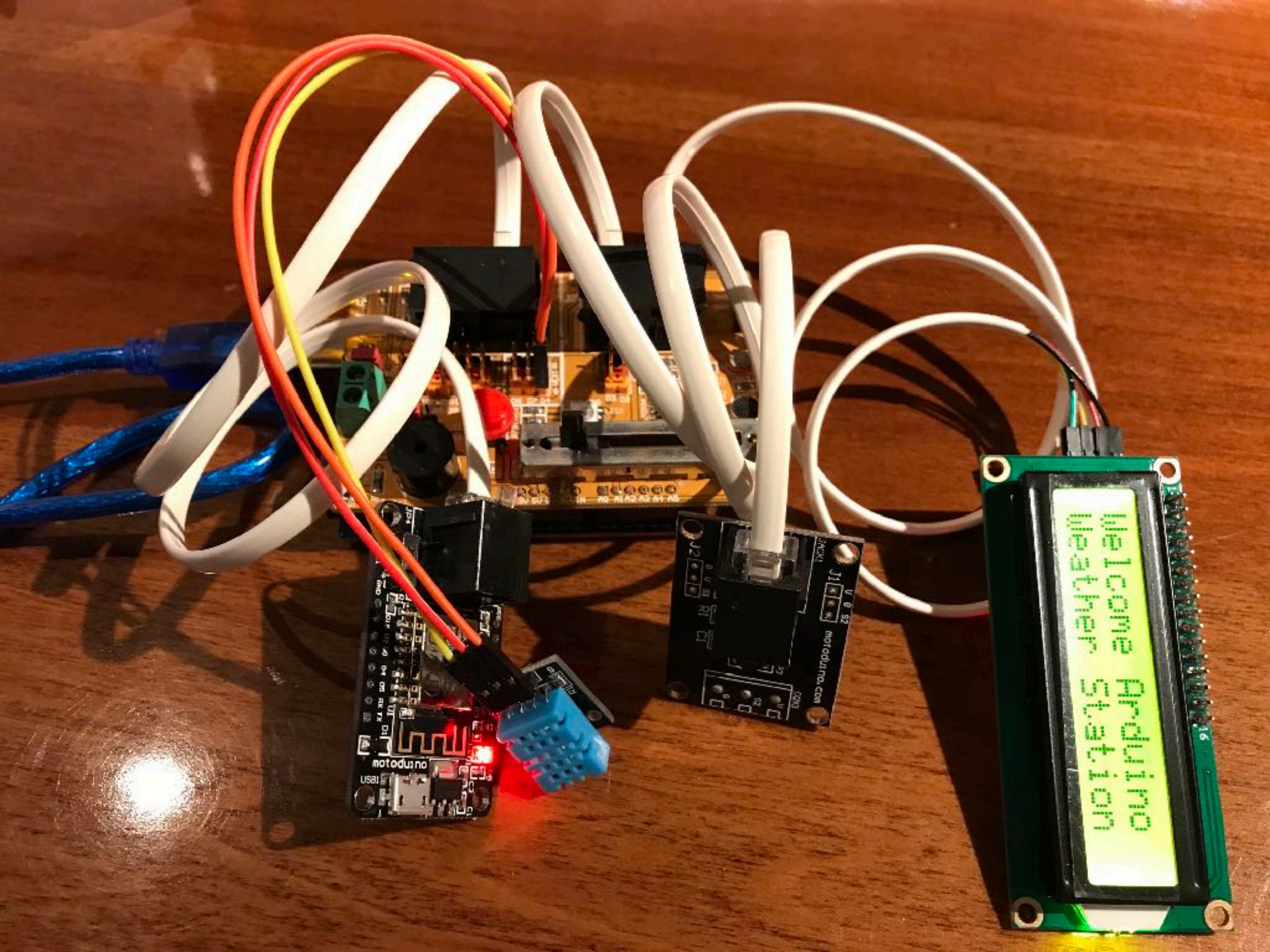
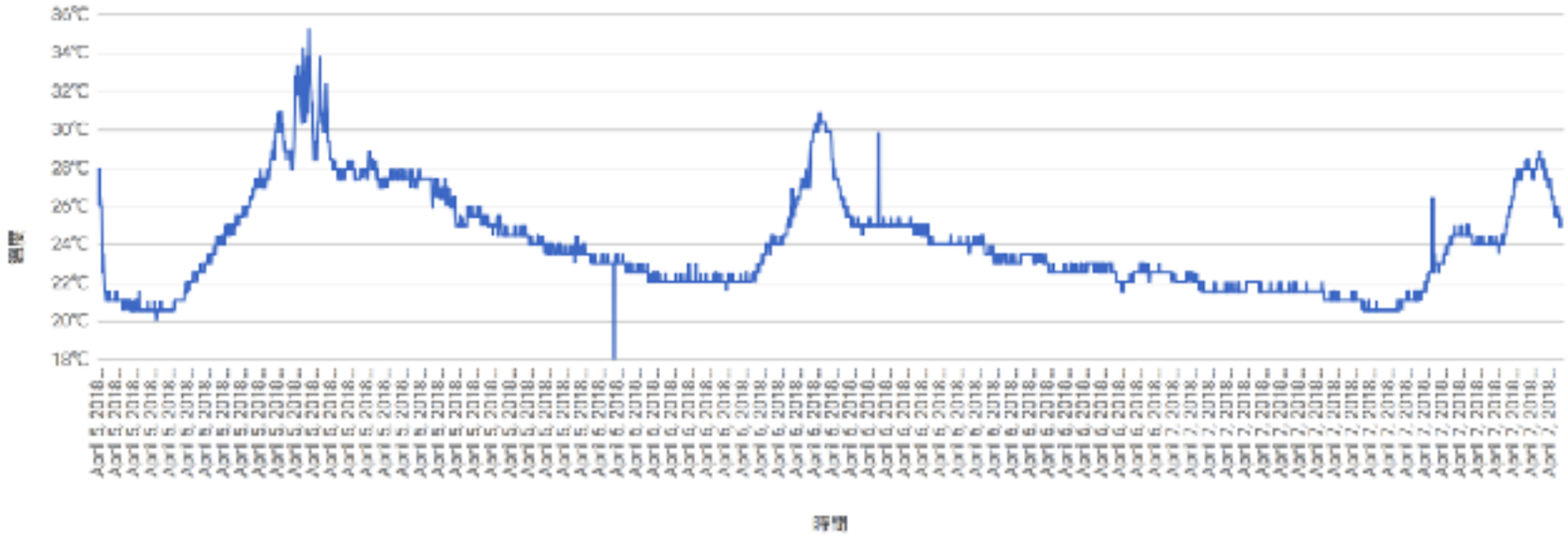
物聯網感測元件實務

雲端氣象站

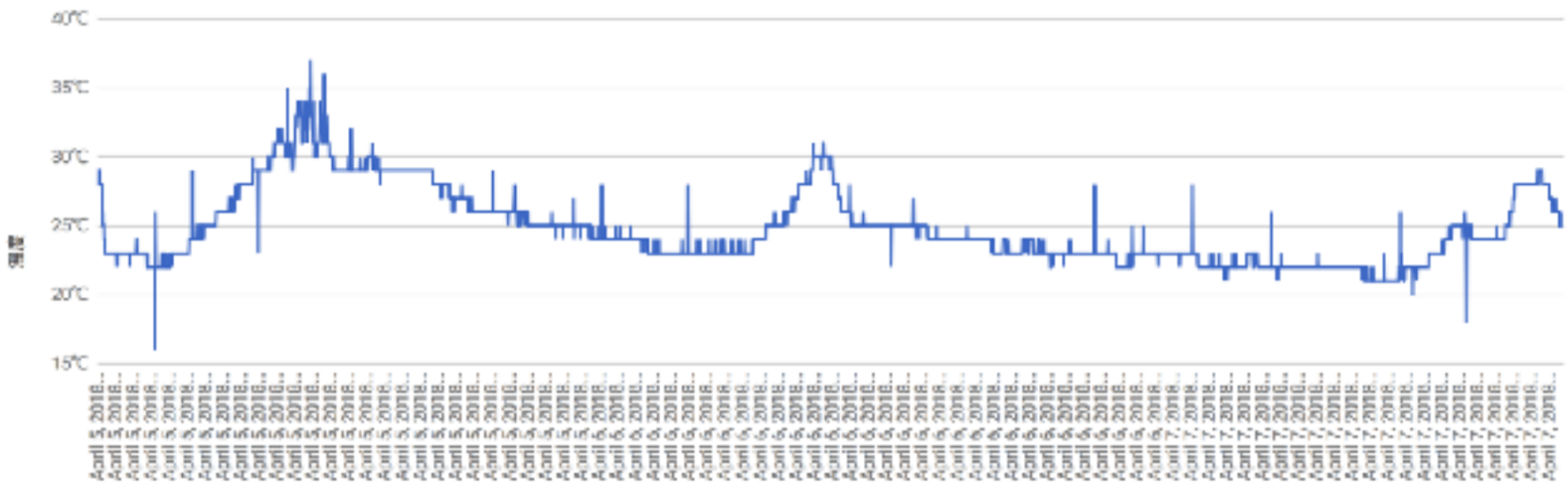
王昱景 Brian Wang
brian.wang.frontline@gmail.com


Welcome Arduino
Weather Station
motoduino
motoduino.com

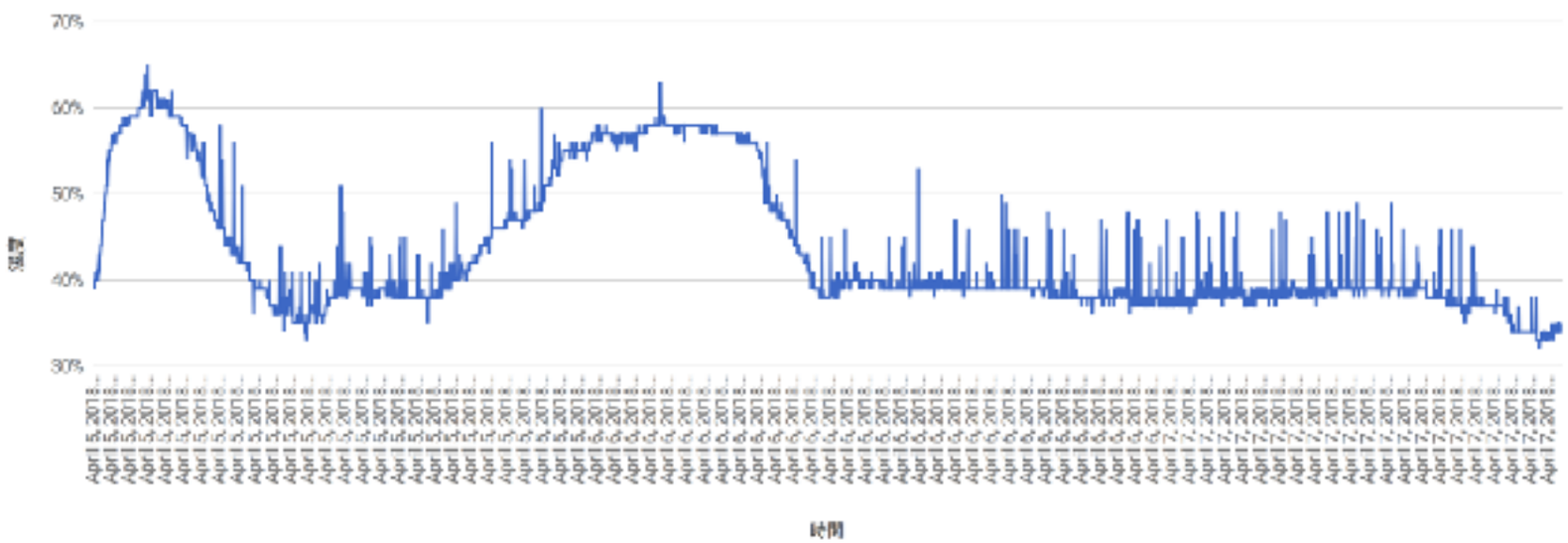
LM35温度



DH11溫度



DH11濕度



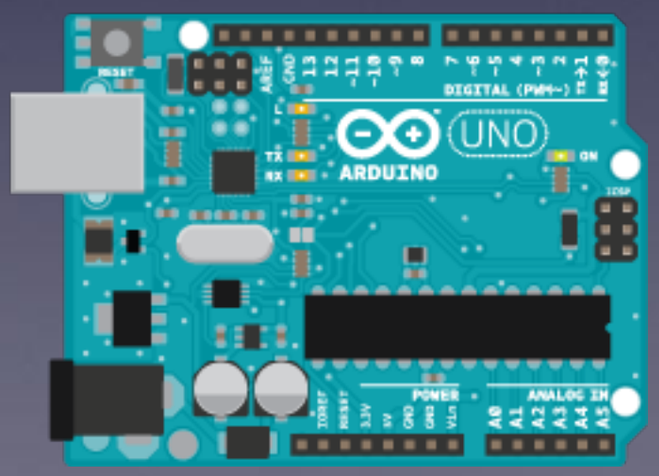
雲端氣象站

Arduino + IFTTT + Google Sheets

Google Sheets

HTTPS

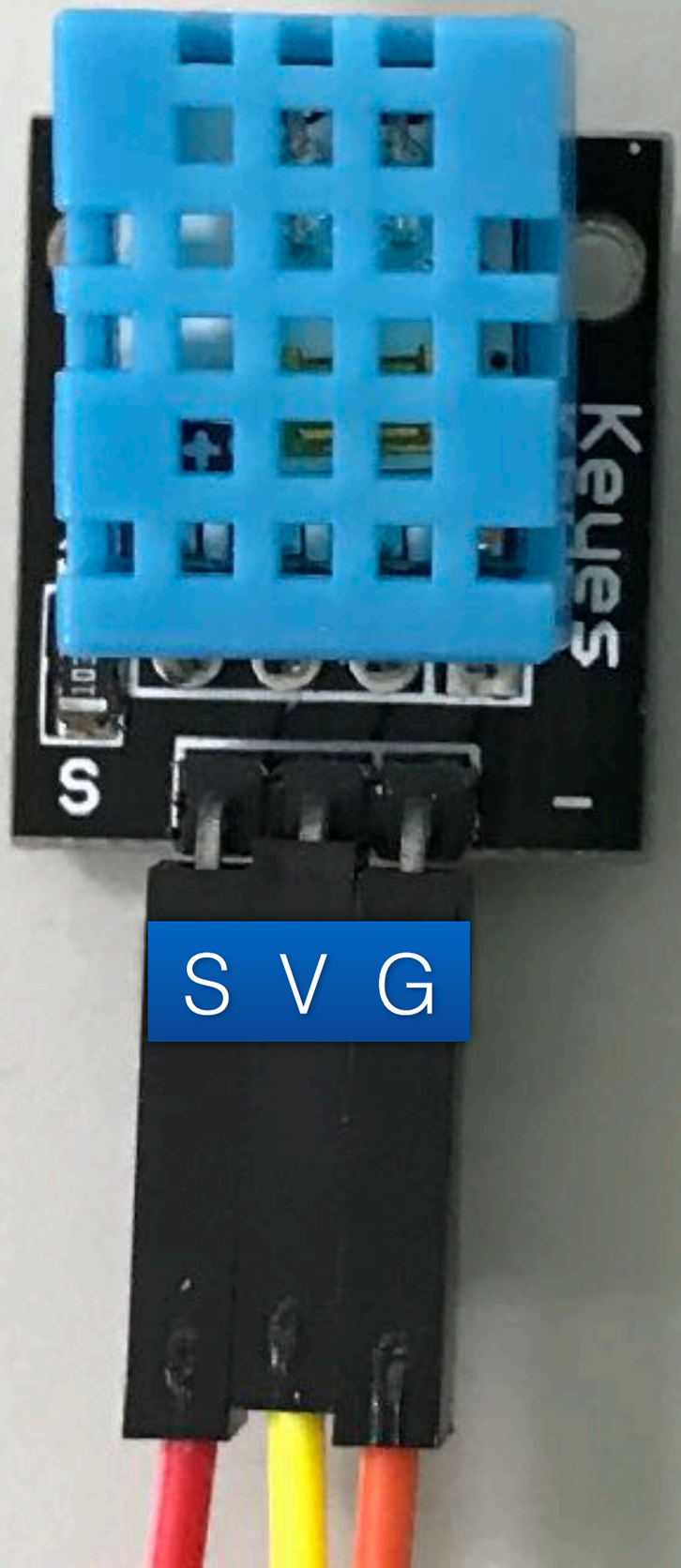
HTTPS



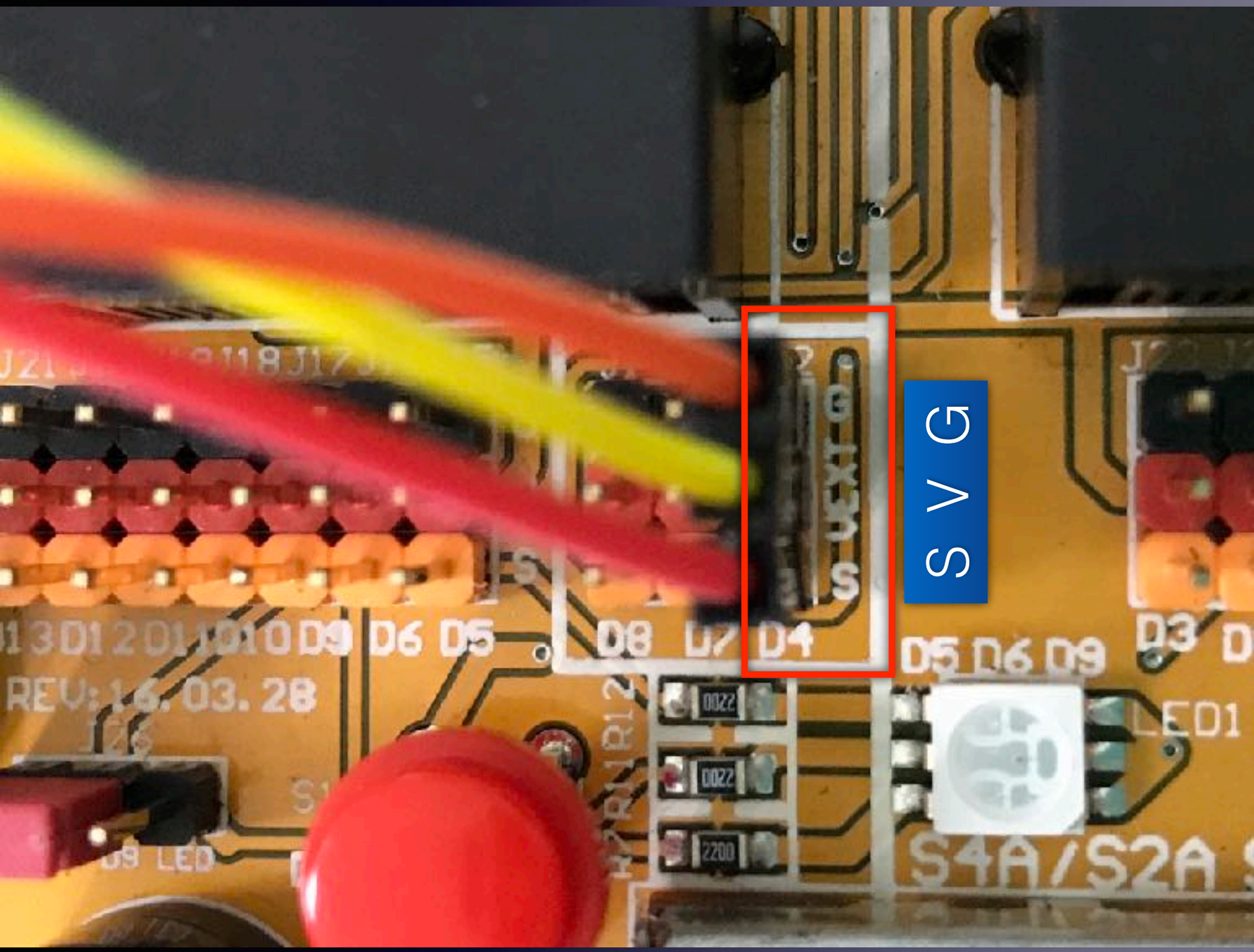
HTTP

IFTTT

Arduino 與溫濕度感測器


S
-
S V G


GND DATA VCC
G V S


S V G
D8 D7 D4
D5 D6 D9
D3
LED1
S4A/S2A
0022
0022
2200

IFTTT 設定

IFTTT Discover Search My Applets Activity brianwang1

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Choose a service

Step 1 of 6

webhooks

Webhooks

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Choose trigger

Step 2 of 6

Receive a web request

This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)

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Complete trigger fields

Step 2 of 6

Receive a web request

This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)

Event Name

WeatherStation

The name of the event, like "button_pressed" or "front_door_opened"

Create trigger

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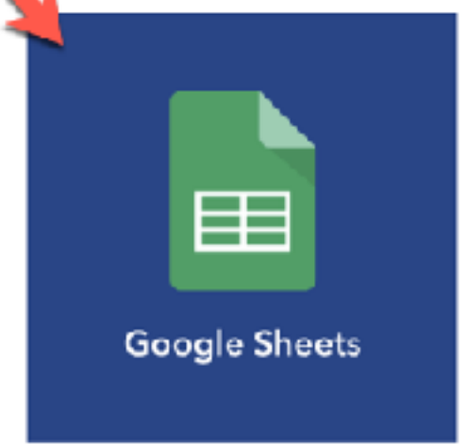
Choose action service

Step 3 of 6

Google Sheets



Back

Choose action

Step 4 of 6

Add row to spreadsheet

This action will add a single row to the bottom of the first worksheet of a spreadsheet you specify. Note: a new spreadsheet is created after 2000 rows.

Update cell in spreadsheet

This action will update a single cell in the first worksheet of a spreadsheet you specify. Note: a new spreadsheet is created if the file doesn't exist.

Back

Complete action fields

Step 5 of 6

Add row to spreadsheet

This action will add a single row to the bottom of the first worksheet of a spreadsheet you specify. Note: a new spreadsheet is created after 2000 rows.

Spreadsheet name

1 WeatherStation

Will create a new spreadsheet if one with this title doesn't exist — Add ingredient

Formatted row

2 OccurredAt ||| Value1 ||| Value2 ||| Value3

Use "|||" to separate cells — Add ingredient

Drive folder path

3 IFTTT

Format: some/folder/path (defaults to "IFTTT") — Add ingredient

Create action 4

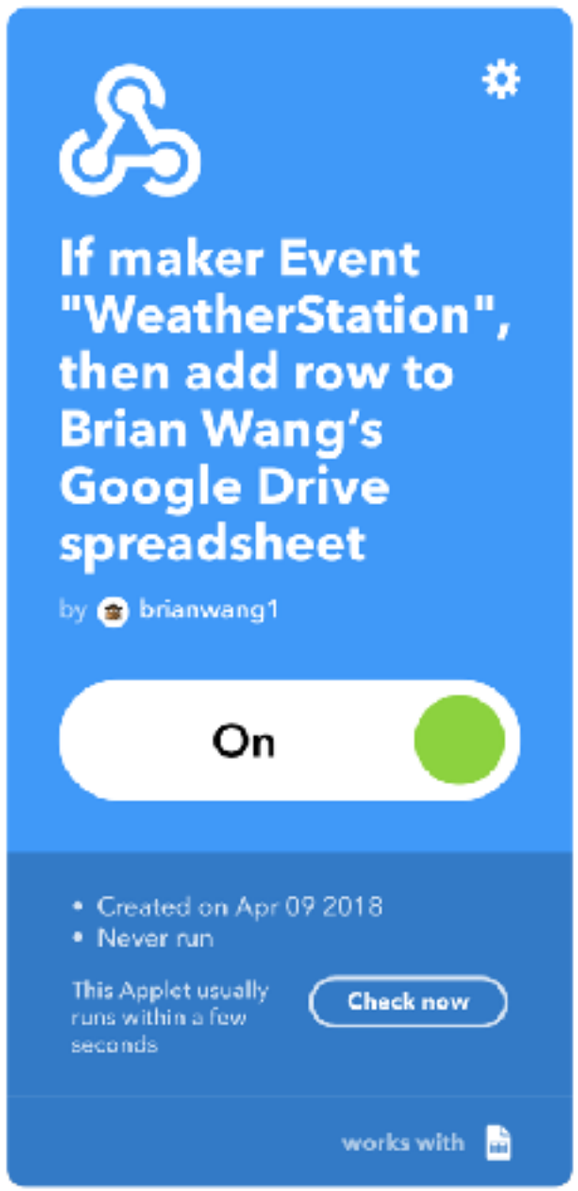
Back

Review and finish

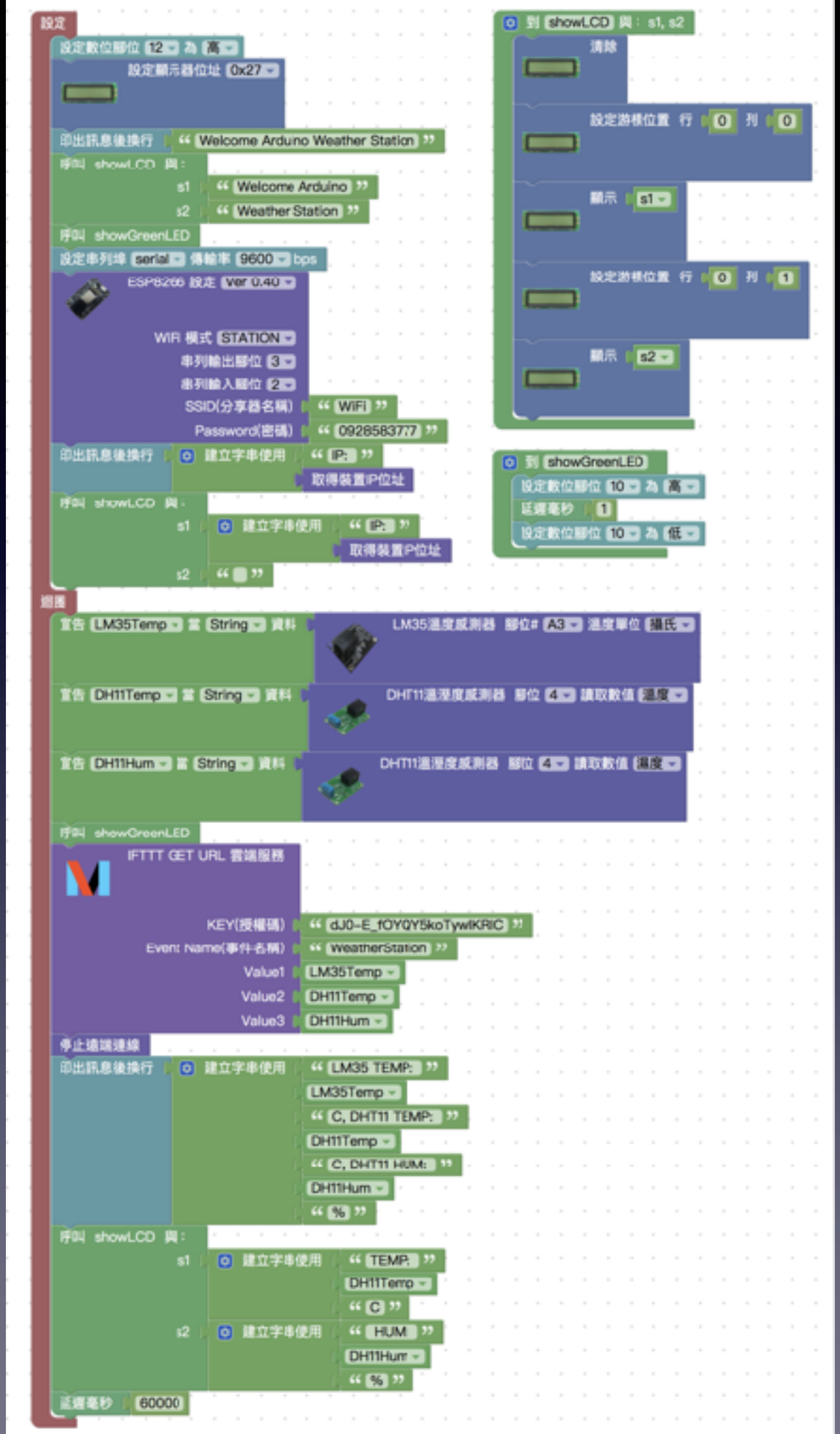
Step 6 of 6

Receive notifications when this Applet runs

Finish


If maker Event "WeatherStation", then add row to Brian Wang's Google Drive spreadsheet
by brianwang1
On
• Created on Apr 09 2018
• Never run
This Applet usually runs within a few seconds
Check now
works with

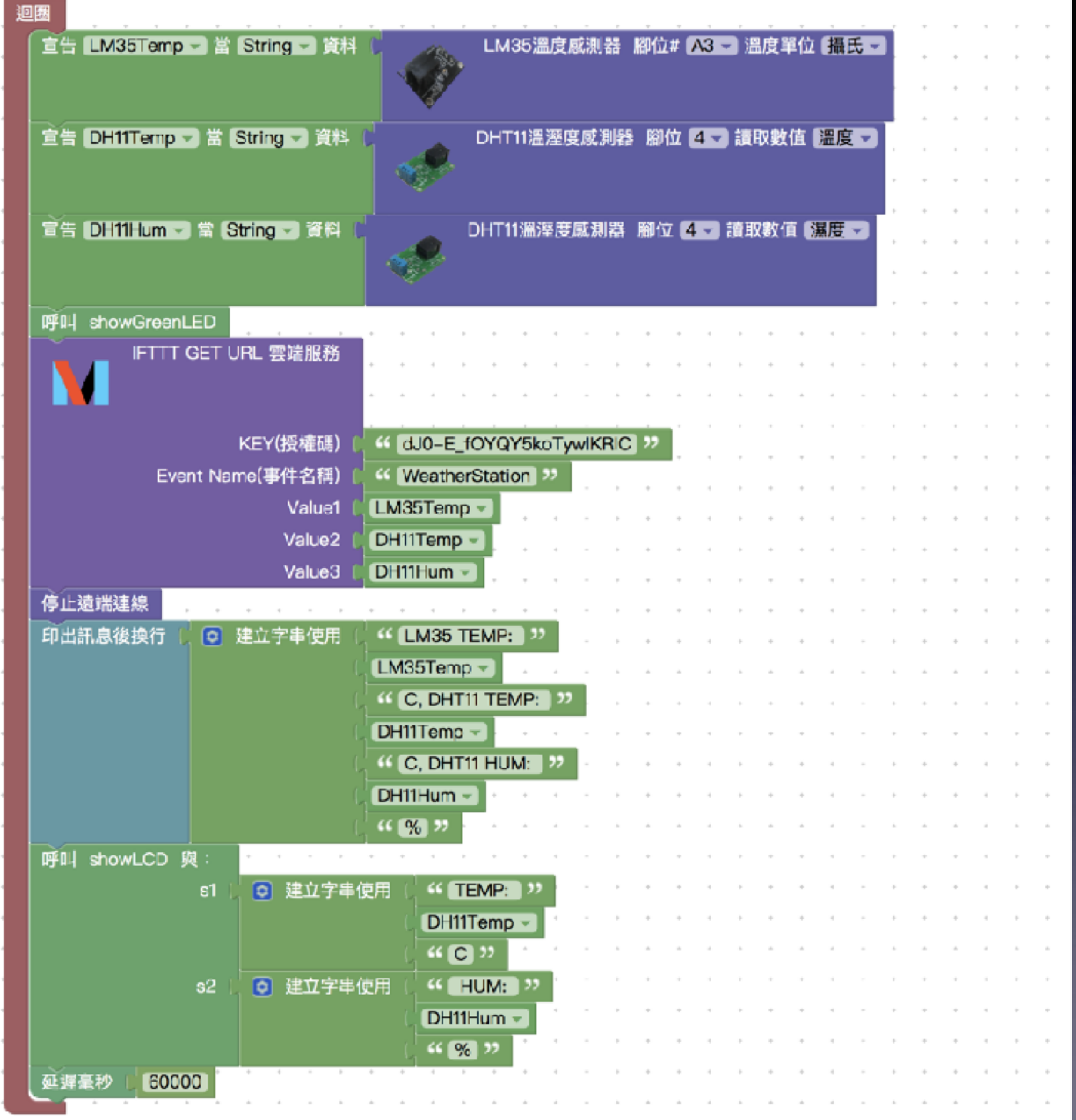
motoBlockly 積木邏輯


設定
設定數位腳位 12 為 高
設定顯示器位址 0x27
印出訊息後換行 "Welcome Arduno Weather Station"
呼叫 showLCD 與：
s1 "Welcome Arduino"
s2 "Weather Station"
呼叫 showGreenLED
設定串列埠 serial 傳輸率 9600 bps
ESP8266 設定 ver 0.40
WiFi 模式 STATION
串列輸出腳位 3
串列輸入腳位 2
SSID(分享器名稱) "WiFi"
Password(密碼) "0928583777"
印出訊息後換行 建立字串使用 "IP:" 取得裝置IP位址
呼叫 showLCD 與：
s1 建立字串使用 "IP:" 取得裝置IP位址
s2 ""
迴圈
宣告 LM35Temp 當 String 資料 LM35溫度感測器 腳位# A3 溫度單位 攝氏
宣告 DH11Temp 當 String 資料 DHT11溫濕度感測器 腳位 4 讀取數值 溫度
宣告 DH11Hum 當 String 資料 DHT11溫濕度感測器 腳位 4 讀取數值 濕度
呼叫 showGreenLED
IFTTT GET URL 雲端服務
KEY(授權碼) "dJ0-E_fOYQY5koTywtKRtC"
Event Name(事件名稱) "WeatherStation"
Value1 LM35Temp
Value2 DH11Temp
Value3 DH11Hum
停止遠端連線
印出訊息後換行 建立字串使用 "LM35 TEMP:" LM35Temp "C, DHT11 TEMP:" DH11Temp "C, DHT11 HUM:" DH11Hum "%"
呼叫 showLCD 與：
s1 建立字串使用 "TEMP:" DH11Temp "C"
s2 建立字串使用 "HUM" DH11Hum "%"
延遲毫秒 60000
到 showLCD 與： s1, s2
清除
設定游標位置 行 0 列 0
顯示 s1
設定游標位置 行 0 列 1
顯示 s2
到 showGreenLED
設定數位腳位 10 為 高
延遲毫秒 1
設定數位腳位 10 為 低

```
設定
  設定數位腳位 12 為 高
  設定顯示器位址 0x27
  印出訊息後換行 " Welcome Arduino Weather Station "
  呼叫 showLCD 與：
      s1 " Welcome Arduino "
      s2 " Weather Station "
  呼叫 showGreenLED
  設定串列埠 serial 傳輸率 9600 bps
  ESP8266 設定 Ver 0.40
      WiFi 模式 STATION
      串列輸出腳位 3
      串列輸入腳位 2
      SSID(分享器名稱) " WiFi "
      Password(密碼) " 0928583777 "
  印出訊息後換行 建立字串使用 " IP: "
                  取得裝置IP位址
  呼叫 showLCD 與：
      s1 建立字串使用 " IP: "
                  取得裝置IP位址
      s2 " "
迴圈

到 showLCD 與： s1, s2
  清除
  設定游標位置 行 0 列 0
  顯示 s1
  設定游標位置 行 0 列 1
  顯示 s2

到 showGreenLED
  設定數位腳位 10 為 高
  延遲毫秒 1
  設定數位腳位 10 為 低
```


迴圈
宣告 LM35Temp 當 String 資料
LM35溫度感測器 腳位# A3 溫度單位 攝氏
宣告 DH11Temp 當 String 資料
DHT11溫溼度感測器 腳位 4 讀取數值 溫度
宣告 DH11Hum 當 String 資料
DHT11溫溼度感測器 腳位 4 讀取數值 濕度
呼叫 showGreanLED
IFTTT GET URL 雲端服務
KEY(授權碼) dJ0-E_fOYQY5koTywlKRIC
Event Name(事件名稱) WeatherStation
Value1 LM35Temp
Value2 DH11Temp
Value3 DH11Hum
停止遠端連線
印出訊息後換行
建立字串使用
LM35 TEMP:
LM35Temp
C, DHT11 TEMP:
DH11Temp
C, DHT11 HUM:
DH11Hum
%
呼叫 showLCD 與：
s1
建立字串使用
TEMP:
DH11Temp
C
s2
建立字串使用
HUM:
DH11Hum
%
延遲毫秒 60000

Arduino 程式編輯燒錄

```
/* Sketch was generated by motoblockly
 Website: http://www.motoblockly.com
 Author: www.motoduino.com
 Date: Tue Apr 10 2018 09:42:23 GMT+0800
 */
#include <Wire.h>
#include <motoLiquidCrystal_I2C.h>
#include "motoWiFiEsp.h"

#include <SoftwareSerial.h>

#include <motoDHT.h>

LiquidCrystal_I2C mylcd(0x27,16,2);

SoftwareSerial esp8266_Serial(3,2);

WiFiEspClient esp_client;

int connect_status = WL_IDLE_STATUS;

String ipAddressToString(const IPAddress& ipAddress ) {
       return String(ipAddress[0]) + String(".")+
       String(ipAddress[1]) + String(".")+
       String(ipAddress[2]) + String(".")+
       String(ipAddress[3]);
}
float Temperature_LM35T_A3(int tempUnit) {
int readtempValue = analogRead(A3);
float temperature = (readtempValue * 0.49);
if(tempUnit == 1)
   return temperature;
 else
   return ((temperature * 1.8) + 32);
}

String  LM35Temp;
DHT motoDHT(4, DHT11);

String  DH11Temp;
String  DH11Hum;
void showLCD(String s1, String s2) {
  mylcd.clear();
  mylcd.setCursor(0,0);
  mylcd.print(s1);
  mylcd.setCursor(0,1);
  mylcd.print(s2);
}

void showGreenLED() {
  digitalWrite(10,HIGH);
  delay(1);
  digitalWrite(10,LOW);
}

```

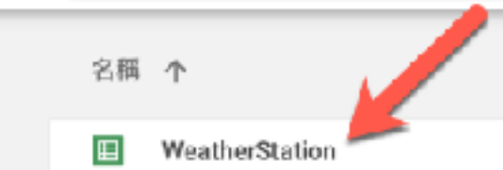
```
55
56  void setup()
57  {
58    pinMode(12, OUTPUT);
59    mylcd.init();
60
61    mylcd.backlight();
62
63    Serial.begin(9600);
64    esp8266_Serial.begin(9600);
65
66    pinMode(A3, INPUT);
67    pinMode(4, INPUT);
68    motoDHT.begin();
69      digitalWrite(12,HIGH);
70    Serial.println("Welcome Arduino Weather Station");
71    showLCD("Welcome Arduino", "Weather Station");
72    showGreenLED();
73    esp8266_Serial.listen();
74    WiFi.init(&esp8266_Serial);
75    if(WiFi.status()==WL_NO_SHIELD) {
76     Serial.println("Esp8266 module no present");
77     while(true);
78     }
79    while(connect_status != WL_CONNECTED) {
80     Serial.println("Connect to router...");
81     connect_status = WiFi.begin("WiFi","0928583777");
82    }
83    Serial.println((String("IP: ") + String(ipAddressToString(WiFi.localIP()))));
84    showLCD(String("IP: ") + String(ipAddressToString(WiFi.localIP())), "");
85
86    pinMode(10, OUTPUT);
87  }
88
89  void loop()
90  {
91      LM35Temp = Temperature_LM35T_A3(1);
92      DH11Temp = motoDHT.readTemperature();
93      DH11Hum = motoDHT.readHumidity();
94      showGreenLED();
95      esp8266_Serial.listen();
96      if (esp_client.connect("maker.ifttt.com", 80)) {
97           String data = "\r\n{\"value1\":"+ String(LM35Temp)+",\"value2\": "+String(DH11Temp)+",\"value3\": "+String(DH11Hum)+"}";
98           esp_client.println("POST /trigger/WeatherStation/with/key/dJ0-E_fOYOY5koTywIKRIC HTTP/1.1");
99           esp_client.println("Host: maker.ifttt.com");
100          esp_client.println("User-Agent: Arduino");
101          esp_client.println("Accept: */*");
102          esp_client.print("Content-Length: ");
103          esp_client.println(data.length());
104          esp_client.println("Content-Type: application/json");
105          esp_client.println("Connection: close");
106          esp_client.println(data);
107     }
108     esp_client.stop();
109     Serial.println((String("LM35 TEMP: ") + String(LM35Temp) + String("C, DHT11 TEMP: ") + String(DH11Temp) + String("C, DHT11 HUM: ") + String(DH11Hum) + String("%")));
110     showLCD(String("TEMP: ") + String(DH11Temp) + String("C"), String(" HUM: ") + String(DH11Hum) + String("%"));
111     delay(60000);
112
113 }
```

Google 雲端硬碟

搜尋雲端硬碟

新增

我的雲端硬碟 > IFTTT



- 我的雲端硬碟
- 電腦
- 與我共用
- 近期存取
- 已加星號
- 垃圾桶
- 備份

已使用 6.2 GB，共 15 GB

升級儲存空間

取得 Backup and Sync Mac 版

名稱	擁有者	上次修改日期	檔案大小
WeatherStation	我	上午12:07 我	–

WeatherStation

檔案 編輯 檢視 插入 格式 資料 工具 表單 外掛程式 說明 上次編輯時間：10 小時前

共用

100% NT$ % .0 .00 123 Arial 10

fx 時間

	A	B	C	D	E	F	G
1	時間	LM35溫度	DH11溫度	DH11濕度			
2	April 5, 2018 at 03:27AM	26	28	41			
3	April 5, 2018 at 03:28AM	26	28	40			
4	April 5, 2018 at 03:30AM	26	29	39			
5	April 5, 2018 at 03:31AM	26	29	40			
6	April 5, 2018 at 03:32AM	26	28	40			
7	April 5, 2018 at 03:33AM	26	28	40			
8	April 5, 2018 at 03:34AM	26	28	40			
9	April 5, 2018 at 03:35AM	26	28	40			
10	April 5, 2018 at 03:36AM	25	28	40			
11	April 5, 2018 at 03:38AM	23	27	40			
12	April 5, 2018 at 03:39AM	23	25	41			
13	April 5, 2018 at 03:40AM	23	26	41			
14	April 5, 2018 at 03:41AM	24	25	41			
15	April 5, 2018 at 03:42AM	23	25	42			
16	April 5, 2018 at 03:43AM	22	24	43			
17	April 5, 2018 at 03:44AM	22	24	43			
18	April 5, 2018 at 03:46AM	22	24	44			
19	April 5, 2018 at 03:47AM	22	23	44			
20	April 5, 2018 at 03:48AM	22	23	45			
21	April 5, 2018 at 03:49AM	21	23	46			
22	April 5, 2018 at 03:50AM	21	23	46			
23	April 5, 2018 at 03:51AM	21	23	47			
24	April 5, 2018 at 03:52AM	21	23	47			
25	April 5, 2018 at 03:53AM	22	23	47			
26	April 5, 2018 at 03:54AM	21	23	48			
27	April 5, 2018 at 03:55AM	22	23	48			
28	April 5, 2018 at 03:57AM	21	23	49			
29	April 5, 2018 at 03:58AM	21	23	49			
30	April 5, 2018 at 03:59AM	21	23	50			
31	April 5, 2018 at 04:00AM	21	23	50			
32	April 5, 2018 at 04:01AM	21	23	51			
33	April 5, 2018 at 04:02AM	21	23	51			

表單回應1 工作表2

探索