แนวทางการใช้งานอินเทอร์เน็ตของสรรพสิ่งในระบบการผลิต

IoT Approaches to Manufacturing System

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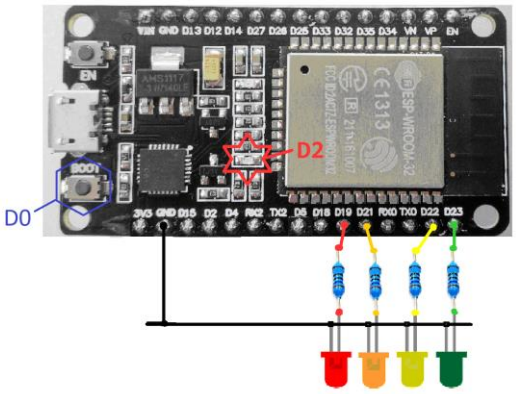
3/3. คำถามท้ายบทเพื่อทดสอบความเข้าใจ

Quiz_301 – 4 External LED Control

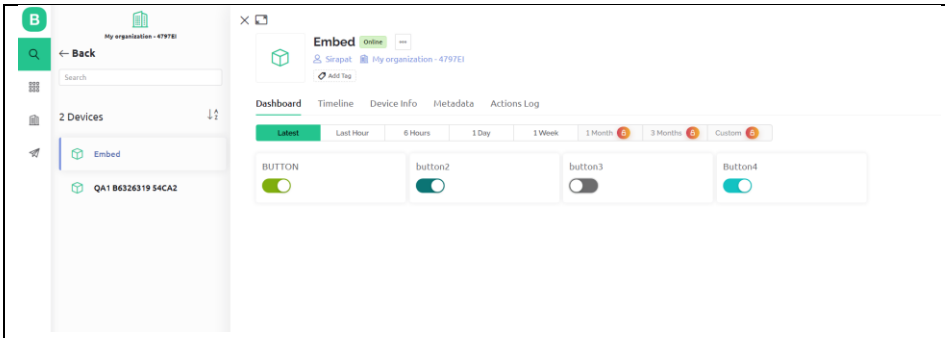


< Test Code >

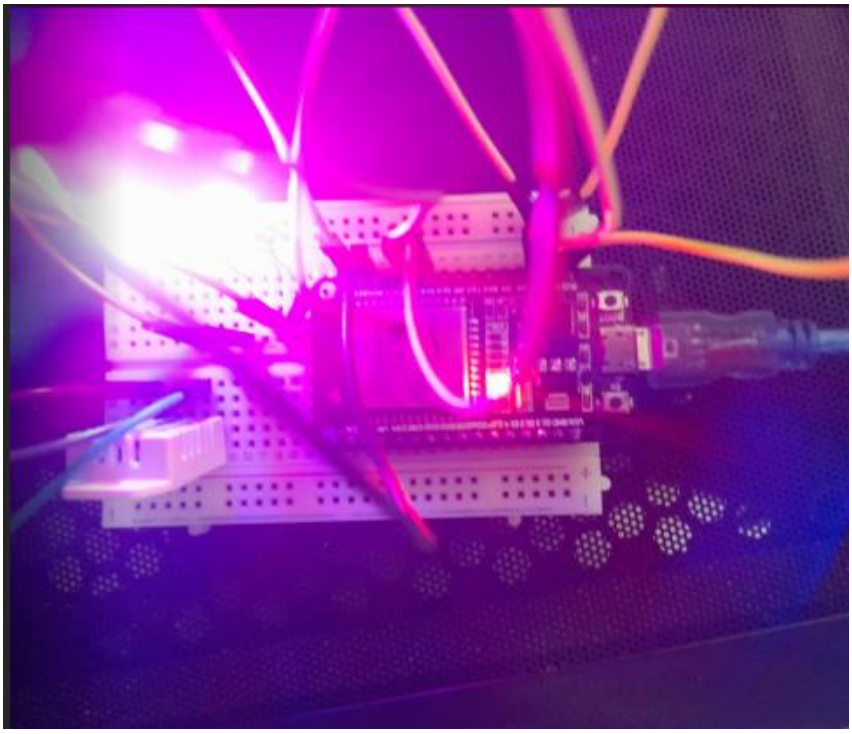
```
#define BLYNK_PRINT Serial

#include <WiFi.h>

#include <WiFiClient.h>

#include <BlynkSimpleEsp32.h>


char auth[] = "gnkdUHYeuiZnbFd68M-_AeZqdUwRSuvc";

char ssid[] = "RATSIRI-HOME 2.4G";

char pass[] = "0984485615";


int led1 = 19;

int led2 = 21;

int led3 = 22;

int led4 = 23;

BLYNK_WRITE(V1) {

  int val = param.asInt();
```

```
  digitalWrite(led1, val);
}
BLYNK_WRITE(V2) {
  int val = param.asInt();
  digitalWrite(led2, val);
}
BLYNK_WRITE(V3) {
  int val = param.asInt();
  digitalWrite(led3, val);
}
BLYNK_WRITE(V4) {
  int val = param.asInt();
  digitalWrite(led4, val);
}


void setup()
{ Serial.begin(115200);
 Blynk.begin(auth, ssid, pass);
 pinMode(led1, OUTPUT);
 pinMode(led2, OUTPUT);
 pinMode(led3, OUTPUT);
 pinMode(led4, OUTPUT);
}
void loop()
{ Blynk.run();
}
```

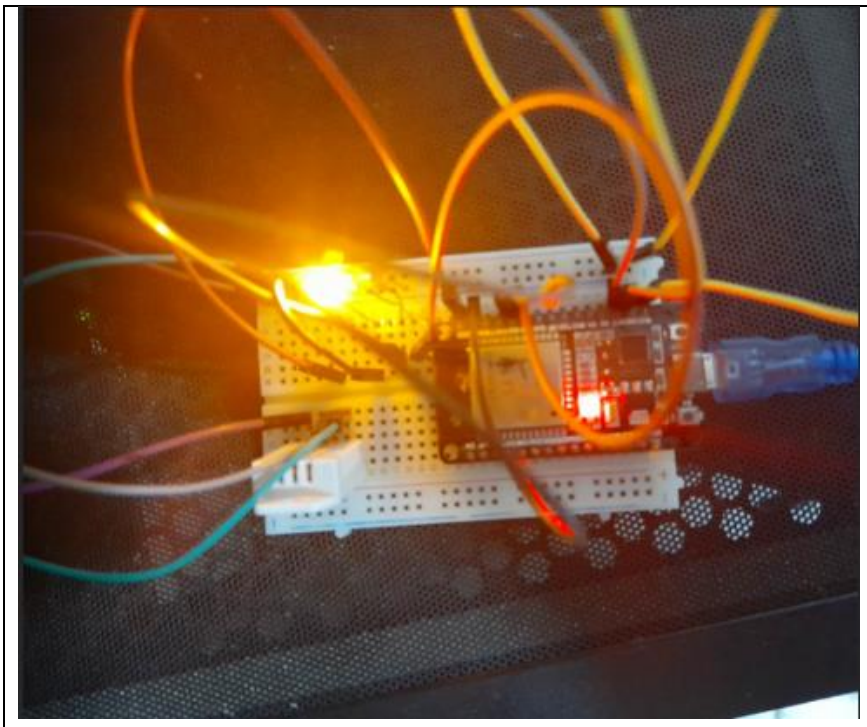
รูปหน้าจอ Blynk



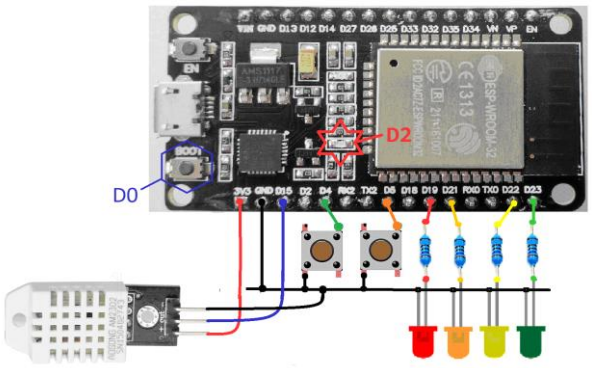
รูปการต่อวงจร – 1



รูปการต่อวงจร – 2



Quiz_302 – DHT22 + 4 LED + 2 Switch



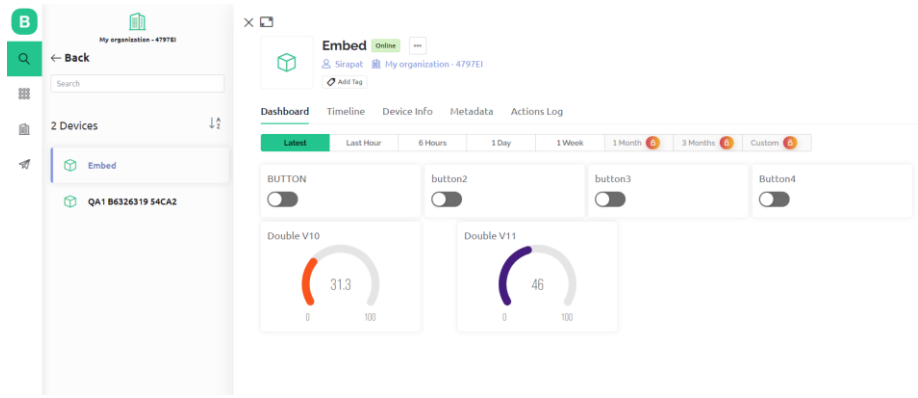
< Test Code >

```
#define BLYNK_PRINT Serial

#include <WiFi.h>

#include <WiFiClient.h>

#include <BlynkSimpleEsp32.h>

#include "DHTesp.h"

BlynkTimer timer;

DHTesp dht;


char auth[] = "gnkdUHYeuiZnbFd68M-_AeZqdUwRSuvc";

char ssid[] = "RATSIRI-HOME 2.4G";

char pass[] = "0984485615";


const int pinDHT_22 = 15; // D15

float temperature = dht.getTemperature(),

      humidity    = dht.getHumidity();

int led1 = 19;

int led2 = 21;

int led3 = 22;

int led4 = 23;

BLYNK_WRITE(V1) {
```

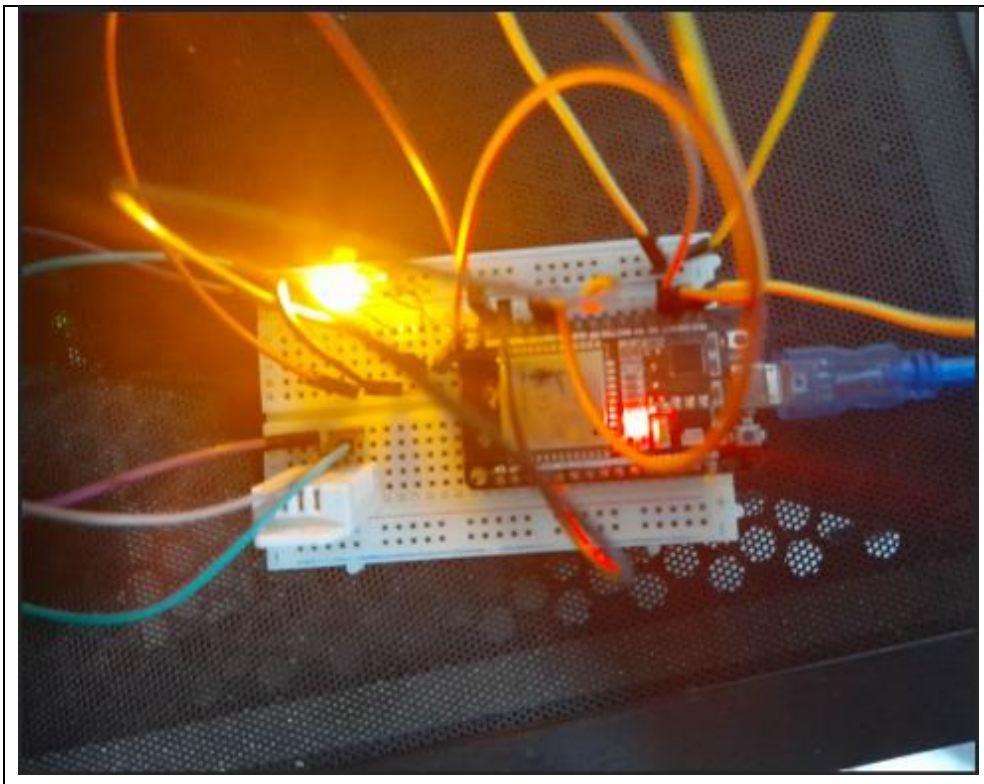
```
  int val = param.asInt();
  digitalWrite(led1, val);
}
BLYNK_WRITE(V2) {
  int val = param.asInt();
  digitalWrite(led2, val);
}
BLYNK_WRITE(V3) {
  int val = param.asInt();
  digitalWrite(led3, val);
}
BLYNK_WRITE(V4) {
  int val = param.asInt();
  digitalWrite(led4, val);
}


void myTimerEvent()
{ temperature = dht.getTemperature();
 humidity = dht.getHumidity();
 Blynk.virtualWrite(V10, temperature);
 Blynk.virtualWrite(V11, humidity);
 Serial.print(" Temp('C) >> "); Serial.print(temperature, 1);
 Serial.print(", Humidity(%) >> "); Serial.println(humidity, 1);
}
void setup()
{ Serial.begin(115200);
 Blynk.begin(auth, ssid, pass);
 pinMode(led1, OUTPUT);
 pinMode(led2, OUTPUT);
 pinMode(led3, OUTPUT);
 pinMode(led4, OUTPUT);
```

```
 dht.setup(pinDHT_22, DHTesp::DHT22);

 timer.setInterval(1000L, myTimerEvent);

}

void loop()

{ Blynk.run();

  timer.run();

}
```

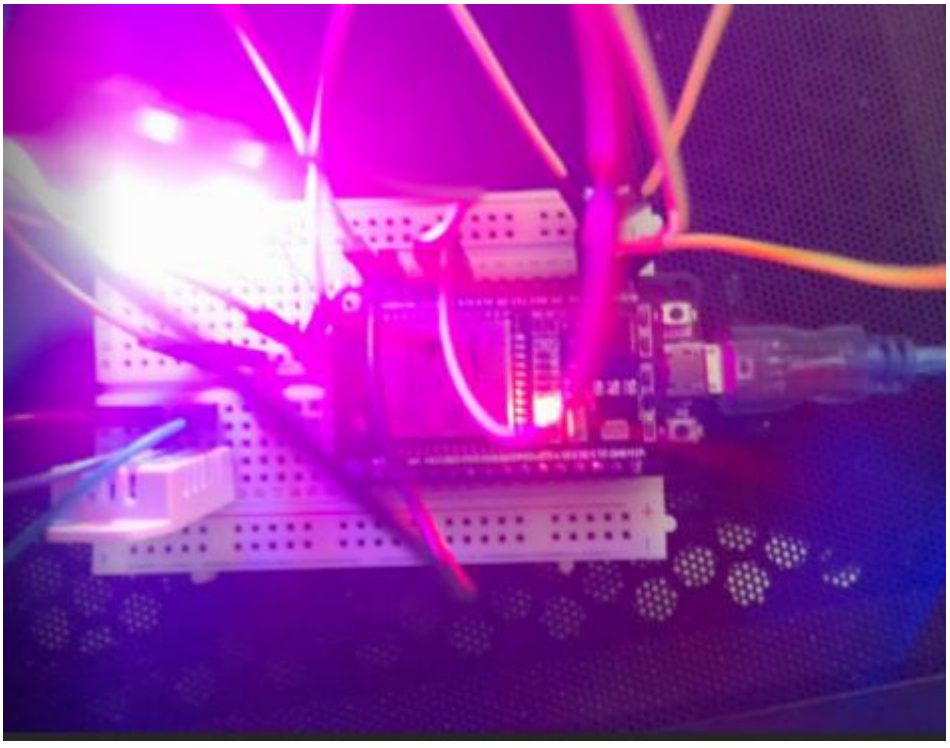
รูปหน้าจอ Blynk



รูปการต่อวงจร – 1



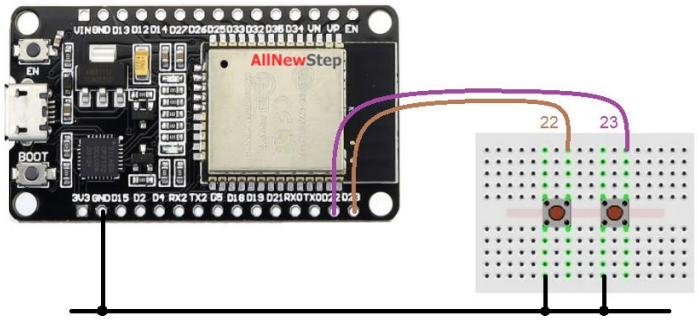
รูปการต่อวงจร – 2



Quiz_303 – Social Alert

ทดสอบการส่งข้อมูลไป ☐ LINE สำหรับสวิตซ์กด 3 ตัว

- กดปุ่ม B ที่ต่อกับ ESP32– ให้ส่งข้อความ “Door Open Alarm”
- กดปุ่ม C ที่ต่อกับ ESP32– ให้ส่งข้อความ “Intruders Alarm”



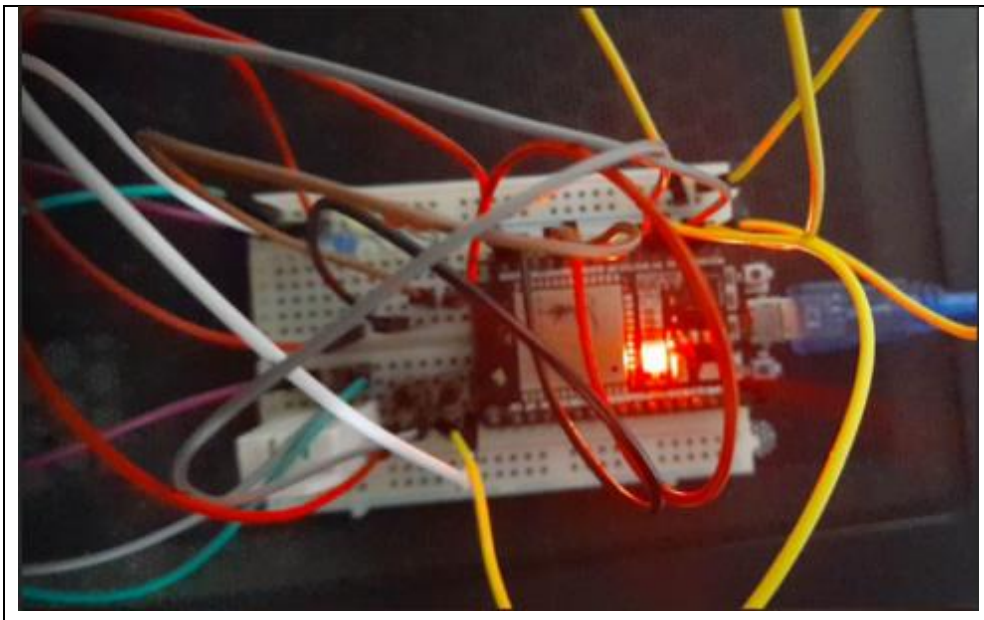
< Test Code >

```
#include <WiFi.h>
#include <HTTPClient.h>

#define WIFI_SSID "RATSIRI-HOME 2.4G" //Your Wifi
#define WIFI_PASS "0984485615" //Your Wifi password
#define WebHooksKey "bkiNBzl7POX16mQ3DekdTf" //Your Webhookskey
#define WebHooksEvent1 "Door"
#define WebHooksEvent2 "Intru"
#define sw1 2
#define sw2 4

void setup() {
 Serial.begin(115200);
 pinMode(sw1, INPUT_PULLUP);
 pinMode(sw2, INPUT_PULLUP);
 WiFi.begin(WIFI_SSID, WIFI_PASS);
 Serial.println("Connecting");
 while (WiFi.status() != WL_CONNECTED) {
 delay(500);
```

```
 Serial.print("."); }
 Serial.println("");
 Serial.print("Connected to WiFi network with IP Address: ");
 Serial.println(WiFi.localIP());
 randomSeed(analogRead(33));
}
void loop() {
 if (digitalRead(sw1) == 1)
 {  String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEvent1) + "/with/key/" +
    String(WebHooksKey);
    String httpRequestData = "Door Alarm" ;
    Serial.println("Server Name :" + serverName);
    Serial.println("json httpRequestData :" + httpRequestData);
    if (WiFi.status() == WL_CONNECTED)
    { HTTPClient http;
      http.begin(serverName);
      http.addHeader("Content-Type", "application/x-www-form-urlencoded");
      int httpResponseCode = http.POST(httpRequestData);
      Serial.print("HTTP Response code: ");
      Serial.println(httpResponseCode);
      http.end();
      if (httpResponseCode == 200)
        Serial.println("Successfully sent");
      else
        Serial.println("Failed!"); }
  else
  { Serial.println("WiFi Disconnected"); }
  Serial.print(" >> Wait for 10 Sec --> ");
  for (int i = 9; i >= 0; i--)
  {  Serial.print(i);
     delay(1000); }
```

```
  Serial.println(" >> Ready"); }
if (digitalRead(sw2) == 1)
  { String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEvent2) + "/with/key/" +
    String(WebHooksKey);
    String httpRequestData = "INTRUDER" ;
    Serial.println("Server Name :" + serverName);
    Serial.println("json httpRequestData :" + httpRequestData);
    if (WiFi.status() == WL_CONNECTED)
    { HTTPClient http;
      http.begin(serverName);
      http.addHeader("Content-Type", "application/x-www-form-urlencoded");
      int httpResponseCode = http.POST(httpRequestData);
      Serial.print("HTTP Response code: ");
      Serial.println(httpResponseCode);
      http.end();
      if (httpResponseCode == 200) Serial.println("Successfully sent");
      else Serial.println("Failed!"); }
  else
  { Serial.println("WiFi Disconnected"); }
    Serial.print(" >> Wait for 10 Sec --> ");
    for (int i = 9; i >= 0; i--)
    { Serial.print(i);
      delay(1000); }
  Serial.println(" >> Ready"); }
}
```

รูปการต่อวงจร – 1



รูปการต่อวงจร – 2

รูปหน้าจอ LINE ผลการทดสอบ

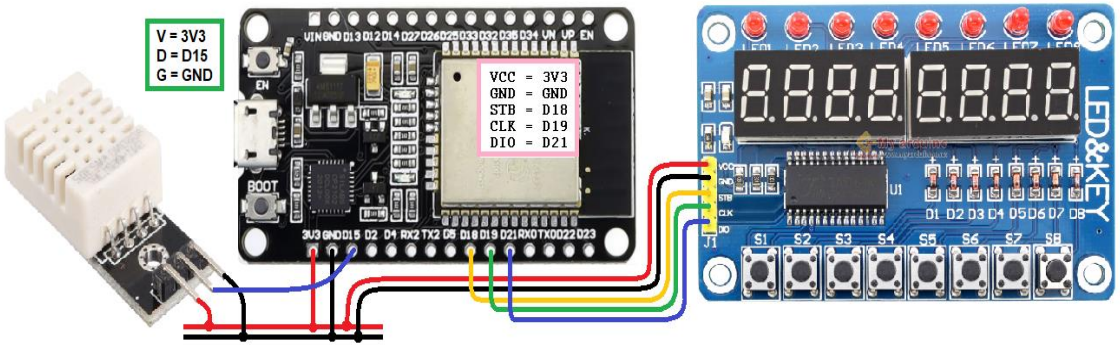
```
HTTP Response code: 200
Successfully sent
 >> Wait for 10 Sec --> 9876543210 >> Ready
Server Name :http://maker.ifttt.com/trigger/Door/with/key/bkiNBzl7POX16mQ3DekdTf
json httpRequestData :Door Alarm
HTTP Response code: 200
Successfully sent
 >> Wait for 10 Sec --> 9876
```

```
Server Name :http://maker.ifttt.com/trigger/Intru/with/key/bkiNBzl7POX16mQ3DekdTf
json httpRequestData :INTRUDER
HTTP Response code: 200
Successfully sent
 >> Wait for 10 Sec --> 9
```

มันลงไลน์ไม่ติด

Quiz_304 – Data Logger and Social Alarm

- ส่งข้อมูลอุณหภูมิไปยัง Google Spreadsheet (ทำแล้วในข้อ QB4)
- หากอุณหภูมิที่อ่านได้เกิน 28'C ให้แจ้งเตือนผ่าน ___ และบอกด้วยว่าอุณหภูมิเท่าใด
  ☐ SMS, ☐ FB Page, ☐ FB Massager, ☐ Twitter, ☑ LINE
- แสดงอุณหภูมิที่ 7_Segment Display TM1638 Board



< Test Code >

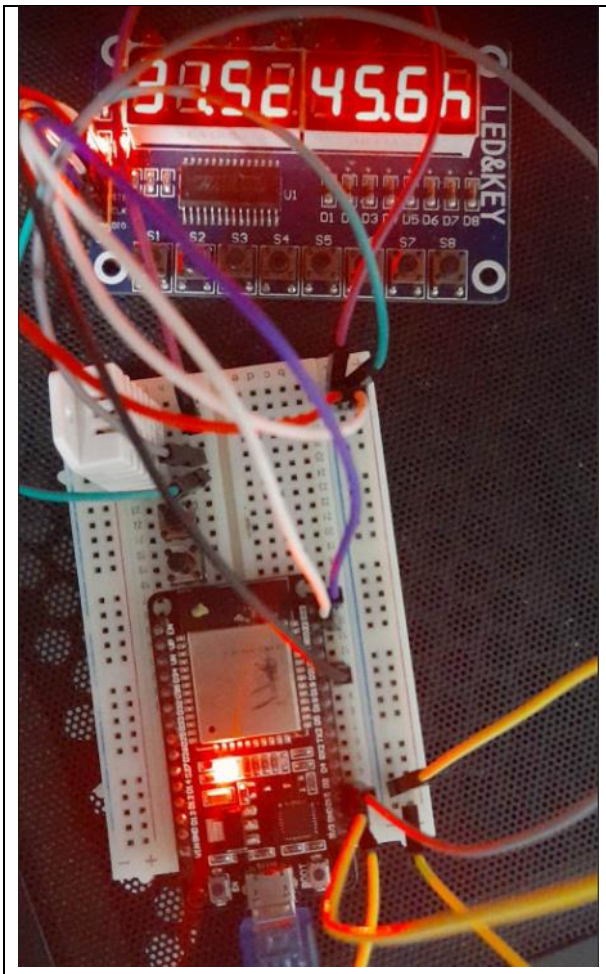
```
#include <WiFi.h>

#include <HTTPClient.h>

#include "DHTesp.h"

#include <TM1638plus.h>


#define WIFI_SSID "RATSIRI-HOME 2.4G" //Your Wifi

#define WIFI_PASS "0984485615" //Your Wifi password

#define WebHooksKey "bkiNBzl7POX16mQ3DekdTf" //Your Webhookskey

#define WebHooksEvent1 "Sheet"

#define WebHooksEvent2 "Tem36"

#define My_NAME "Eieieie"

#define Pin_DHT22 15

#define Brd_STB 21

#define Brd_CLK 22

#define Brd_DIO 23


bool high_freq = true;

TM1638plus tm(Brd_STB, Brd_CLK , Brd_DIO, high_freq);
```

```
DHTesp dht;

void setup() {

 Serial.begin(115200);

 WiFi.begin(WIFI_SSID, WIFI_PASS);

 Serial.println("Connecting");

 while (WiFi.status() != WL_CONNECTED) {

 delay(500);

 Serial.print(".");

 }

 Serial.println("");

 Serial.print("Connected to WiFi network with IP Address: ");

 Serial.println(WiFi.localIP());

 dht.setup(Pin_DHT22, DHTesp::DHT22);

 tm.displayBegin();

}

void loop() {

 float humidity = dht.getHumidity();

 float temperature = dht.getTemperature();

 Serial.println();

 Serial.print("\nTemperature('C) = ");

 Serial.print(temperature, 1);

 Serial.print("\tHumidity(%) = ");

 Serial.print(humidity, 1);

 int Tempp2 = temperature/10; int Tempp1 = (int)temperature%10; int Tempp0 = int(temperature*10)%10;

 int Humi2 = humidity/10; int Humi1 = (int)humidity%10; int Humi0 = int(humidity*10)%10;

 tm.displayHex(0, Tempp2);

 tm.displayASCIIwDot(1, Tempp1 + '0');

 tm.displayHex(2, Tempp0);

 tm.display7Seg(3, B01011000);

 tm.displayHex(4, Humi2);

 tm.displayASCIIwDot(5, Humi1 + '0');
```

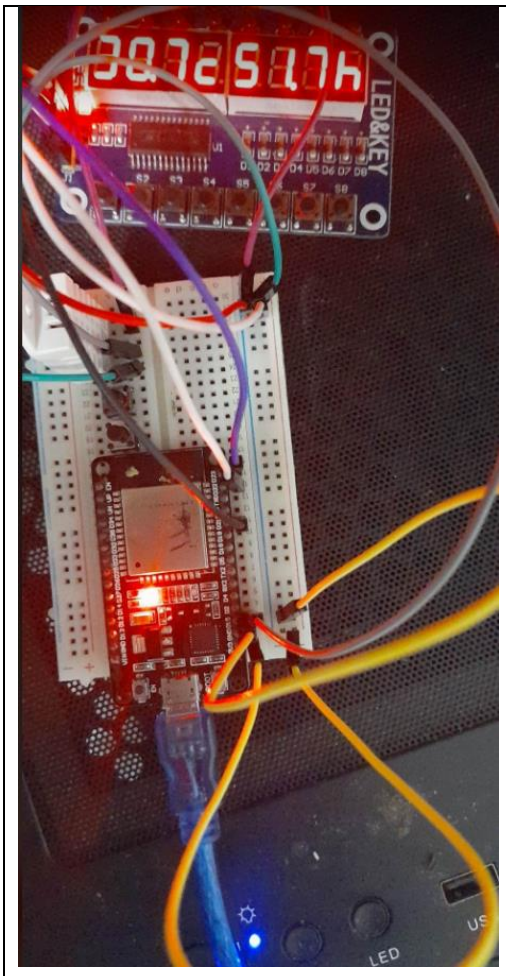
```
 tm.displayHex(6, Humi0);
 tm.display7Seg(7, B01110100);


 String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEvent1) + "/with/key/" +
String(WebHooksKey);
 String httpRequestData = "value1=" + String(My_NAME) + "&value2=" + String(temperature) + "&value3=" +
String(humidity);
 Serial.println();
 Serial.println("Server Name >> " + serverName);
 Serial.println("json httpRequestData >> " + httpRequestData);
 if (WiFi.status() == WL_CONNECTED)
 { HTTPClient http;
   http.begin(serverName);
   http.addHeader("Content-Type", "application/x-www-form-urlencoded");
   int httpResponseCode = http.POST(httpRequestData);
   Serial.print("HTTP Response code: ");
   Serial.println(httpResponseCode);
   http.end();
   if (httpResponseCode == 200)
       Serial.println(" --> Successfully sent");
   else
       Serial.println(" --> Failed!");  }
 else {
   Serial.println("WiFi Disconnected");
 }
 int WaitTime = 60;
 Serial.print(" >> Wait for next time --> ");
 for (int i = WaitTime; i >= 0; i -= 5)
 {  Serial.print(",");
    Serial.print(i);
    delay(5000); }
```

```
 if (temperature >= 28)
 {  String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEvent2) + "/with/key/" +
String(WebHooksKey);
    String httpRequestData = "value1=" + String(temperature) + "&value2=" + String(humidity);
    Serial.println("Server Name :" + serverName);
    Serial.println("json httpRequestData :" + httpRequestData);
    if (WiFi.status() == WL_CONNECTED)
     { HTTPClient http;
       http.begin(serverName);
       http.addHeader("Content-Type", "application/x-www-form-urlencoded");
       int httpResponseCode = http.POST(httpRequestData);
       Serial.print("HTTP Response code: ");
       Serial.println(httpResponseCode);
       http.end();
       if (httpResponseCode == 200) Serial.println("Successfully sent");
       else
         Serial.println("Failed!"); }
    else
    { Serial.println("WiFi Disconnected"); }
     Serial.print(" >> Wait for 10 Sec --> ");
     for (int i = 9; i >= 0; i--)
     { Serial.print(i);
       delay(1000); }
    Serial.println(" >> Ready");
 }
}
```

รูปการต่อวงจร – 1



รูปการต่อวงจร – 2



รูปหน้าจอ LINE ผลการทดสอบ

June 13, 2023 at	Sheet	Eieieie	31.4	47.9
June 13, 2023 at	Sheet	Eieieie	31.4	46
June 13, 2023 at	Sheet	Eieieie	31.4	47.4
June 13, 2023 at	Sheet	Eieieie	31.4	47.4
June 13, 2023 at	Sheet	Eieieie	31.6	64.3
June 13, 2023 at	Sheet	Eieieie	31.4	57.9
June 13, 2023 at	Sheet	Eieieie	31.6	47.5
June 13, 2023 at	Sheet	Eieieie	31.6	47.5
June 13, 2023 at	Sheet	Eieieie	31.7	46.5
June 13, 2023 at	Sheet	Eieieie	31.7	46.9
June 13, 2023 at	Sheet	Eieieie	31.5	45.6
June 13, 2023 at	Sheet	Eieieie	30.7	51.7
June 13, 2023 at	Sheet	Eieieie	31.7	52.8
June 13, 2023 at	Sheet	Eieieie	31.6	46.7
June 13, 2023 at	Sheet	Eieieie	31.4	47.3
June 13, 2023 at	Sheet	Eieieie	31.3	48

มันไม่ส่งเข้าไลน์