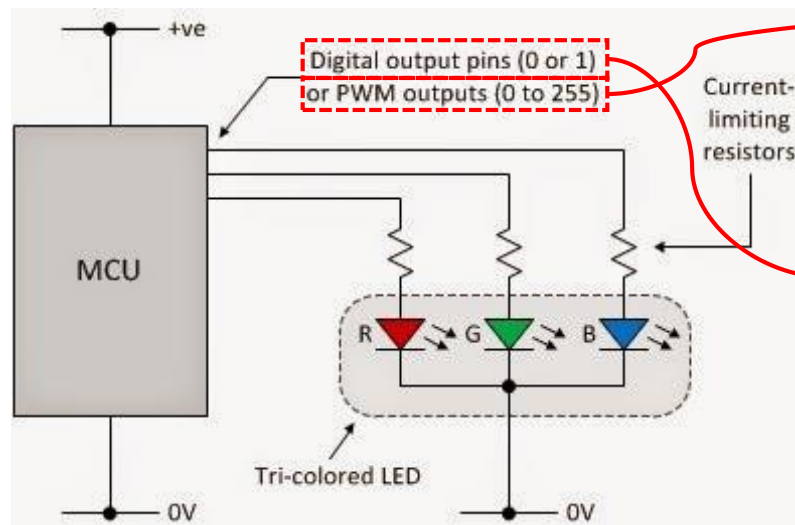
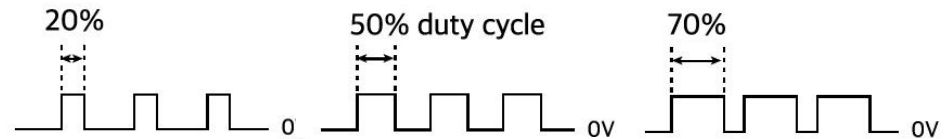
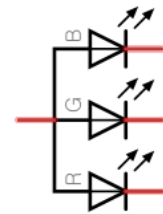
WS2812 RGB LED

LED

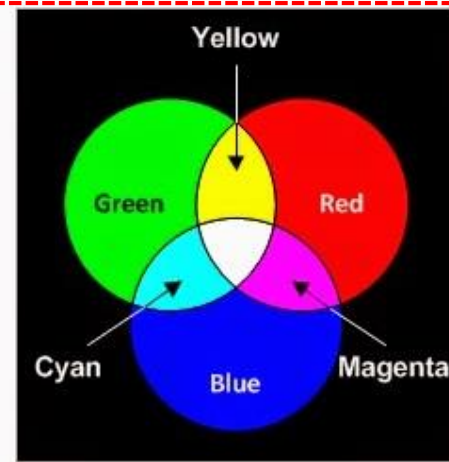
» LED? Light Emitting Diode



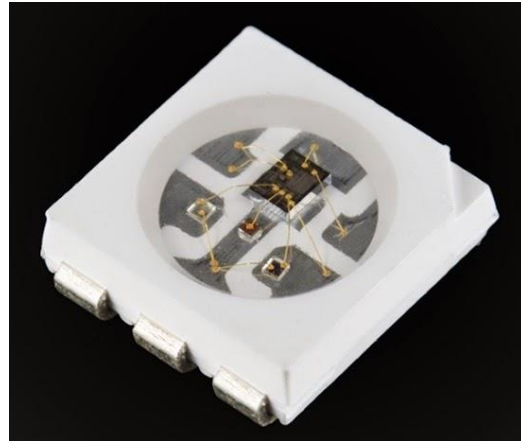
» RGB LED?



R	G	B	Output
Off	Off	Off	Black
On	Off	Off	Red
Off	On	Off	Green
Off	Off	On	Blue
On	On	Off	Yellow
On	Off	On	Magenta
Off	On	On	Cyan
On	On	On	White

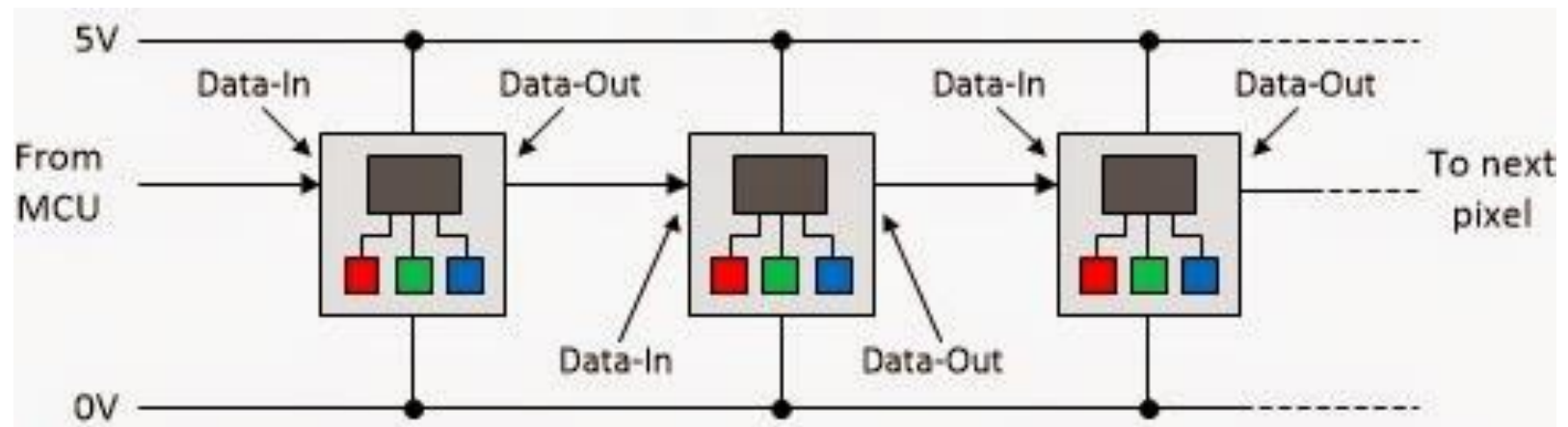


WS2812



» WS2812

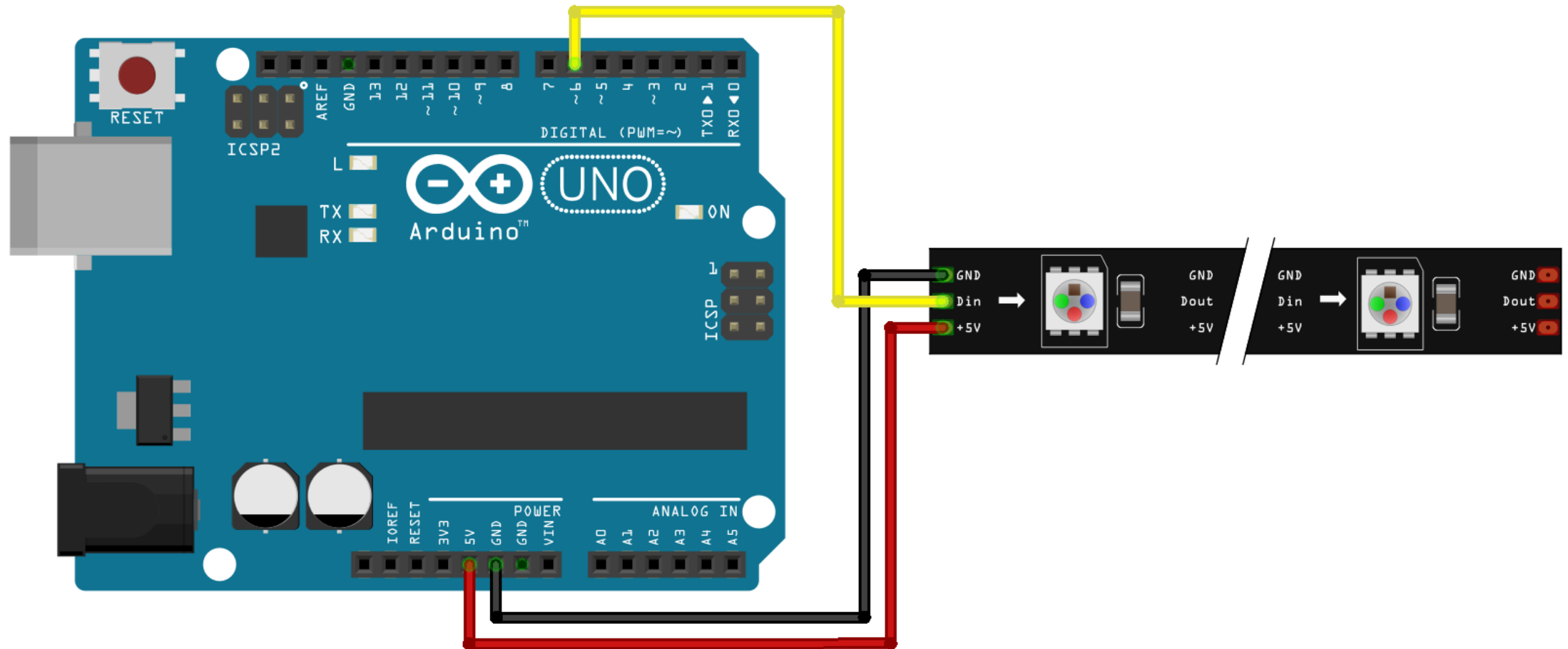
- Control circuit and RGB chip are integrated in a package of 5050
- VCC, VSS, DI, DO
- Daisy-chain



Neopixels



The Circuit



The Library

The screenshot shows the Arduino IDE interface. The 'Sketch' menu is open, and 'Include Library' is selected. The 'Library Manager' window is also open, showing a list of libraries. A red dashed box highlights the search bar in the Library Manager, and a red arrow points to it. A black text box with white text says "adafruit neopixel" search and install.

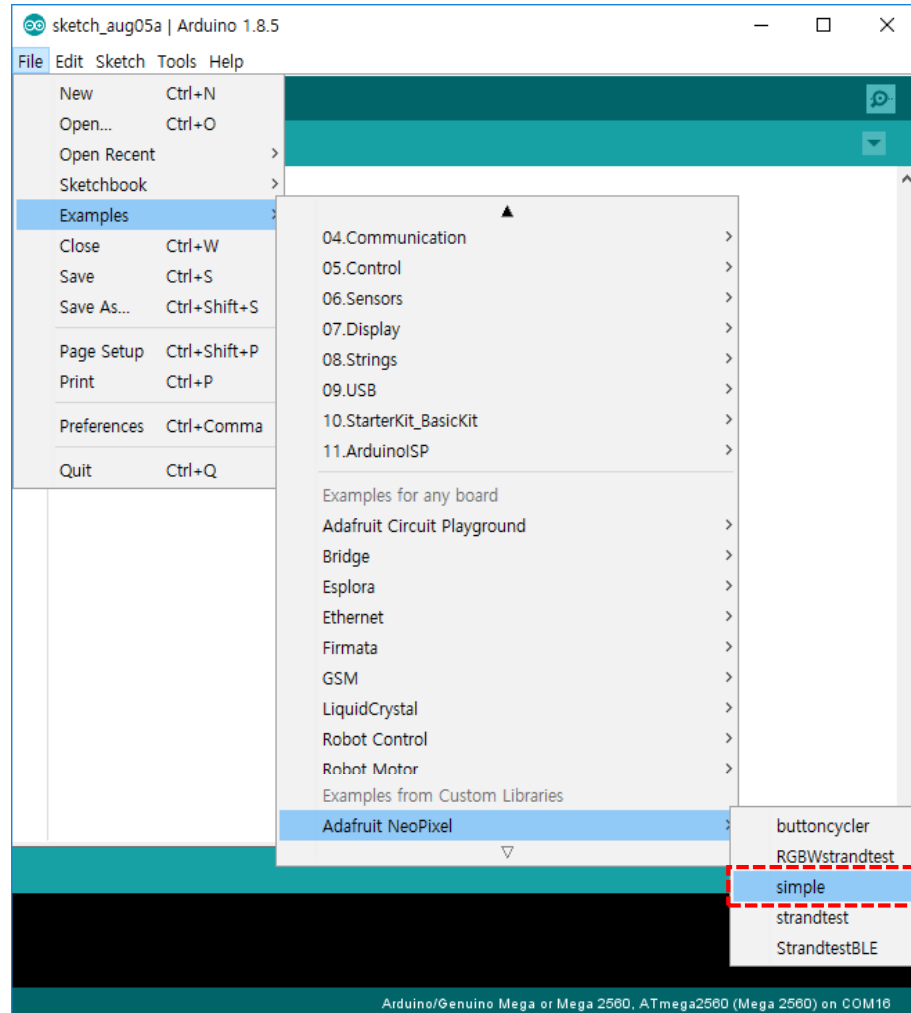
Arduino IDE (sketch_aug05b | Arduino 1.8.5) menu items:

- File
- Edit
- Sketch
 - Verify/Compile (Ctrl+R)
 - Upload (Ctrl+U)
 - Upload Using Programmer (Ctrl+Shift+U)
 - Export compiled Binary (Ctrl+Alt+S)
 - Show Sketch Folder (Ctrl+K)
 - Include Library**
 - Add File...
- Tools
- Help

Library Manager window:

- Type: All
- Topic: All
- Search bar (highlighted with a red dashed box)
- Libraries listed:
 - Arduino Low Power** by Arduino
Power save primitives features for SAMD and nRF52 32bit boards. With this library you can manage the low power states of newer Arduino boards.
[More info](#)
 - Arduino Uno WiFi Dev Ed Library** by Arduino
This library allows users to use network features like rest and mqtt. Includes some tools for the ESP8266. Use this library only with Arduino Uno WiFi Developer Edition.
[More info](#)
 - ArduinoCloud** by Arduino
Easily connect your Arduino/Genuino board to the Arduino Cloud. Easily connect your Arduino/Genuino board to the Arduino Cloud.
[More info](#)
- Close button

The Code



Exercise 1

»» **Change the led color to red.**

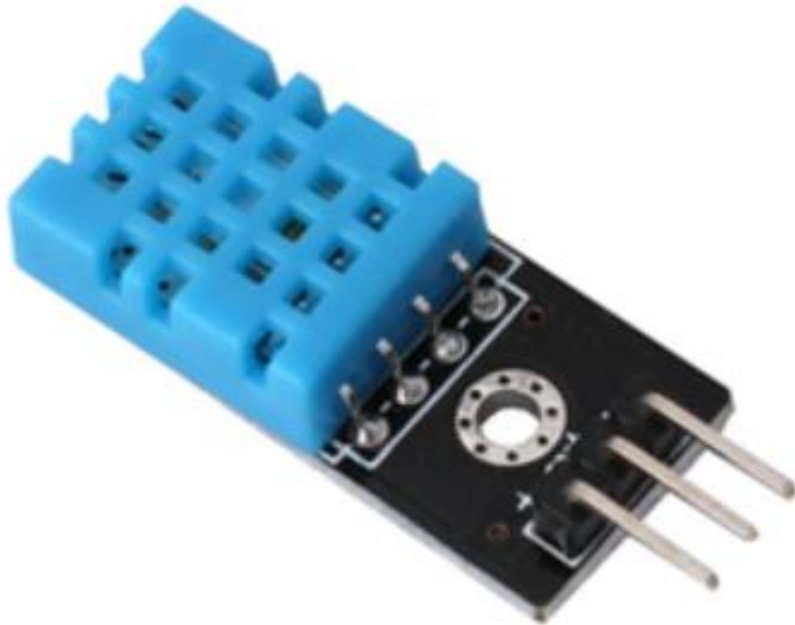
- **Hint : See the 40th line of the code.**

»» **Try the strandtest example.**

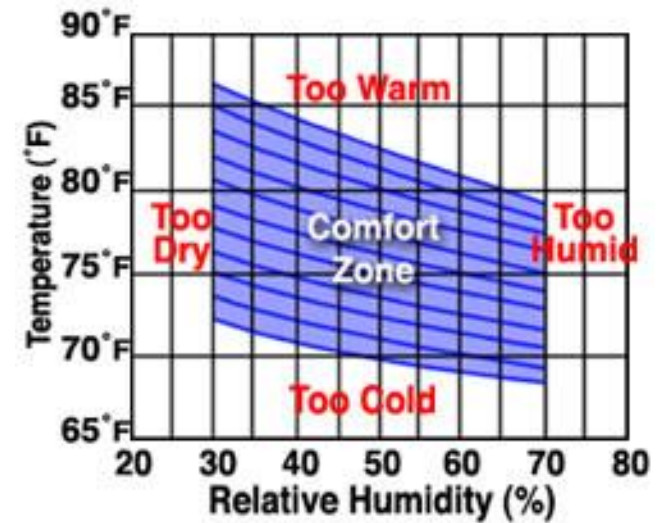
- **Hint : The 16th line of the code should be modified.**

DHT11

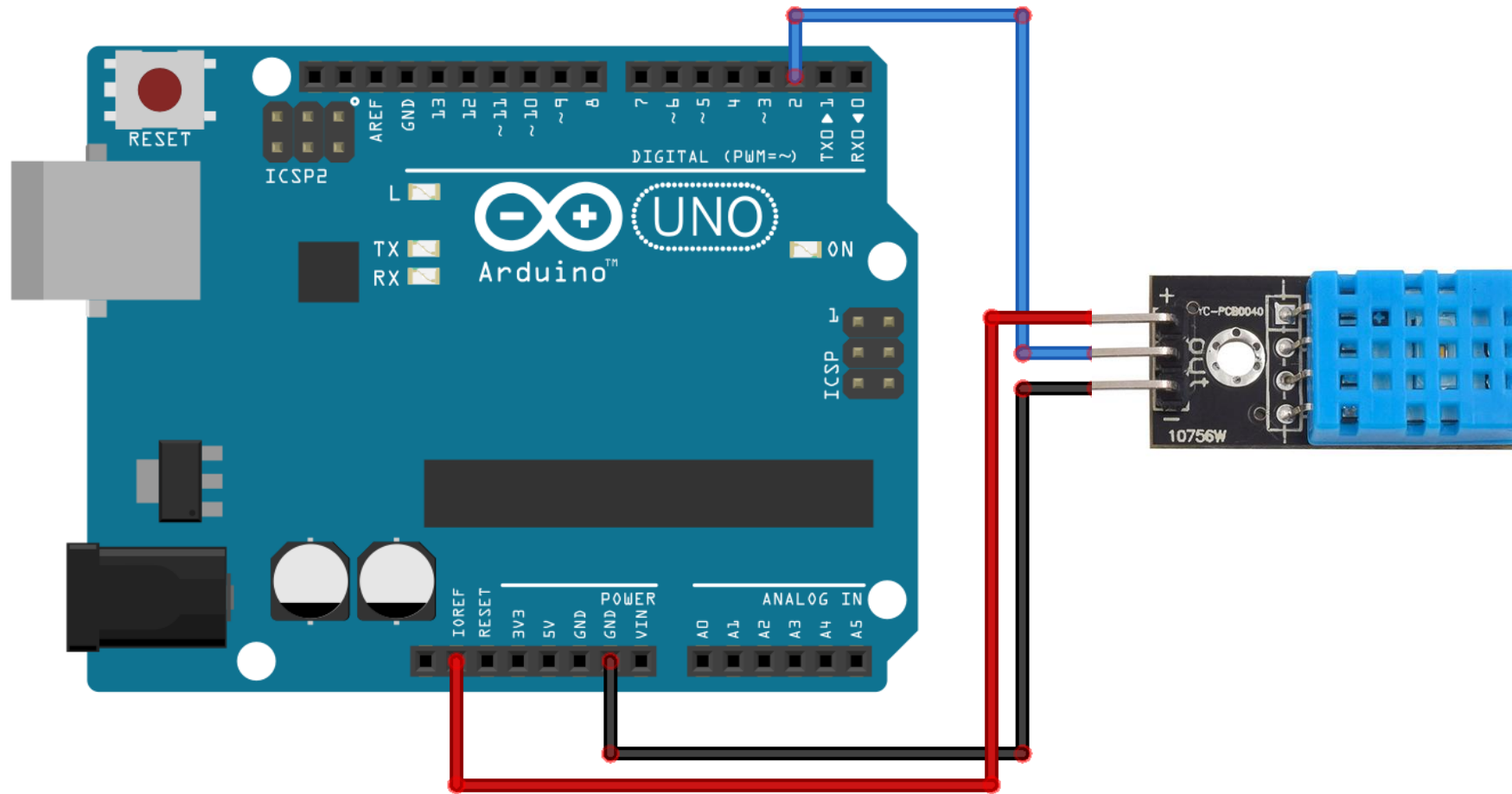
DHT11



Temperature Range/Accuracy	0 - 50 °C / $\pm 2^{\circ}\text{C}$
Humidity Range/Accuracy	20 - 90% RH / $\pm 5\%$ RH
Sampling Rate	1Hz
Operation Voltage	3 – 5V
Max Current During Measuring	2.5mA



The Circuit



fritzing

The Library

The screenshot shows the Arduino IDE interface. The 'Sketch' menu is open, and 'Include Library' is selected. The 'Library Manager' window is also open, showing a list of libraries. A red dashed box highlights the search bar in the Library Manager, and a red arrow points to it. A text overlay reads: "DHT sensor library" search and install and "Adafruit Unified Sensor" search and install.

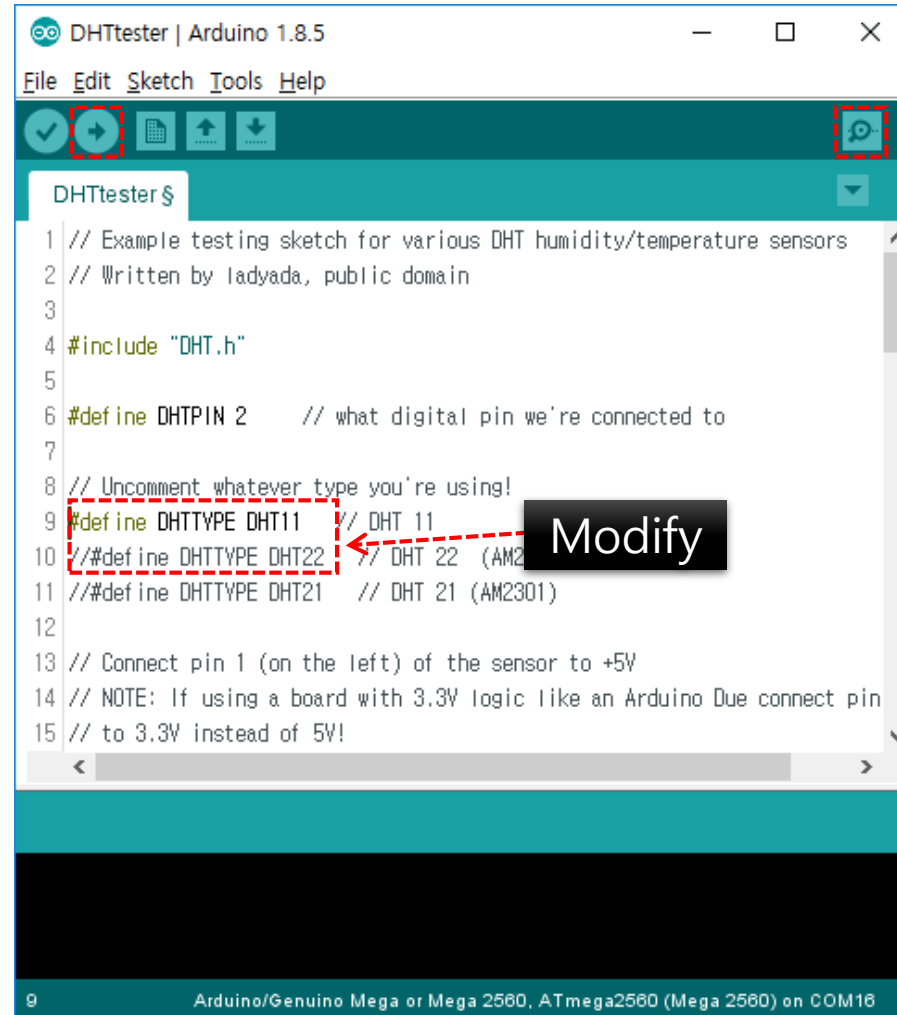
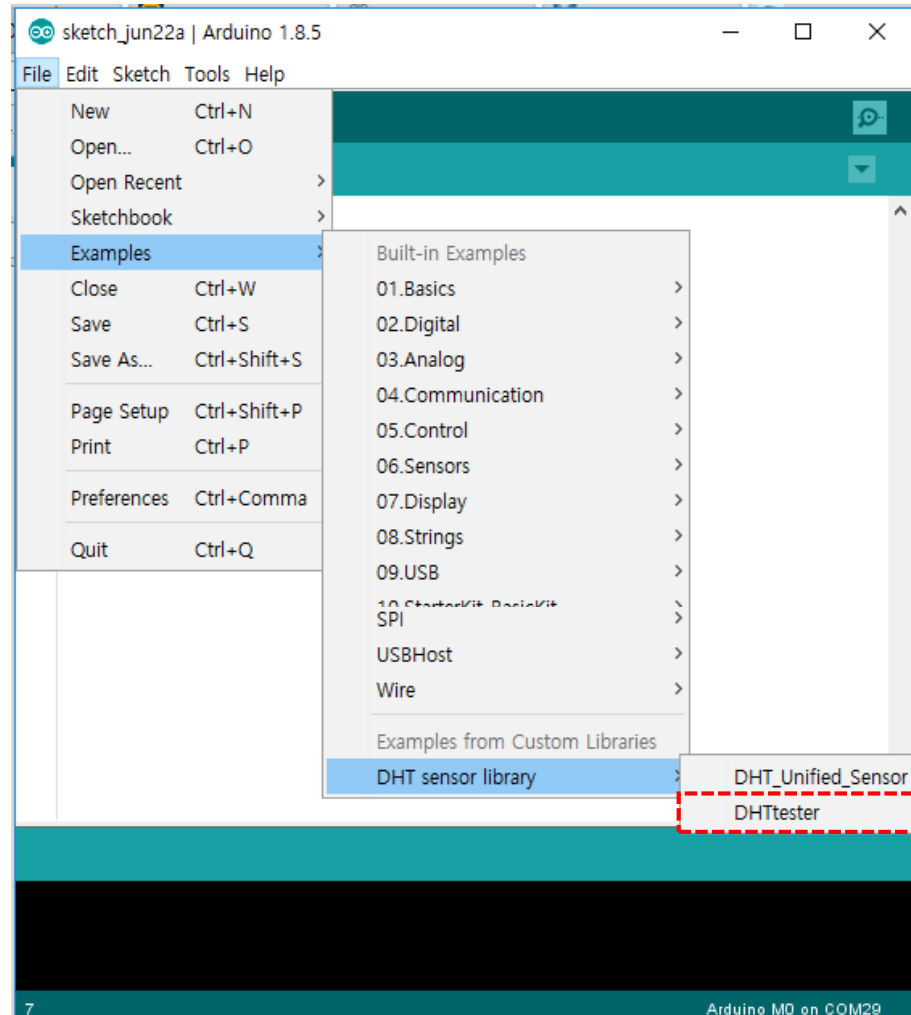
Arduino IDE (sketch_aug05b | Arduino 1.8.5) menu items:

- File
- Edit
- Sketch
 - Verify/Compile (Ctrl+R)
 - Upload (Ctrl+U)
 - Upload Using Programmer (Ctrl+Shift+U)
 - Export compiled Binary (Ctrl+Alt+S)
 - Show Sketch Folder (Ctrl+K)
 - Include Library**
 - Add File...
- Tools
- Help

Library Manager window:

- Type: All
- Topic: All
- Search bar (highlighted with a red dashed box)
- Libraries listed:
 - Arduino Low Power** by Arduino
Power save primitives features for SAMD and AVR52 32bit boards With this library you can manage the low power states of newer Arduino boards
[More info](#)
 - Arduino Low Power** by Arduino
Power save primitives features for SAMD and AVR52 32bit boards With this library you can manage the low power states of newer Arduino boards
[More info](#)
 - Arduino Cloud** by Arduino
Easily connect your Arduino/Genuino board to the Arduino Cloud Easily connect your Arduino/Genuino board to the Arduino Cloud
[More info](#)
- Close button

The Code

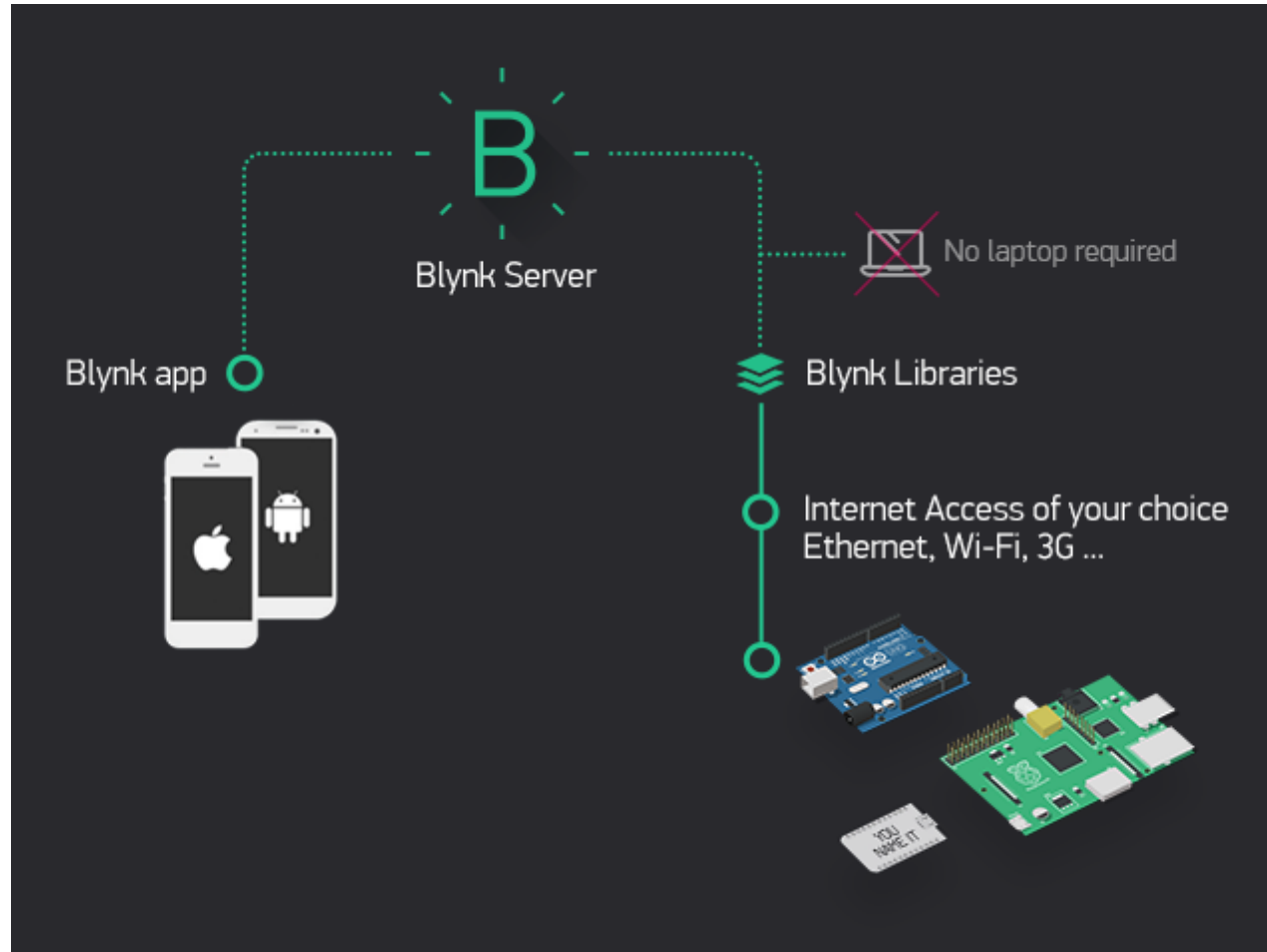


Exercise 2

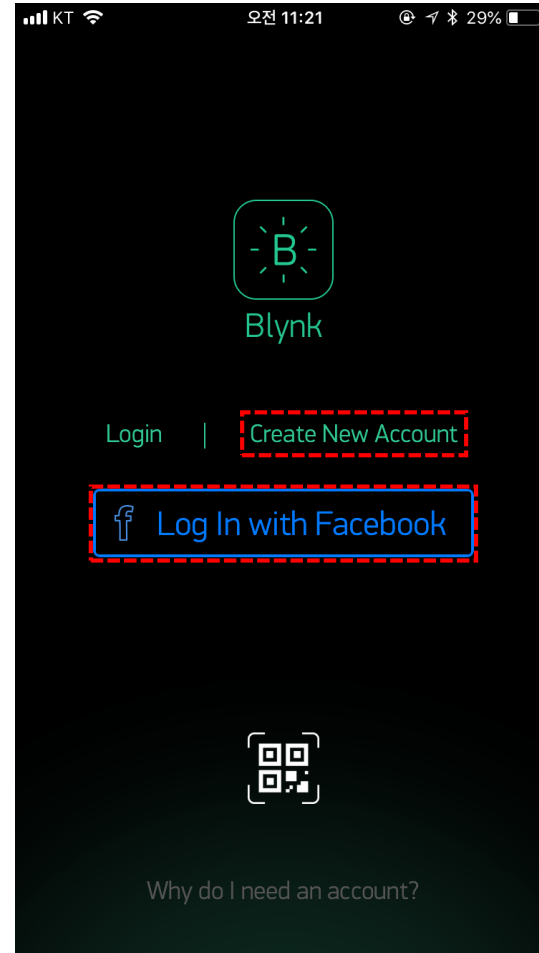
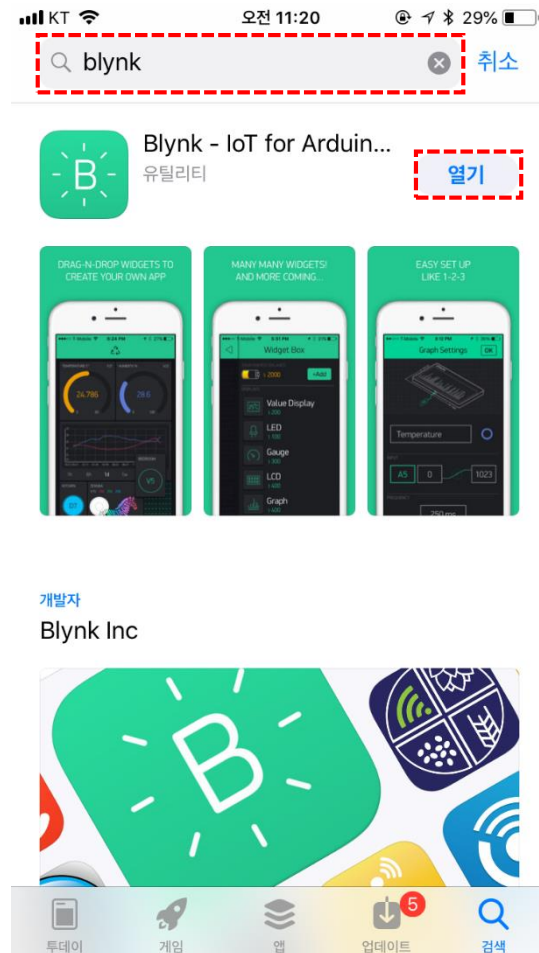
- » **Change the brightness of LED color according to temperature and humidity change.**
- **Hint : Combine the simple example with the DHTtester example.**
 - **Option : Try the map function.**

Blynk

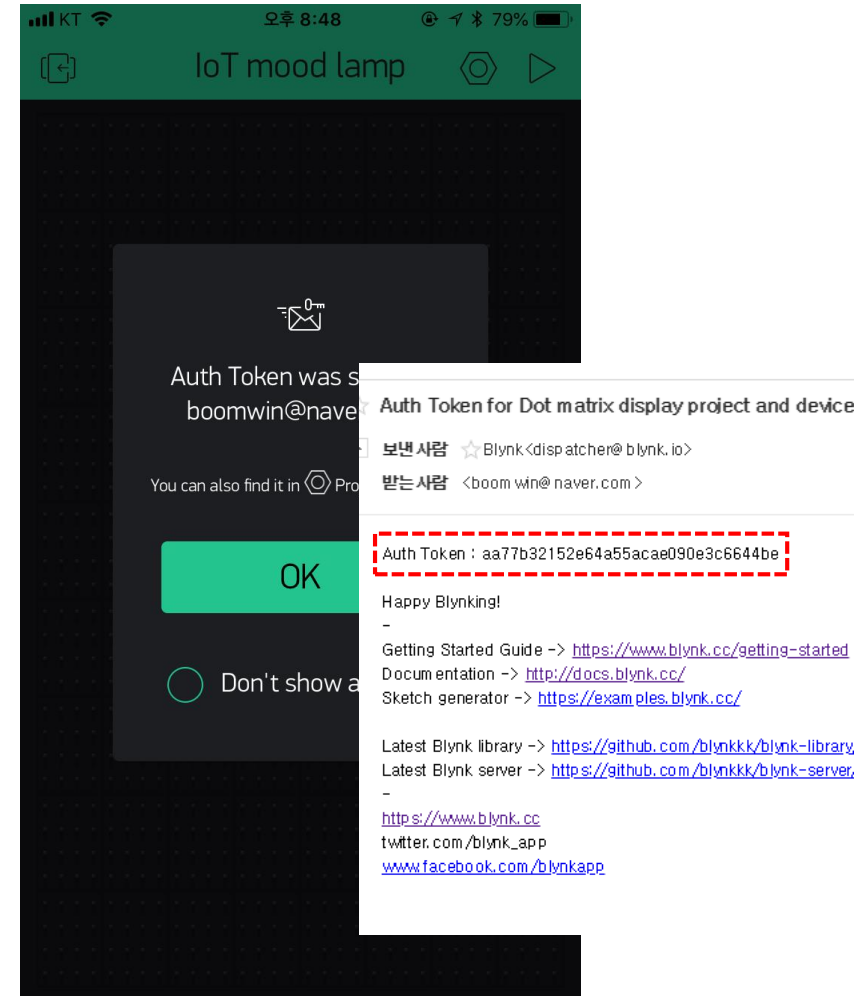
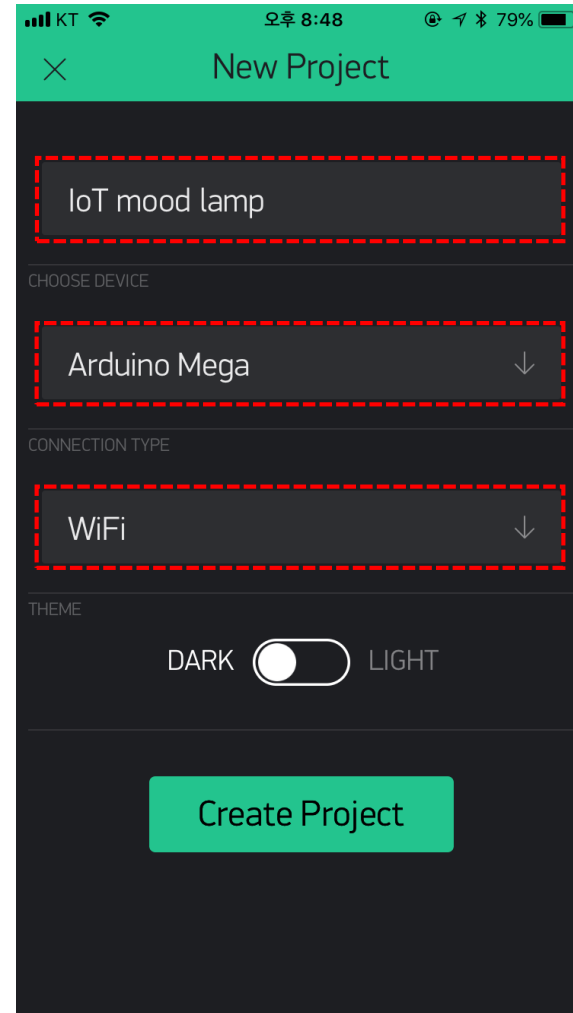
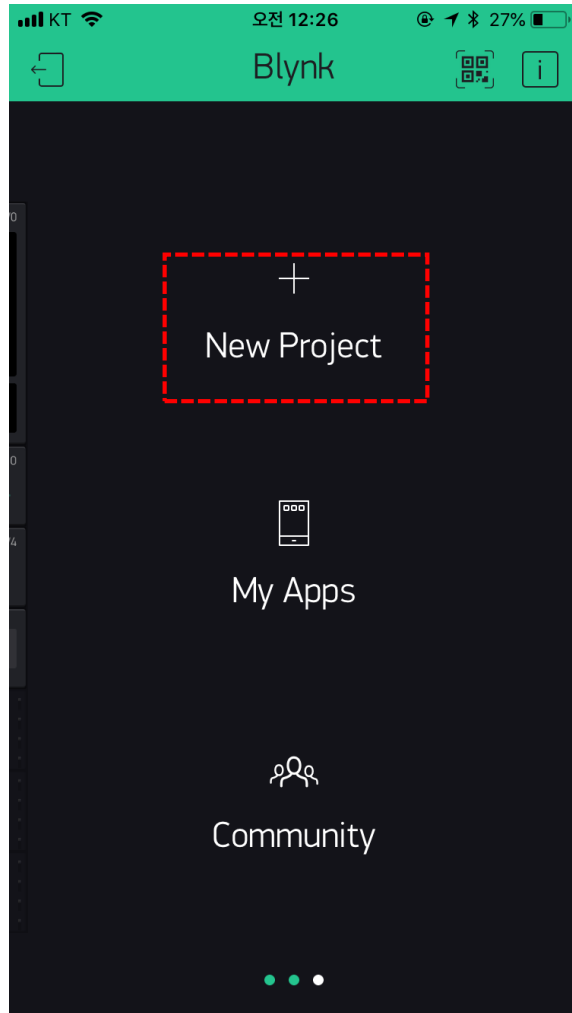
Blynk



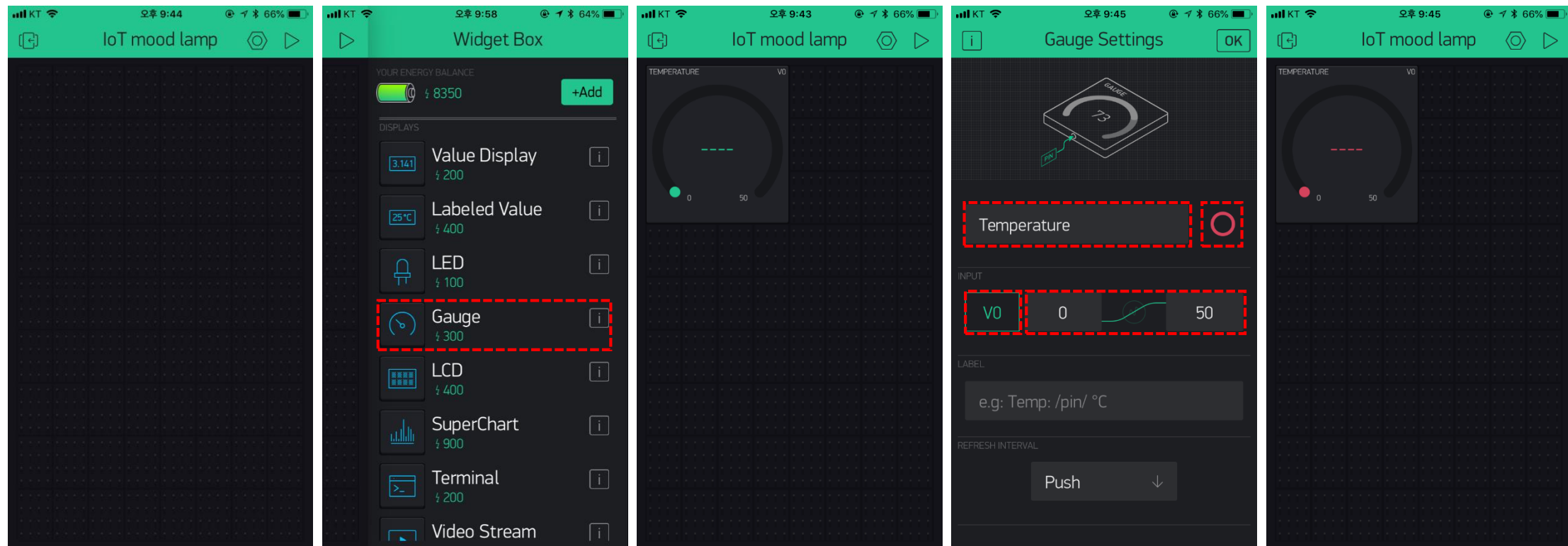
Install & create new account



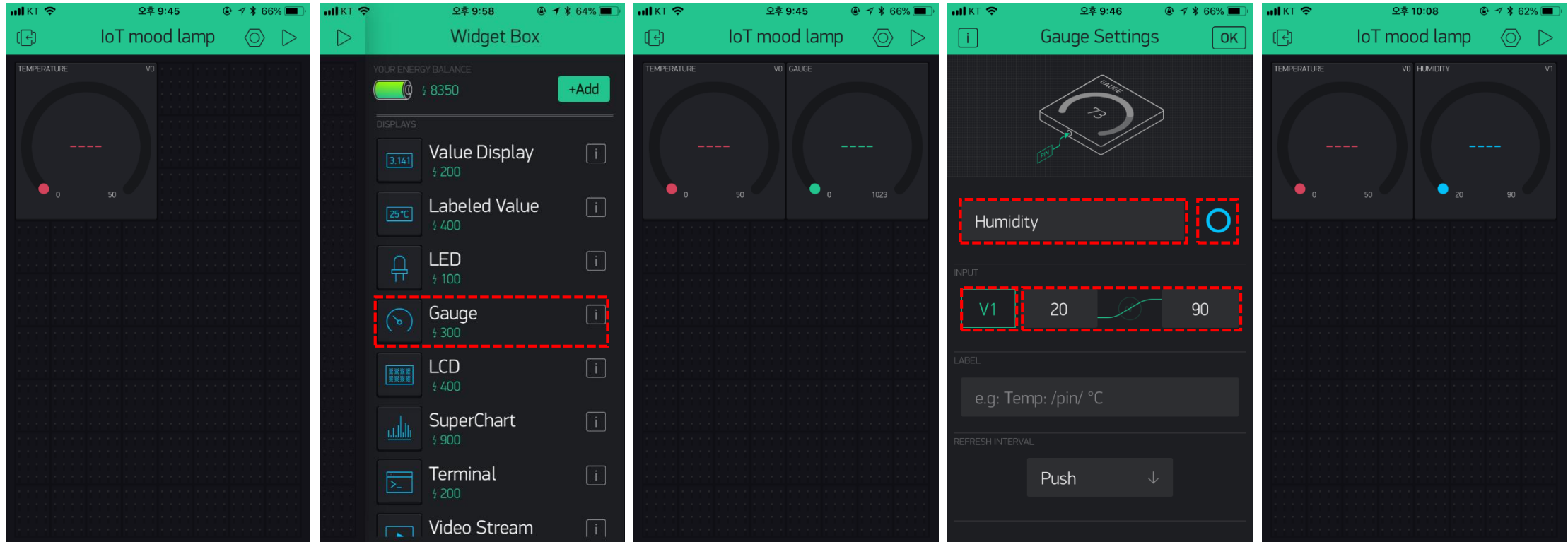
New project



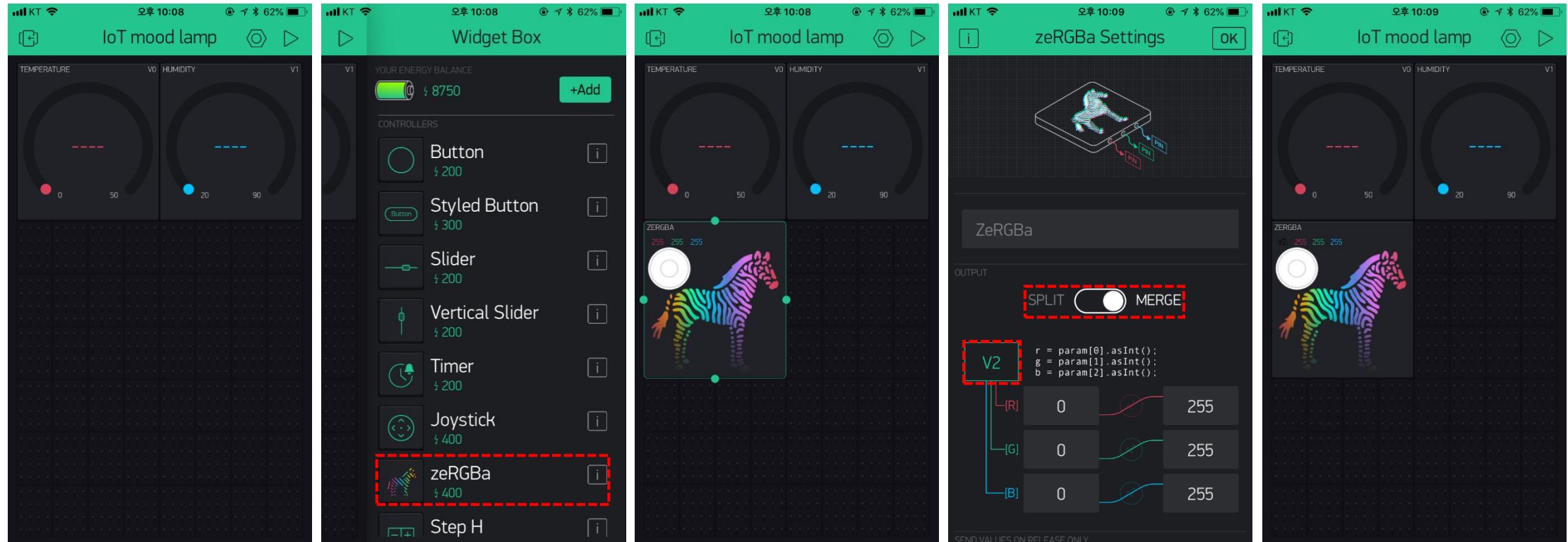
Add widget(for temperature)



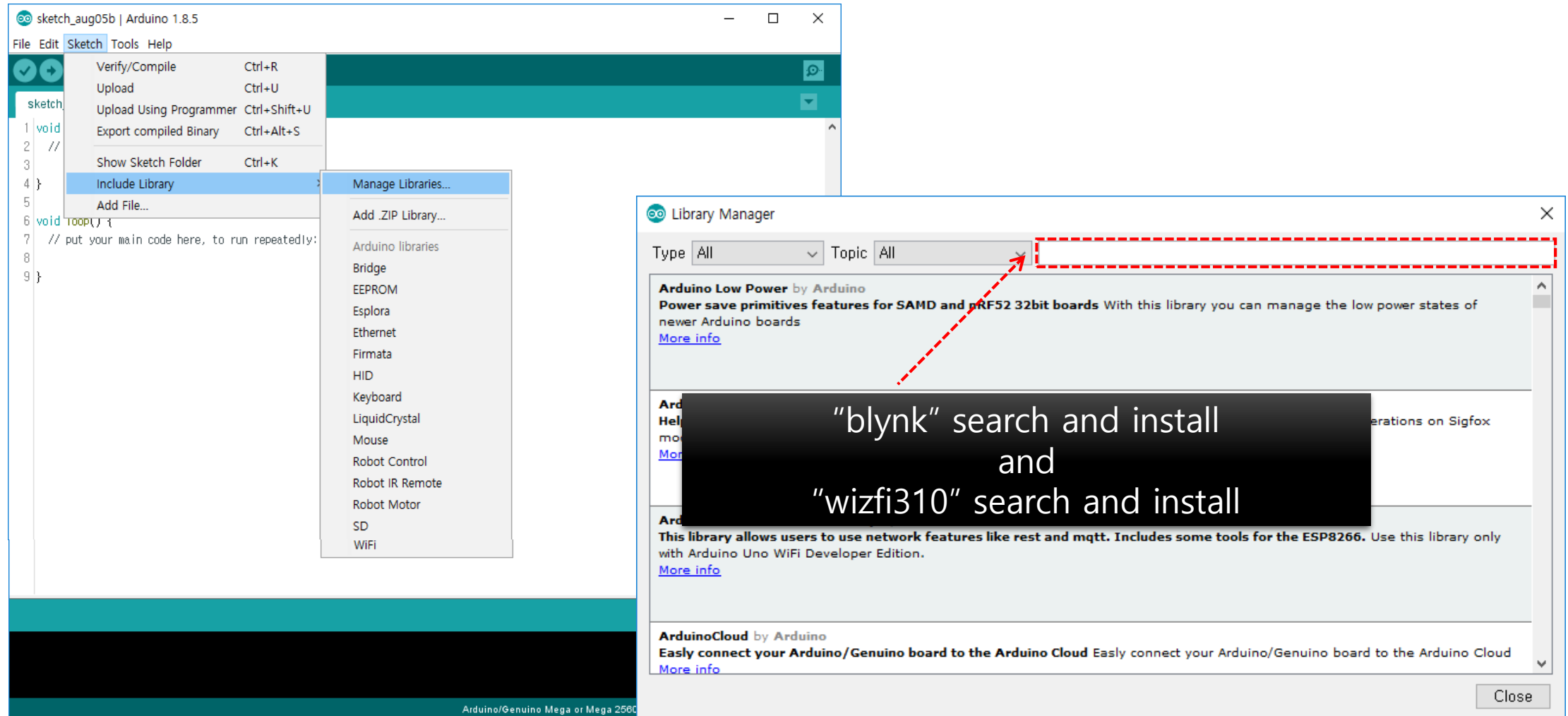
Add widget(for humidity)



Add widget(for WS2812 RGB LED)



The Library



The image shows the Arduino IDE interface with the 'Sketch' menu open, highlighting 'Include Library' and 'Manage Libraries...'. The 'Library Manager' window is also open, displaying a list of libraries. A red dashed box highlights the search bar in the Library Manager, and a red arrow points to it. A black text box with white text is overlaid on the Library Manager window, stating: "blynk" search and install and "wizfi310" search and install.

Arduino IDE (sketch_aug05b | Arduino 1.8.5) menu items:

- File
- Edit
- Sketch
 - Verify/Compile (Ctrl+R)
 - Upload (Ctrl+U)
 - Upload Using Programmer (Ctrl+Shift+U)
 - Export compiled Binary (Ctrl+Alt+S)
 - Show Sketch Folder (Ctrl+K)
 - Include Library
 - Add File...
- Tools
- Help

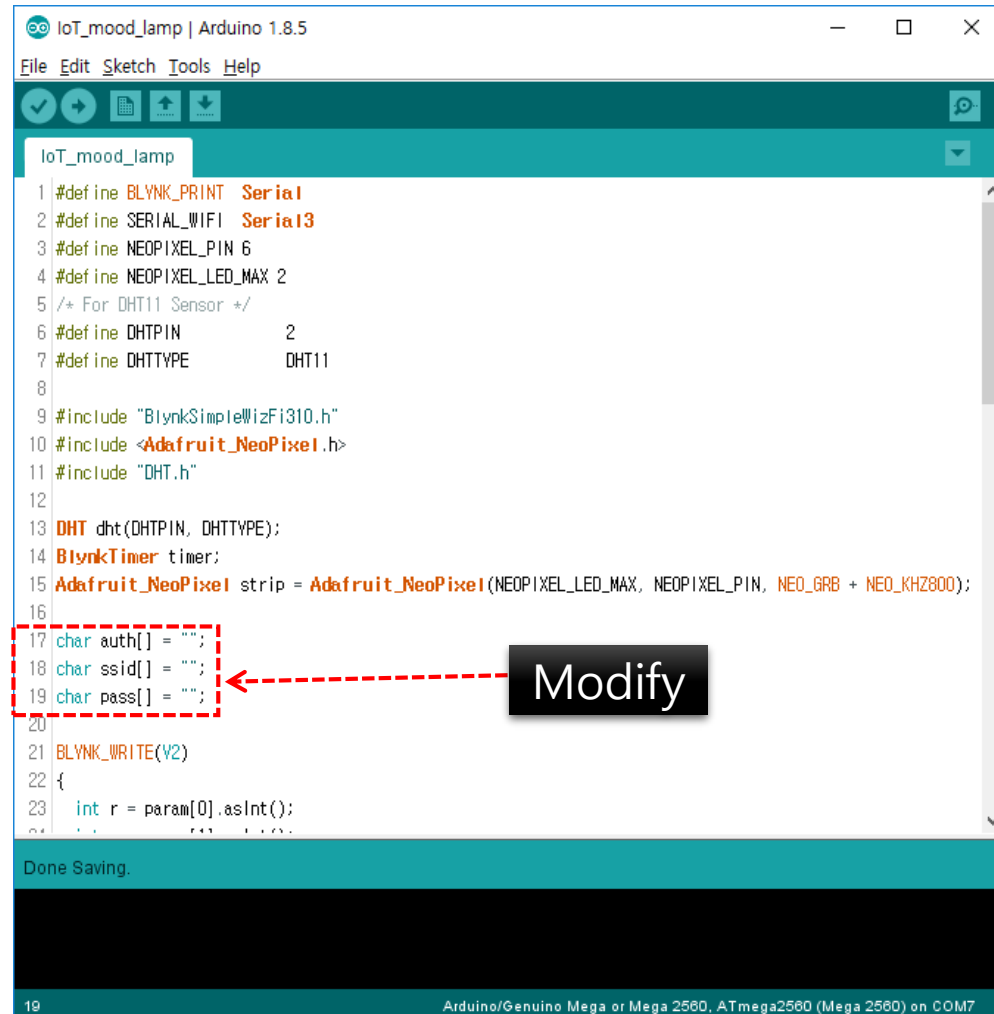
Library Manager window:

- Type: All
- Topic: All
- Search bar (highlighted with a red dashed box)
- Library list:

 - Arduino Low Power by Arduino
 - Power save primitives features for SAMD and nRF52 32bit boards
 - With this library you can manage the low power states of newer Arduino boards
 - [More info](#)
 - Arduino Cloud by Arduino
 - Easily connect your Arduino/Genuino board to the Arduino Cloud
 - Easily connect your Arduino/Genuino board to the Arduino Cloud
 - [More info](#)

Close button

The Code



```
IoT_mood_lamp | Arduino 1.8.5
File Edit Sketch Tools Help

IoT_mood_lamp

1 #define BLYNK_PRINT Serial
2 #define SERIAL_WIFI Serial3
3 #define NEOPIXEL_PIN 6
4 #define NEOPIXEL_LED_MAX 2
5 /* For DHT11 Sensor */
6 #define DHTPIN 2
7 #define DHTTYPE DHT11
8
9 #include "BlynkSimpleWizFi310.h"
10 #include <Adafruit_NeoPixel.h>
11 #include "DHT.h"
12
13 DHT dht(DHTPIN, DHTTYPE);
14 BlynkTimer timer;
15 Adafruit_NeoPixel strip = Adafruit_NeoPixel(NEOPIXEL_LED_MAX, NEOPIXEL_PIN, NEO_GRB + NEO_KHZ800);
16
17 char auth[] = "";
18 char ssid[] = "";
19 char pass[] = "";
20
21 BLYNK_WRITE(V2)
22 {
23   int r = param[0].asInt();
24   ...
25 }
```

Done Saving.

19 Arduino/Genuino Mega or Mega 2560, ATmega2560 (Mega 2560) on COM7



Thank you

QR code

