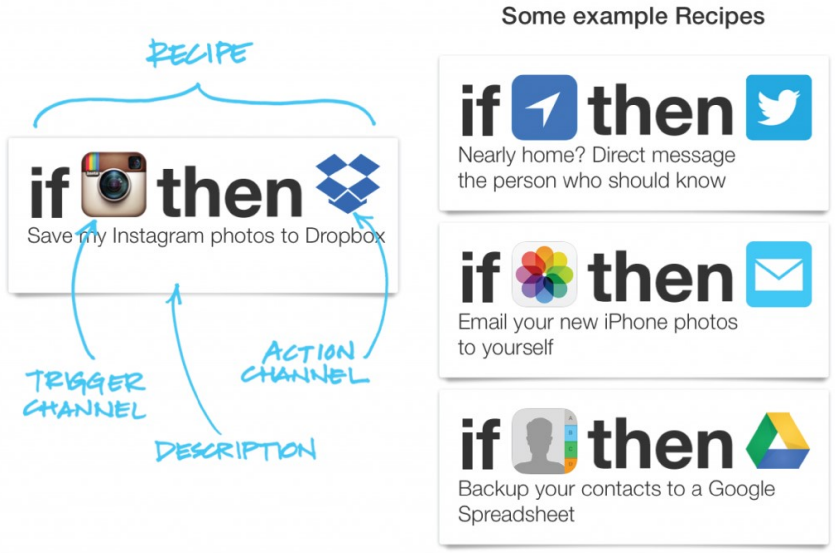
IFTTT with ESP 32

Week08 @19,20,21 กันยายน 2560

1. Introduction

http://www.instructables.com/id/ESP8266-to-IFTTT-Using-Arduino-IDE/



https://ifttt.com/blog/2016/08/ifttt-is-coming-to-an-app-near-you

2. Read This

- https://marooter.blogspot.com/2017/06/week04-arduino-iots-sms.html
- http://www.olrepublic.com/careerlab/เทคนิคการทำงาน-อ่านแล้วใช้เลย-Working-Tips/1697-IFTTT-If-This-Then-That.html
- https://circuitdigest.com/microcontroller-projects/sending-sms-using-esp8266
- https://www.twilio.com/docs/guides/send-sms-and-mms-messages-esp8266-cpp
- http://www.ioxhop.com/article/47/esp8266-esp8285-กับการส่งการแจ้งเตือนเข้า-line

3. Experiment

1. MQTT Lens

- MQTT Broker
  - iot.eclipse.org 1883
  - test.mosquitto.org 1883
  - broker.mqttdashboard.com 1883

2. Singe in IFTTT

- https://ifttt.com/discover

3. Add Library IFTTT and Arduino JSON

- from https://github.com/witnessmenow/arduino-ifttt-maker/archive/master.zip
- Add Lib Sketch → Include Lib → Add Zip…
- from https://github.com/bblanchon/ArduinoJson/archive/master.zip
- Add Lib Sketch → Include Lib → Add Zip…

4. IFTTT Test_1 – If Time Then SMS

- If Date&Time Then SMS

5. Test_2 – Basic Trigger to Google Spreadsheet

- Open File >> File → Example → IFTTTMaker → ESP8266 → TrigerEvent
- แก้ไข

  บรรทัดที่ 2 แก้ไขจาก `#include <ESP8266WiFi.h>`

  เป็น `#include <WiFi.h>`

  `#define KEY "dAaxAGi8wPjYP4nMahlM23"`

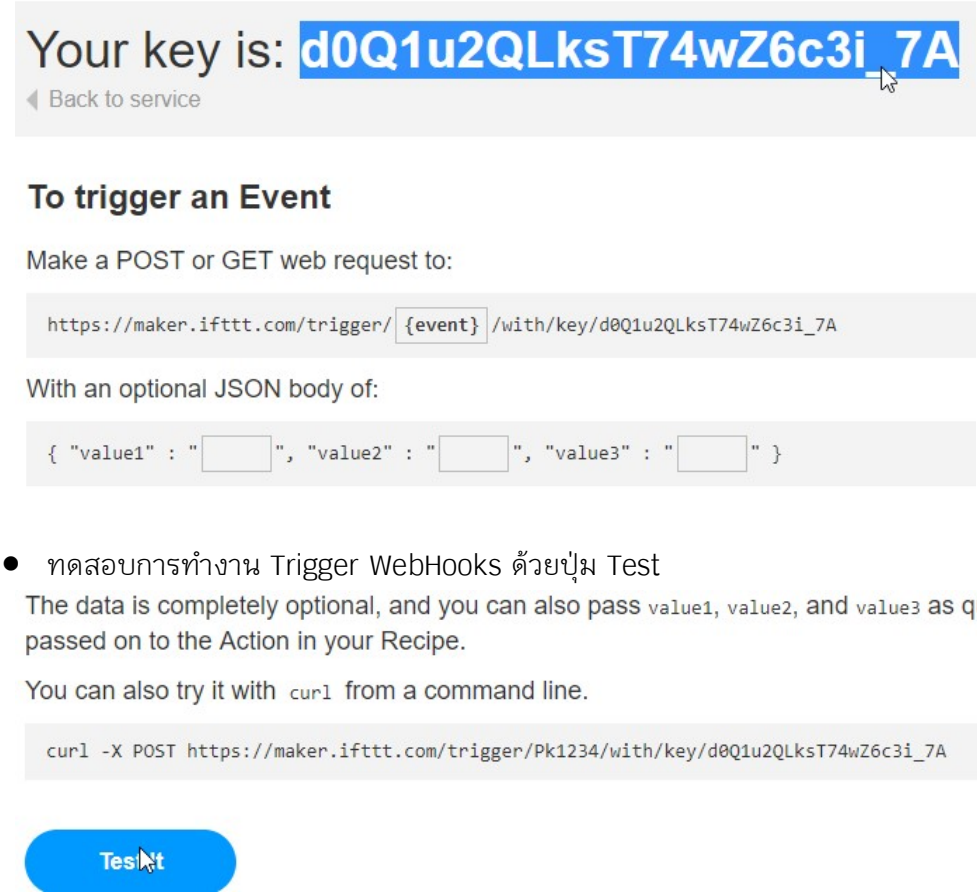
  `#define EVENT_NAME "ClassChk0920"`

  `if(ifttt.triggerEvent(EVENT_NAME, ssid, ip.toString(),"B3706985")){`
- เมื่อโปรแกรมทำงานผ่านโปรแกรมย่อย SETUP จะ Trigger WebHooks 1 ครั้ง

```
#include <IFTTTMaker.h>
#include <WiFi.h>
#include <WiFiClientSecure.h>

//------- Replace the following! ------
char ssid[]          = "IOT_Test";              // your network SSID (name)
char password[]      = "Pk0123456789";          // your network key
#define KEY          "dAaxAGi8wPjYP4nMahlM23"   // Get it from this page https://ifttt.com/services/maker/settings
#define EVENT_NAME   "ClassChk0920"             // Name of your event name, set when you are creating the applet

WiFiClientSecure client;
IFTTTMaker ifttt(KEY, client);

void setup() {
  Serial.begin(115200);

  // Set WiFi to station mode and disconnect from an AP if it was Previously
  // connected
  WiFi.mode(WIFI_STA);
  WiFi.disconnect();
  delay(100);

  // Attempt to connect to Wifi network:
  Serial.print("Connecting Wifi: ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");
    delay(500);
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  IPAddress ip = WiFi.localIP();
  Serial.println(ip);


  //triggerEvent takes an Event Name and then you can optional pass in up to 3 extra Strings
  if(ifttt.triggerEvent(EVENT_NAME, ssid, ip.toString(),"B3706985")){
    Serial.println("Successfully sent");
  } else
  { Serial.println("Failed!");
  }
}

void loop() {
}
```

6. Test3_IFTTT Setup

- If WebHooks Then SMS
- ตรวจสอบคีย์ WebHooks ที่หน้าต่าง WebHooks Documentation



- ทดสอบการทำงาน Trigger WebHooks ด้วยปุ่ม Test

- Open File >> File → Example → IFTTTMaker → ESP8266 → TrigerEvent
- แก้ไข

  บรรทัดที่ 2 แก้ไขจาก #include <ESP8266WiFi.h>

  เป็น #include <WiFi.h>

  #define KEY "kkkkkkkkkkkkkkkkkkkkkkkk"

```
#include <IFTTTMaker.h>
#include <WiFi.h>
#include <WiFiClientSecure.h>

//------- Replace the following! ------
char ssid[]          = "IOT_Test";              // your network SSID (name)
char password[]      = "Pk0123456789";          // your network key
#define KEY          "XXXXXXX"

WiFiClientSecure client;
IFTTTMaker ifttt(KEY, client);

void setup() {
  Serial.begin(115200);

  // Set WiFi to station mode and disconnect from an AP if it was Previously
  // connected
  WiFi.mode(WIFI_STA);
  WiFi.disconnect();
  delay(100);

  // Attempt to connect to Wifi network:
  Serial.print("Connecting Wifi: ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");
    delay(500);
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  IPAddress ip = WiFi.localIP();
  Serial.println(ip);

  pinMode(23, INPUT_PULLUP);
}


void loop() {
  int ChkStatus;
  if (digitalRead(23) == LOW)
  { Serial.print("Pin 23 Trigger ..... ");
    ChkStatus = ifttt.triggerEvent("Trigger23");
    if (ChkStatus == 0)
      Serial.println(" > Successfully sent");
    else
      Serial.println(" > Failed!");
    delay(2000);
  }
}
```

7. Test_4 – Basic Trigger

- Open File >> File → Example → IFTTTMaker → ESP8266 → TrigerEvent
- แก้ไข
  - บรรทัดแรก
    - จาก #include <ESP8266WiFi.h>
    - เป็น #include <WiFi.h>
  - Access Point →SSID, PASSWORD
  - KEY YYYY
  - EVENT_NAME XXXX
- เมื่อโปรแกรมทำงานผ่านโปรแกรมย่อย SETUP จะ Trigger WebHooks 1 ครั้ง

```
#include <IFTTTMaker.h>
#include <WiFi.h>
#include <WiFiClientSecure.h>

//------- Replace the following! ------
char ssid[]             = "testVirus";
char password[]         = "1510031510";
#define KEY             "d0Q1u2QLksT74wZ6c3i_7A"
#define EVENT_NAME      "Pk1234"

WiFiClientSecure client;
IFTTTMaker ifttt(KEY, client);

void setup() {
  Serial.begin(115200);

  // Set WiFi to station mode and disconnect from an AP if it was Previously
  // connected
  WiFi.mode(WIFI_STA);
  WiFi.disconnect();
  delay(100);

  // Attempt to connect to Wifi network:
  Serial.print("Connecting Wifi: ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");
    delay(500);
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  IPAddress ip = WiFi.localIP();
  Serial.println(ip);


  //triggerEvent takes an Event Name and then you can optional pass in up to 3 extra Strings
  if (ifttt.triggerEvent(EVENT_NAME, ssid, ip.toString())) {
    Serial.println("Successfully sent");
  } else
  {
    Serial.println("Failed!");
  }
}

void loop() {
}
```

8. Test_5 - DHT11 Start

- ต่อวงจร DHT-11 to D15

  DHT11 (VCC, DIN, GND)

  ESP32 (3V3, D15, GND)

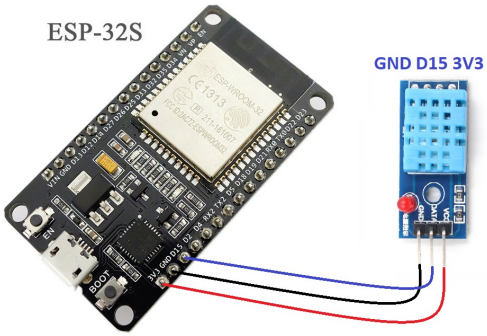
- File → Example → DHT Sensor Library → DHT Tester

  แก้ไขโปรแกรม

  #define DHTPIN 15

  #define DHTTYPE DHT11

- โหลดโปรแกรมทดสอบ




```
#include "DHT.h"
#define DHTPIN 15     // what digital pin we're connected to
#define DHTTYPE DHT11   // DHT 11
DHT dht(DHTPIN, DHTTYPE);

void setup() {
  Serial.begin(9600);
  Serial.println("DHTxx test!");
  dht.begin();
}

void loop() {
  delay(2000);
  float h = dht.readHumidity();
  float t = dht.readTemperature();
  float f = dht.readTemperature(true);
  float hif = dht.computeHeatIndex(f, h);
  float hic = dht.computeHeatIndex(t, h, false);

  if (isnan(h) || isnan(t) || isnan(f)) {
    Serial.println("Failed to read from DHT sensor!");
    return;
  }

  Serial.print("Humidity: ");          Serial.print(h);
  Serial.print("\tTemperature: ");     Serial.print(t);
  Serial.print(" *C, ");               Serial.print(f);
  Serial.print(" *F\tHeat index: ");   Serial.print(hic);
  Serial.print(" *C,");                Serial.print(hif);
  Serial.println(" *F");
}
```

9. Test_6 – Send Temperature to Google Spreadsheet

- ตั้ง IFTTT → If WebHooks Then Google Drive
- ทดสอบ WebHooks Trigger แล้วดูผลการทำงานที่ Google Sheet

- โหลดโปรแกรมต่อไปนี้

```
#include <IFTTTMaker.h>
#include <WiFi.h>
#include <WiFiClientSecure.h>
#include "DHT.h"
#define DHTPIN 15
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);

//------- Replace the following! ------
char ssid[]                 = "IOT_Test";                   // your network SSID (name)
char password[]             = "Pk0123456789";               // your network key
#define KEY                 "XXXXXXX"

WiFiClientSecure client;
IFTTTMaker ifttt(KEY, client);
int Count = 15;

void setup() {
  Serial.begin(115200);
  // Set WiFi to station mode and disconnect from an AP if it was Previously
  // connected
  WiFi.mode(WIFI_STA);
  WiFi.disconnect();
  delay(100);

  // Attempt to connect to Wifi network:
  Serial.print("Connecting Wifi: ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");
    delay(500);
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  IPAddress ip = WiFi.localIP();
  Serial.println(ip);
  dht.begin();
}

void loop() {
  float h = dht.readHumidity();
  float t = dht.readTemperature();                  float f = dht.readTemperature(true);
  float hif = dht.computeHeatIndex(f, h);           float hic = dht.computeHeatIndex(t, h, false);

  if (isnan(h) || isnan(t) || isnan(f)) {
    Serial.println("Failed to read from DHT sensor!");
    return;
  }
  Serial.print("Count = ");               Serial.print(Count);
  Serial.print("\tHumidity: ");           Serial.print(h);
  Serial.print("\tTemperature: ");        Serial.print(t);
  Serial.print(" *C, ");                  Serial.print(f);
  Serial.print(" *F\tHeat index: ");      Serial.print(hic);
  Serial.print(" *C,");                   Serial.print(hif);
  Serial.println(" *F");

  if (Count <= 0)
  { Count = 15;
    Serial.print("Temperature Save Tepperature..... ");
    int ChkStatus = ifttt.triggerEvent("TriggerSaveTempp", String(h), String(t), String(hic));
    if (ChkStatus == 0)
      Serial.println(" > Successfully sent");
    else
      Serial.println(" > Failed!");
  }
  delay(2000);
  Count--;
}
```

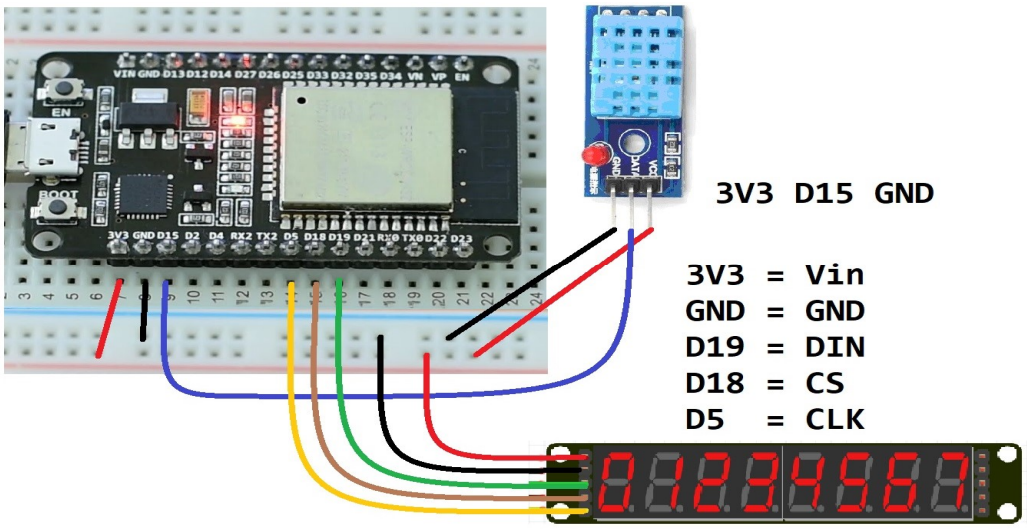
10. Test_7 – If Temperature over 30'C Alarm

- ตั้ง IFTTT ➔ If WebHooks Then SMS
- โหลดโปรแกรมต่อไปนี้

```
#include <IFTTTMaker.h>
#include <WiFi.h>
#include <WiFiClientSecure.h>
#include "DHT.h"
#define DHTPIN 15
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);

//------- Replace the following! ------
char ssid[]         = "IOT_Test";          // your network SSID (name)
char password[]     = "Pk0123456789";      // your network key
#define KEY         "XXXXXXX"

WiFiClientSecure client;
IFTTTMaker ifttt(KEY, client);
int Count = 15;

void setup() {
  Serial.begin(115200);
  WiFi.mode(WIFI_STA);                     WiFi.disconnect();
  delay(100);

  // Attempt to connect to Wifi network:
  Serial.print("Connecting Wifi: ");       Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");                     delay(500);
  }
  Serial.println("");                      Serial.println("WiFi connected");          Serial.println("IP address: ");
  IPAddress ip = WiFi.localIP();           Serial.println(ip);
  dht.begin();
}

void loop() {
  float h = dht.readHumidity();
  float t = dht.readTemperature();         float f = dht.readTemperature(true);
  float hif = dht.computeHeatIndex(f, h);  float hic = dht.computeHeatIndex(t, h, false);

  if (isnan(h) || isnan(t) || isnan(f)) {
    Serial.println("Failed to read from DHT sensor!");
    return;
  }
  Serial.print("Count = ");          Serial.print(Count);
  Serial.print("\tHumidity: ");      Serial.print(h);
  Serial.print("\tTemperature: ");   Serial.print(t);
  Serial.print(" *C, ");             Serial.print(f);
  Serial.print(" *F\tHeat index: "); Serial.print(hic);
  Serial.print(" *C,");              Serial.print(hif);
  Serial.println(" *F");

  if (Count <= 0)
  { Count = 15;
    if (t > 30 )
    { Serial.print("Temperature Trigger..... ");
      int ChkStatus = ifttt.triggerEvent("TriggerTempp");
      if (ChkStatus == 0)
        Serial.println(" > Successfully sent");
      else
        Serial.println(" > Failed!");
    }
  }
  delay(2000);
  Count--
}
```

11. Test_8: From DHT-11 Send to Google Sheet and Display with MAX-7219 7Segment

- ต่อวงจรเพิ่มเติม



- Add Library https://github.com/wayoda/LedControl/archive/master.zip
- ทดสอบโปรแกรม File → Example → LedControl → LCDemo7Segment
- ปรับแก้โปรแกรมจากขา [DIN, CLK, CS] = [12,11,10] มาเป็นขา [19,5,18]
- จากโปรแกรมตัวอย่าง ให้ปรับแก้โปรแกรมให้เหมาะสม

```
#include "LedControl.h"
/***** These pin numbers will probably not work with your hardware *****
  pin 5 is connected to the DataIn
  pin 19 is connected to the CLK
  pin 18 is connected to LOAD
  We have only a single MAX72XX.
*/
LedControl lc = LedControl(5, 19, 18, 1);

void setup() {
  lc.shutdown(0, false);
  lc.setIntensity(0, 8);
  lc.clearDisplay(0);
}


void loop() {
  for (int i = 16; i >= 0; i--)
  { lc.setChar(0, 7, 'a', false); // Charector
    lc.setRow(0, 6, 0x05);        // Manual Code
    lc.setChar(0, 5, 'd', false);
    lc.setRow(0, 4, 0x1c);
    lc.setRow(0, 3, B00010000);
    lc.setRow(0, 2, 0x15);
    lc.setRow(0, 1, 0x1D);
    lc.setDigit(0, 0, i, false);  // Dec Value
    delay(500);

    lc.clearDisplay(0);
    delay(500);
  }
}
```

PCเลขที่ _____รหัส_____ ชื่อ-สกุล _____

4. Exercise

1. ทดสอบการส่งข้อมูลไปยัง Google Spreadsheet ของอาจารย์ กับ 3 Cell คือ SSID, IP, Student_ID

```
#define KEY          "dAaxAGi8wPjYP4nMahlM23"
#define EVENT_NAME   "ClassChk0920"
ifttt.triggerEvent(EVENT_NAME, ssid, ip.toString(),"B37[redacted]")
```

2. ทดสอบการส่งข้อมูลไปแบบ SMS, LINE, Facebook, twitter, FB Massager
   - กดปุ่ม A ที่ต่อกับ Node32 – ให้ส่งข้อความ “Overheats Alarm”
   - กดปุ่ม B ที่ต่อกับ Node32 – ให้ส่งข้อความ “Door Open Alarm”
   - กดปุ่ม C ที่ต่อกับ Node32 – ให้ส่งข้อความ “Intruders Alarm”

   ☐ SMS ☐ LINE ☐ Facebook ☐ Twitter ☐ FB Massager

3. ต่อ DHT-11 เข้ากับ ESP32 ทดสอบการส่งข้อมูลอุณหภูมิไปยัง Google Spreadsheet ของตัวเอง

4. จากข้อ 3 เพิ่มเติม คือ
   - 4.1 ส่งข้อมูลอุณหภูมิไปยัง Google Spreadsheet (ทำแล้วในข้อ 3)
   - 4.2 หากอุณหภูมิที่อ่านได้เกิน 28’C ให้แจ้งเตือนผ่าน SMS หรือ LINE หรือ Facebook หรือ twitter หรือ Facebook Massager

   ☐ SMS ☐ LINE ☐ Facebook ☐ Twitter ☐ FB Massager

5. จากข้อ 3 เพิ่มเติม คือ
   - 5.1 ส่งข้อมูลอุณหภูมิไปยัง Google Spreadsheet (ทำแล้วในข้อ 3)
   - 5.2 หากอุณหภูมิที่อ่านได้เกิน 28’C ให้แจ้งเตือนผ่าน SMS หรือ LINE หรือ Facebook หรือ twitter หรือ Facebook Massager (ทำแล้วในข้อ 4)

   ☐ SMS ☐ LINE ☐ Facebook ☐ Twitter ☐ FB Massager
   - 5.3 แสดงอุณหภูมิที่ 7_Segment Display