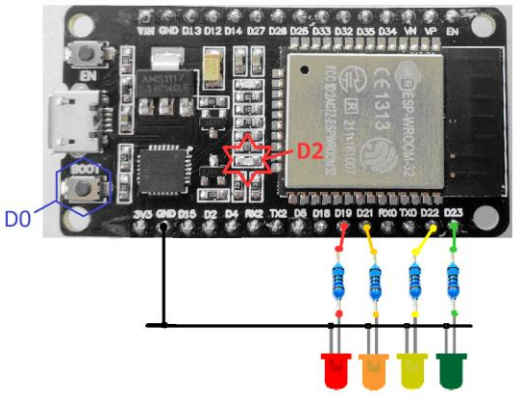
แนวทางการใช้งานอินเทอร์เน็ตของสรรพสิ่งในระบบการผลิต

IoT Approaches to Manufacturing System

ชื่อ-สกุล : นางสาวขวัญจิรา พันธุเกตุ **รหัสนักศึกษา B6321451**

3/3. คำถามท้ายบทเพื่อทดสอบความเข้าใจ

Quiz_301 – 4 External LED Control



Quiz_301 | Arduino 1.8.19

File Edit Sketch Tools Help

Quiz_301

```
//Blynk
#define BLYNK_PRINT Serial

#define BLYNK_TEMPLATE_ID "TMPL6tSFFxJrg"
#define BLYNK_TEMPLATE_NAME "D3"
#define BLYNK_AUTH_TOKEN "BVnnV_3B38dKjYOj8wLmKkpc82r6tUTk"
#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "105/766-2.4G";
char pass[] = "0999128910";

void setup()
{
  // Debug console
  Serial.begin(9600);

  Blynk.begin(BLYNK_AUTH_TOKEN, ssid, pass);
}

void loop()
{
  Blynk.run();
}
```

COM3

Send

```
□ ????,?&Q2??□□??[28] Connecting to 105/766-2.4G
[2725] Connected to WiFi
[2726] IP: 192.168.1.167
[2726]
    ___  __          __
   / _ )/ /_ _____  / /__
  / _  / / // / _ \/  '_/
 /____/_/\_, /_//_/_/\_\
        /___/ v1.0.1 on ESP32

[2800] Connecting to blynk.cloud:80
[2925] Ready (ping: 34ms).
```

Autoscroll Show timestamp No line ending 9600 baud Clear output

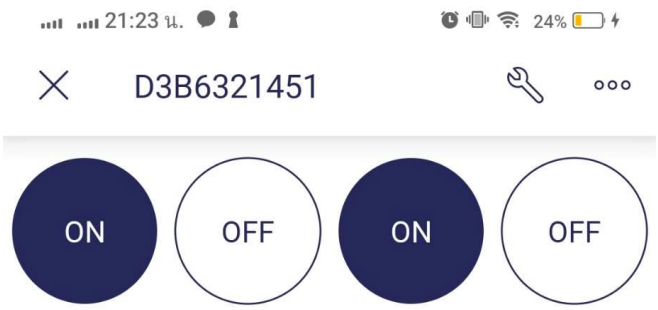
Done Saving.

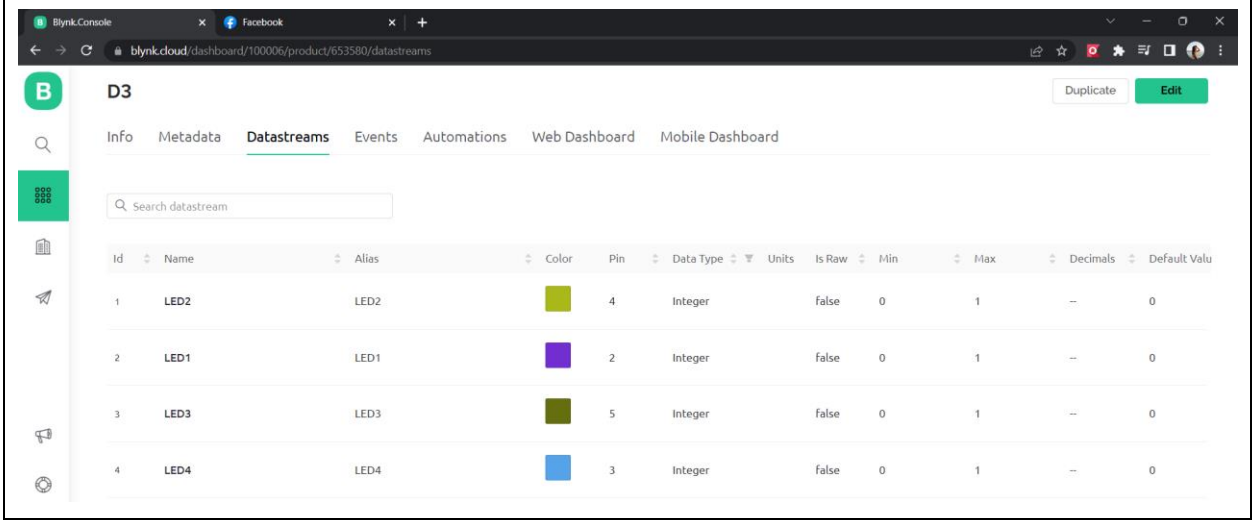
```
Leaving...
Hard resetting via RTS pin...
```

```
//Blynk

#define BLYNK_PRINT Serial


#define BLYNK_TEMPLATE_ID "TMPL6tSFFxJrg"

#define BLYNK_TEMPLATE_NAME "D3"

#define BLYNK_AUTH_TOKEN "BVnnV_3B38dKjYOj8wLmKkpc82r6tUTk"

#include <WiFi.h>

#include <WiFiClient.h>

#include <BlynkSimpleEsp32.h>


// Your WiFi credentials.

// Set password to "" for open networks.

char ssid[] = "105/766-2.4G";

char pass[] = "0999128910";


void setup()

{

  // Debug console

  Serial.begin(9600);


  Blynk.begin(BLYNK_AUTH_TOKEN, ssid, pass);

}
```

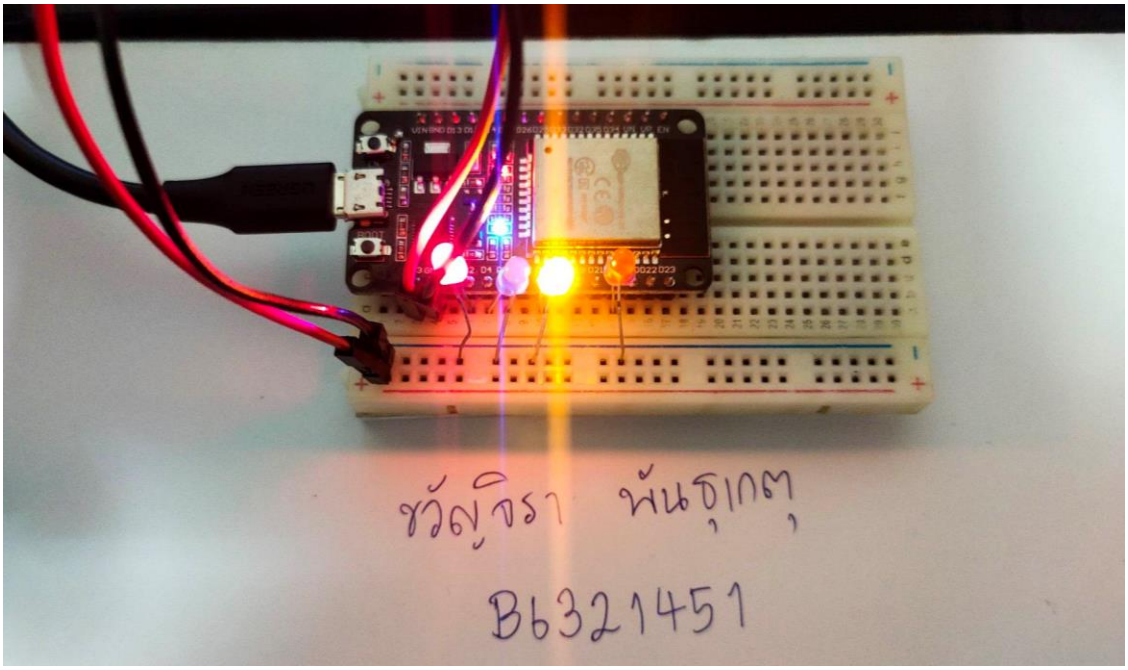
```
void loop()

{

  Blynk.run();

}
```

รูปหน้าจอ **Blynk**

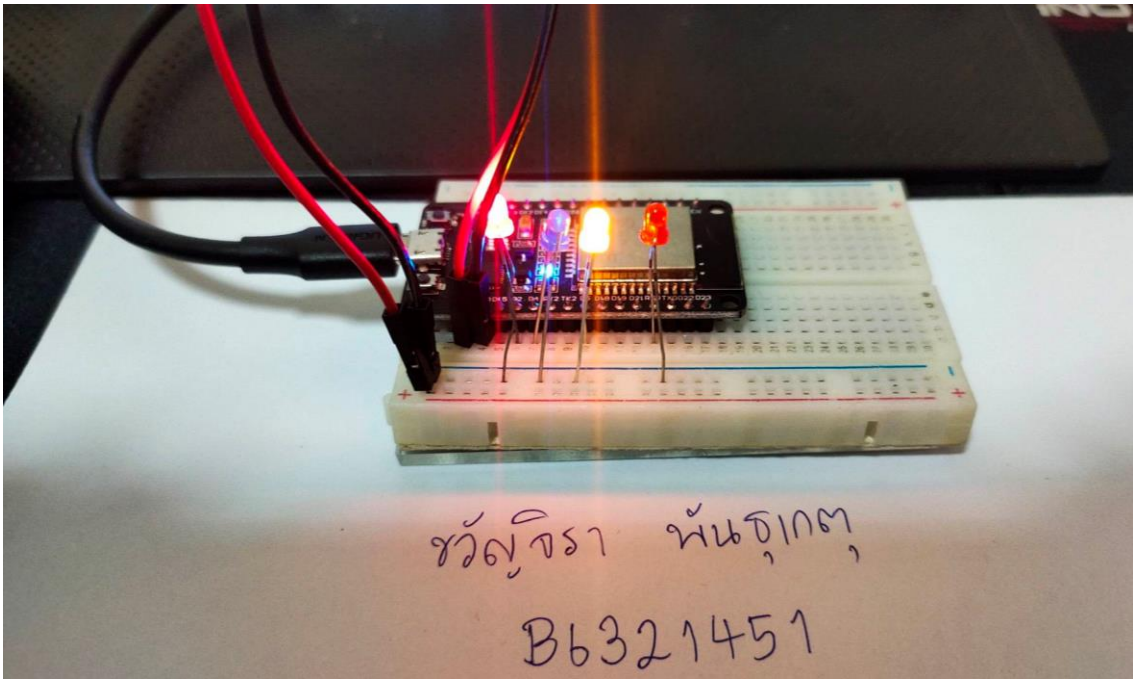




รูปการต่อวงจร – 1

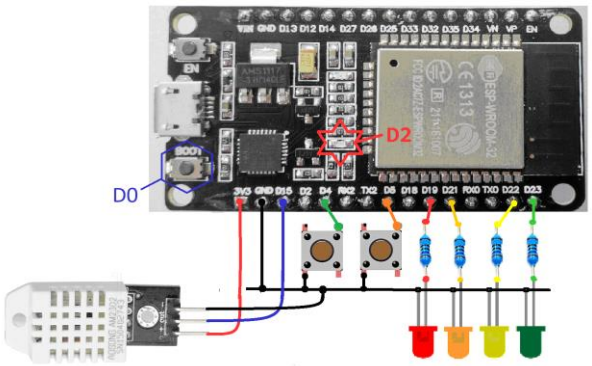


รูปการต่อวงจร – 2



https://www.youtube.com/shorts/TxxISF43v_E

Quiz_302 – DHT22 + 4 LED + 2 Switch

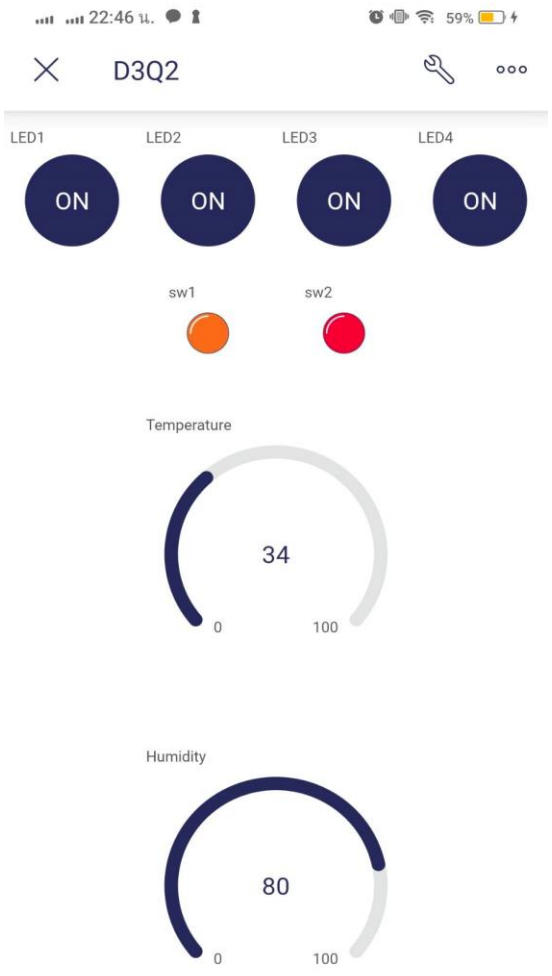


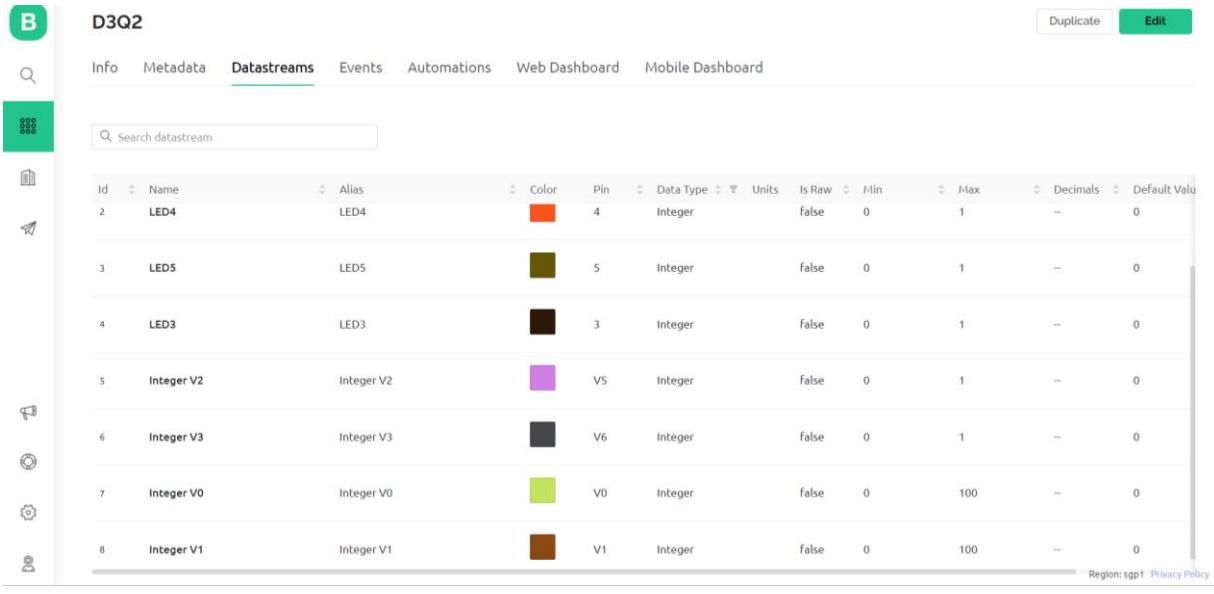

```
//Blynk

#define BLYNK_PRINT Serial

#define BLYNK_TEMPLATE_ID "TMPL6ehgcTddD"

#define BLYNK_TEMPLATE_NAME "D3Q2"

#define BLYNK_AUTH_TOKEN "ffaNF8m0Qzycu_tHIY_lcZfAq1toMz-V"

#include <WiFi.h>

#include <WiFiClient.h>

#include <BlynkSimpleEsp32.h>

#include "DHTesp.h"

#define DHT22_Pin 15

const int btnPin = 18; //

boolean btnState = false;

WidgetLED blynk_LED(V5);

BlynkTimer timer; // Announcing the timer

const int btnPin2 = 19; //

boolean btnState2 = false;
```

```
WidgetLED blynk_LED2(V6);

// Your WiFi credentials.

// Set password to "" for open networks.

char ssid[] = "105/766-2.4G";

char pass[] = "0999128910";

DHTesp dht;

//boolean btnState = false;

void setup()

{

  // Debug console

  Serial.begin(9600);

  dht.setup(DHT22_Pin, DHTesp::DHT22); // Connect DHT sensor to GPIO 15

  pinMode(btnPin, INPUT_PULLDOWN);

  pinMode(btnPin2, INPUT_PULLDOWN);

  Blynk.begin(BLYNK_AUTH_TOKEN, ssid, pass);

  timer.setInterval(1000L, myTimerEvent);

}

void myTimerEvent() {

  float humidity = dht.getHumidity();

  float temperature = dht.getTemperature();

  Blynk.virtualWrite(V0, temperature);

  Blynk.virtualWrite(V1, humidity);

  boolean isPressed = (digitalRead(btnPin) == LOW);

  if (isPressed != btnState)
```

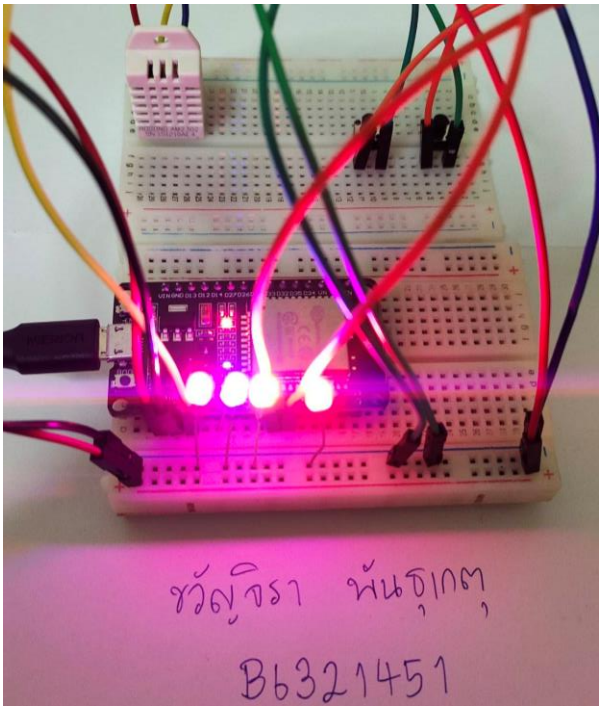
```
 { if (isPressed)
    blynk_LED.on();
  else
    blynk_LED.off();
  btnState = isPressed;
  Serial.print(" LED Status = ");
  Serial.println(btnState);
  if (isPressed)
    blynk_LED2.on();
  else
    blynk_LED2.off();
  btnState2 = isPressed;
  Serial.print(" LED Status = ");
  Serial.println(btnState2);
 }
 Serial.print(" Temp('C) >> "); Serial.print(temperature, 1);
 Serial.print(", Humidity(%) >> "); Serial.println(humidity, 1);
}
void loop()
{
 Blynk.run();
 timer.run();
}
```

รูปหน้าจอ Blynk

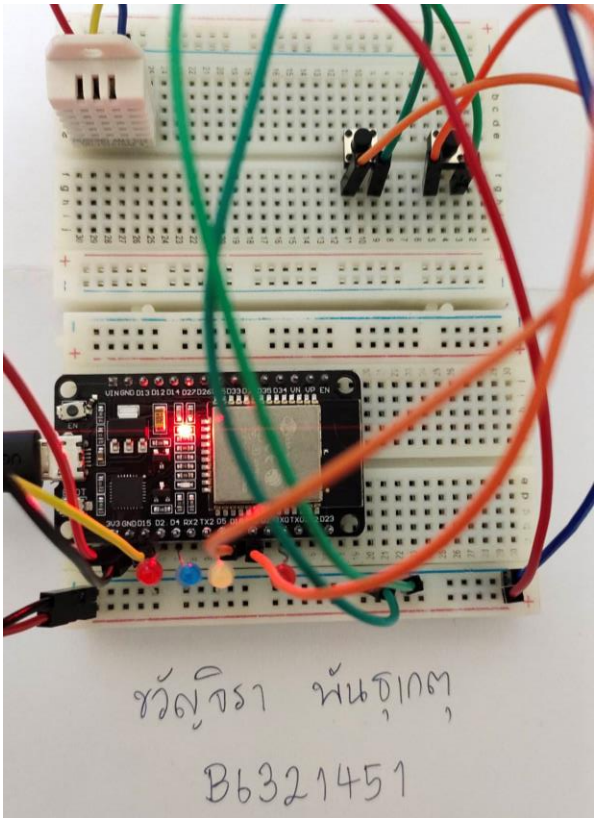




รูปการต่อวงจร – 1



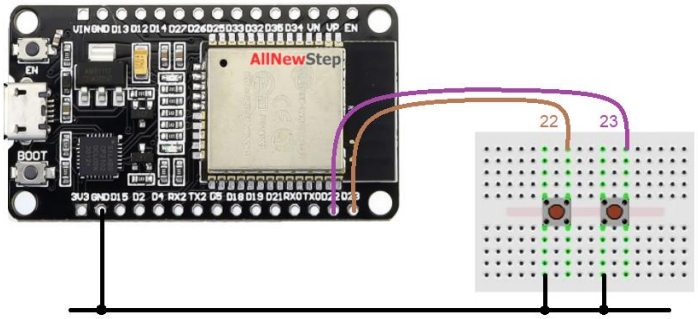
รูปการต่อวงจร – 2



Quiz_303 – Social Alert

ทดสอบการส่งข้อมูลไป ☐ LINE สำหรับสวิตซ์กด 2 ตัว

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



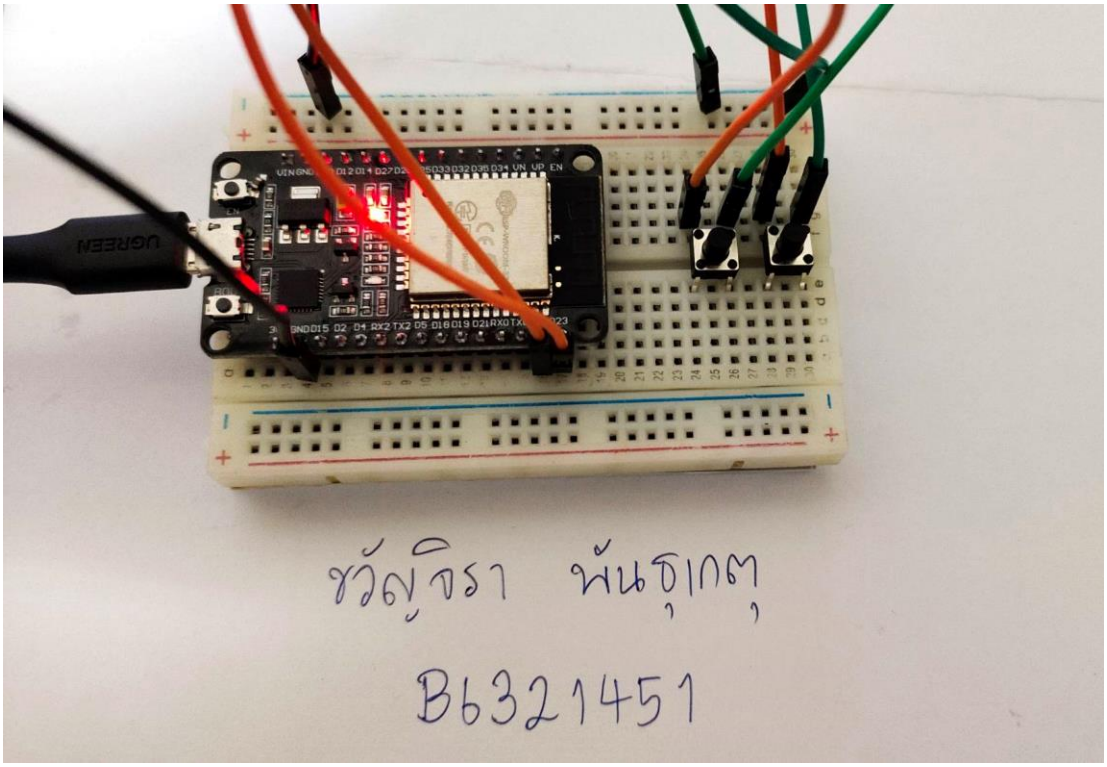

```
#include <WiFi.h>

#include <HTTPClient.h>

#define WIFI_SSID "105/766-2.4G"

#define WIFI_PASS "0999128910"

#define WebHooksKey "dbrBCoc3b7tMyPoF__5yjk"

#define WebHooksEventNane "Test_Key"

#define testSwitch0 22 //

#define testSwitch1 23 //

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());
  pinMode(testSwitch0, INPUT_PULLUP);
  pinMode(testSwitch1, INPUT_PULLUP);
  randomSeed(analogRead(33));
}
void loop() {
  if (digitalRead(testSwitch0) == LOW) {
    String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEventNane) +
"/with/key/" + String(WebHooksKey);
    String httpRequestData = "value1=" + String("Door Open 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");
```

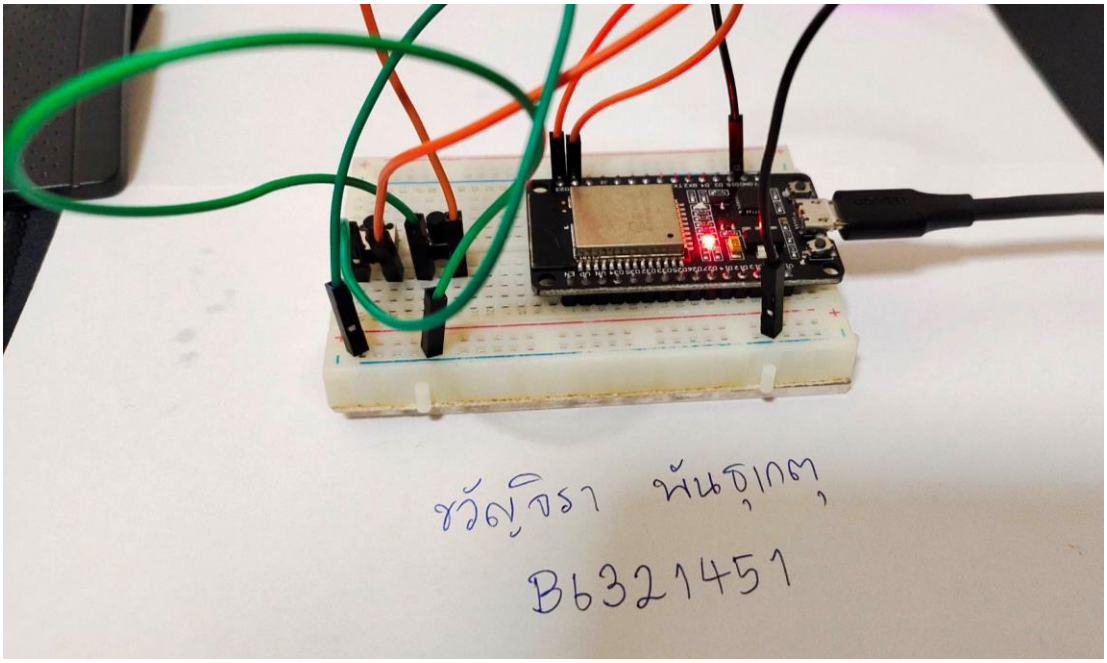
```
    else
      Serial.println("Failed!");
  }
  else {
    Serial.println("WiFi Disconnected");
  }

  Serial.print(" >> Wait for 10 Sec --> ");
  for (int i = 9; i >= 0; i--) {
    Serial.print(i);
    delay(1000);
  }
  Serial.println(" >> Ready");
 }

 if (digitalRead(testSwitch1) == LOW) {
  String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEventNane) +
"/with/key/" + String(WebHooksKey);
  String httpRequestData = "value1=" + String("Intruders 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");
  }
}
```

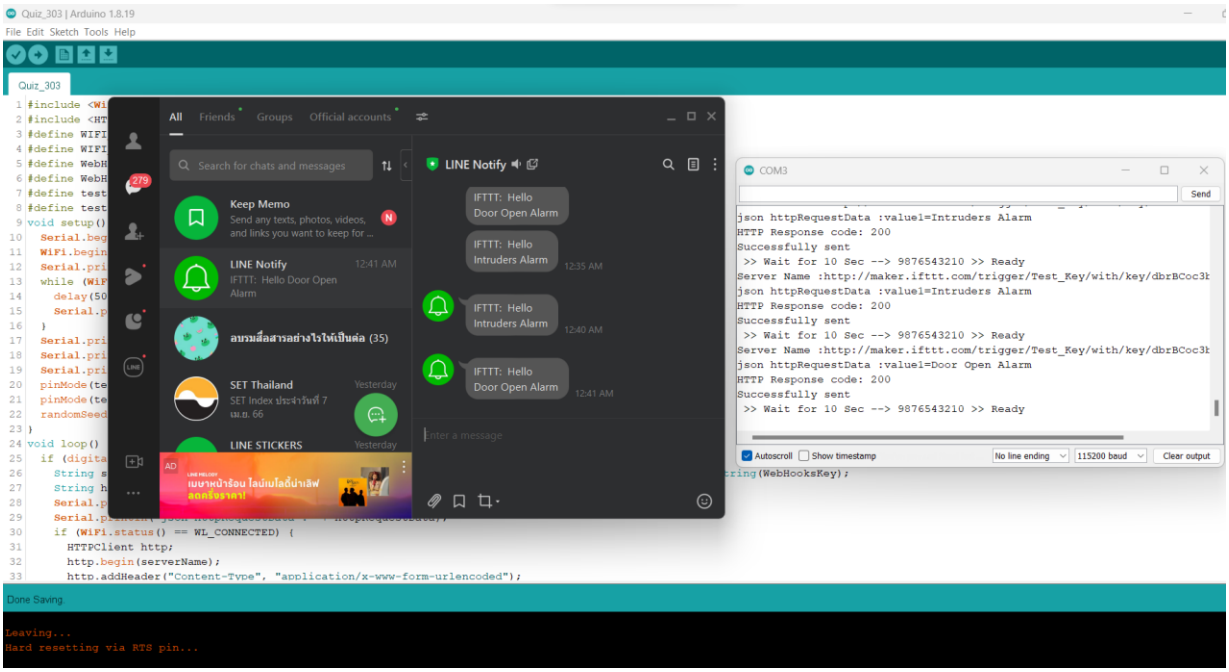
รูปการต่อวงจร – 1

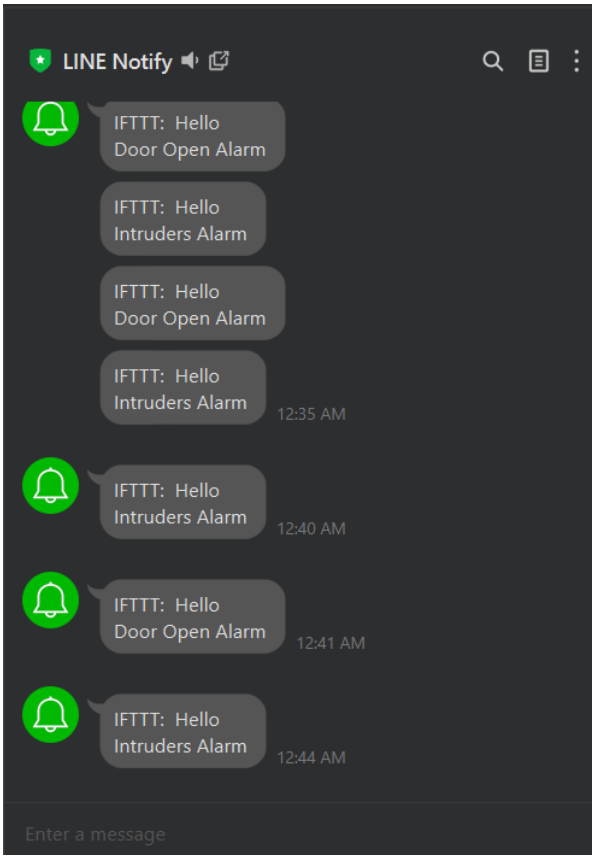


รูปการต่อวงจร – 2



รูปหน้าจอ **LINE** ผลการทดสอบ

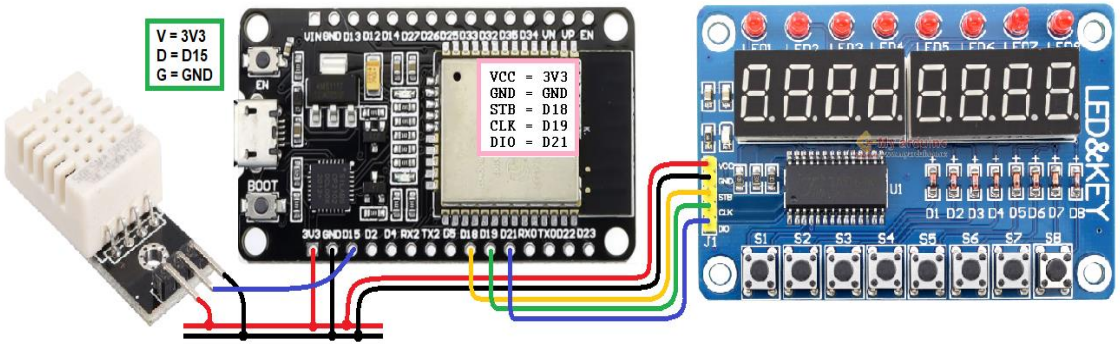




https://www.youtube.com/watch?v=Rwwm8aJcqHo

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



Quiz_304 | Arduino 1.8.19

File Edit Sketch Tools Help

Quiz_304

```
#include <WiFi.h>
#include <HTTPClient.h>
#include "DHTesp.h"
#include <TM1638plus.h>
#define WIFI_SSID "105/766-2.4G"
#define WIFI_PASS "0999128910"
#define WebHooksKey "dbrBCoc3b7tMyPoF__5yjk"
#define WebHooksEventNane "gg"
#define WebHooksEventNane_LINE "Test_Key"
#define My_NAME "B6321451"
#define Pin_DHT22 15
#define Brd_STB 18
#define Brd_CLK 19
#define Brd_DIO 5
bool high_freq = true;
TM1638plus tm(Brd_STB, Brd_CLK , Brd_DIO, high_freq);
DHTesp dht;
void setup() {
  Serial.begin(115200);
  tm.displayBegin();
  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);
}
void loop() {
  float humidity = dht.getHumidity();
```

COM3

Send

```
HTTP Response code: 200
[Line] --> Successfully sent
 >> Wait for next time --> ,60,55,50,45,40,35,30,25,20,15,10,5,0

Temperature('C) = 36.2  Humidity(%) = 34.6
Server Name >> http://maker.ifttt.com/trigger/gg/with/key/dbrBCoc3b7tM
json httpRequestData >> value1=B6321451&value2=36.20&value3=34.60
HTTP Response code: 200
 --> Successfully sent

Server Name >> http://maker.ifttt.com/trigger/Test_Key/with/key/dbrBCo
json httpRequestData >> value1=36.20
HTTP Response code: 200
[Line] --> Successfully sent
 >> Wait for next time --> ,60
```

Autoscroll Show timestamp | No line ending | 115200 baud | Clear output

```
Leaving...
Hard resetting via RTS pin...
```

```
#include <WiFi.h>

#include <HTTPClient.h>

#include "DHTesp.h"

#include <TM1638plus.h>

#define WIFI_SSID "105/766-2.4G"

#define WIFI_PASS "0999128910"

#define WebHooksKey "dbrBCoc3b7tMyPoF__5yjk"

#define WebHooksEventNane "gg"

#define WebHooksEventNane_LINE "Test_Key"

#define My_NAME "B6321451"

#define Pin_DHT22 15

#define Brd_STB 18

#define Brd_CLK 19

#define Brd_DIO 5

bool high_freq = true;

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

DHTesp dht;

void setup() {

  Serial.begin(115200);

  tm.displayBegin();

  WiFi.begin(WIFI_SSID, WIFI_PASS);

  Serial.println("Connecting");

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

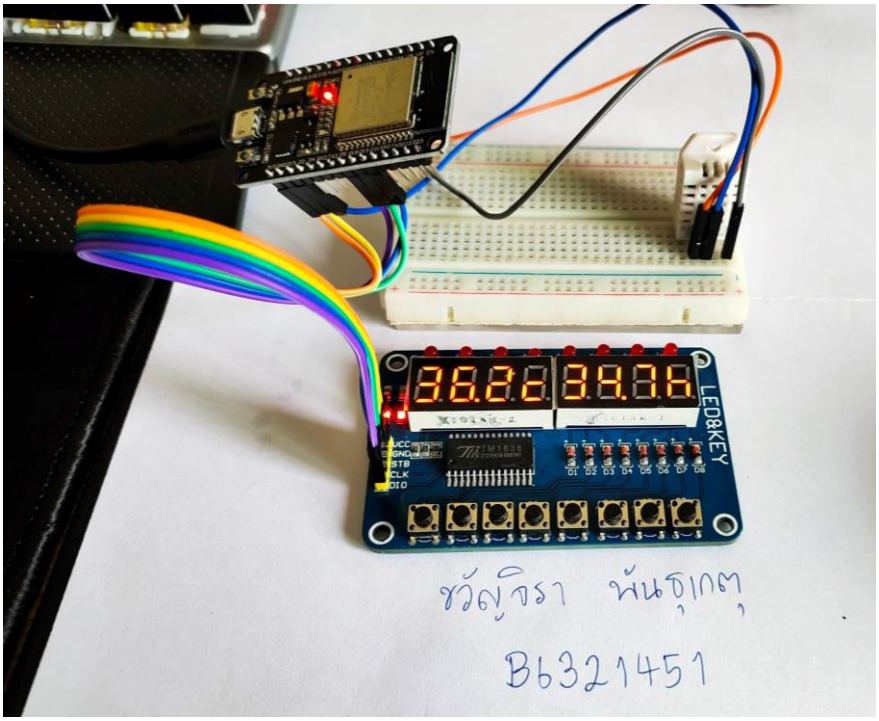
```
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.print("Connected to WiFi network with IP Address: ");
  Serial.println(WiFi.localIP());
  dht.setup(Pin_DHT22, DHTesp::DHT22);
}
void loop() {
  float humidity = dht.getHumidity();
  float temperature = dht.getTemperature();
  Serial.println();
  Serial.print("\nTemperature('C) = ");
  Serial.print(temperature, 1);
  Serial.print("\tHumidity(%) = ");
  Serial.print(humidity, 1);
  String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEventNane) +
"/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");

  }

  if (temperature > 28) {

    String serverName = "http://maker.ifttt.com/trigger/" + String(WebHooksEventNane_LINE)
+ "/with/key/" + String(WebHooksKey);

    String httpRequestData = "value1=" + String(temperature);

    Serial.println();

    Serial.println("Server Name >> " + serverName);

    Serial.println("json httpRequestData >> " + httpRequestData);
```

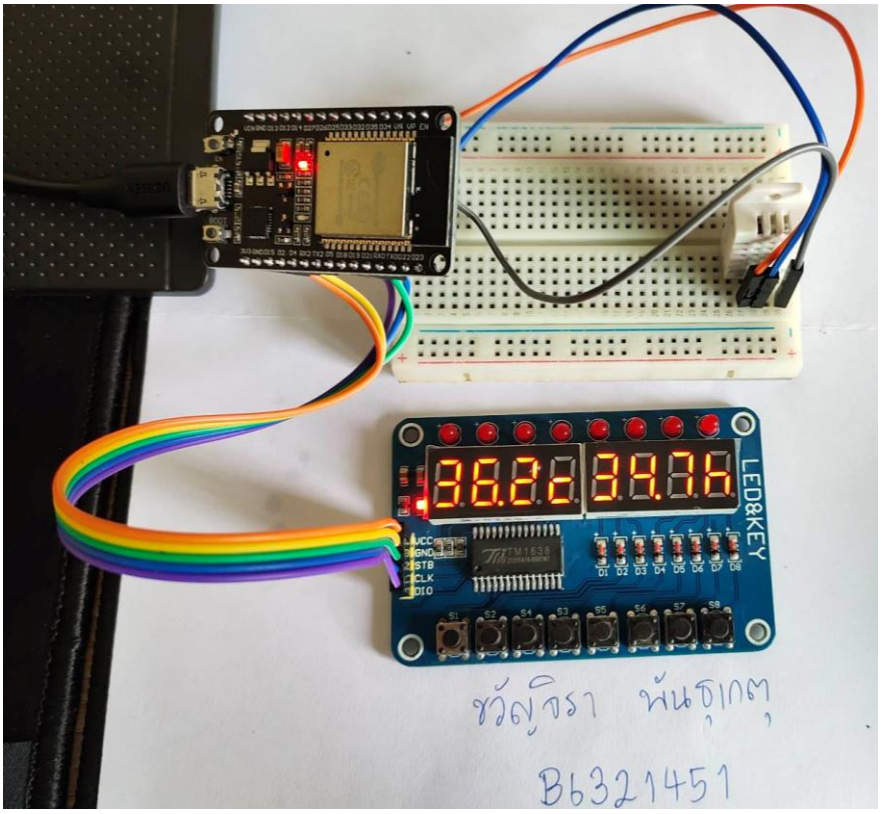
```
  if (WiFi.status() == WL_CONNECTED) {
    HTTPClient http;
    http.begin(serverName);
    http.addHeader("Content-Type", "application/x-www-form-urlencoded");
    int httpResponseCode = http.POST(httpRequestData);
    Serial.print("HTTP Response code: ");
    Serial.println(httpResponseCode);
    http.end();
    if (httpResponseCode == 200)
      Serial.println("[Line] --> Successfully sent");
    else
      Serial.println("[Line] --> Failed!");
  }
  else {
    Serial.println("WiFi Disconnected");
  }
 }
 int t = int(temperature * 100);
 int Tempp2 = (int)temperature / 10; int Tempp1 = (int)temperature % 10; int Tempp0 =
(int)(temperature * 10) % 10;
 int Humi2 = (int)humidity / 10; int Humi1 = (int)humidity % 10; int Humi0 = (int)(humidity *
10) % 10;
 tm.displayHex(0, Tempp2);
 tm.displayASCIIwDot(1, Tempp1 + '0'); // turn on dot
```

```
  tm.displayHex(2, Tempp0);

  tm.display7Seg(3, B01011000); // Code=tgfedcba

  tm.displayHex(4, Humi2);

  tm.displayASCIIwDot(5, Humi1 + '0'); // turn on dot

  tm.displayHex(6, Humi0);

  tm.display7Seg(7, B01110100); // Code=tgfedcba

  delay(2000);

  int WaitTime = 60;

  Serial.print(" >> Wait for next time --> ");

  for (int i = WaitTime; i >= 0; i -= 5) {

    Serial.print(",");

    Serial.print(i);

    delay(5000);

  }

}
```

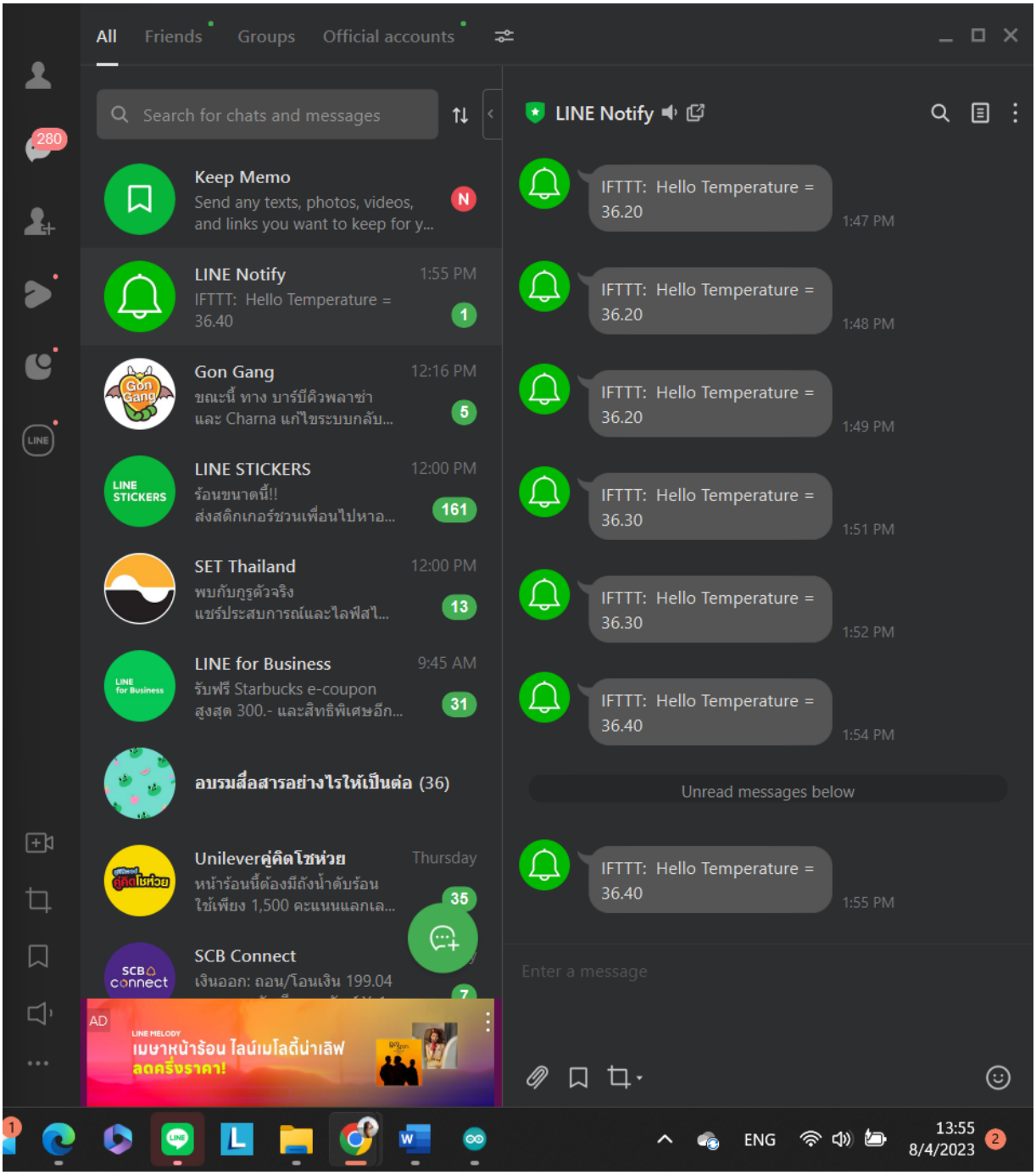
รูปการต่อวงจร – 1

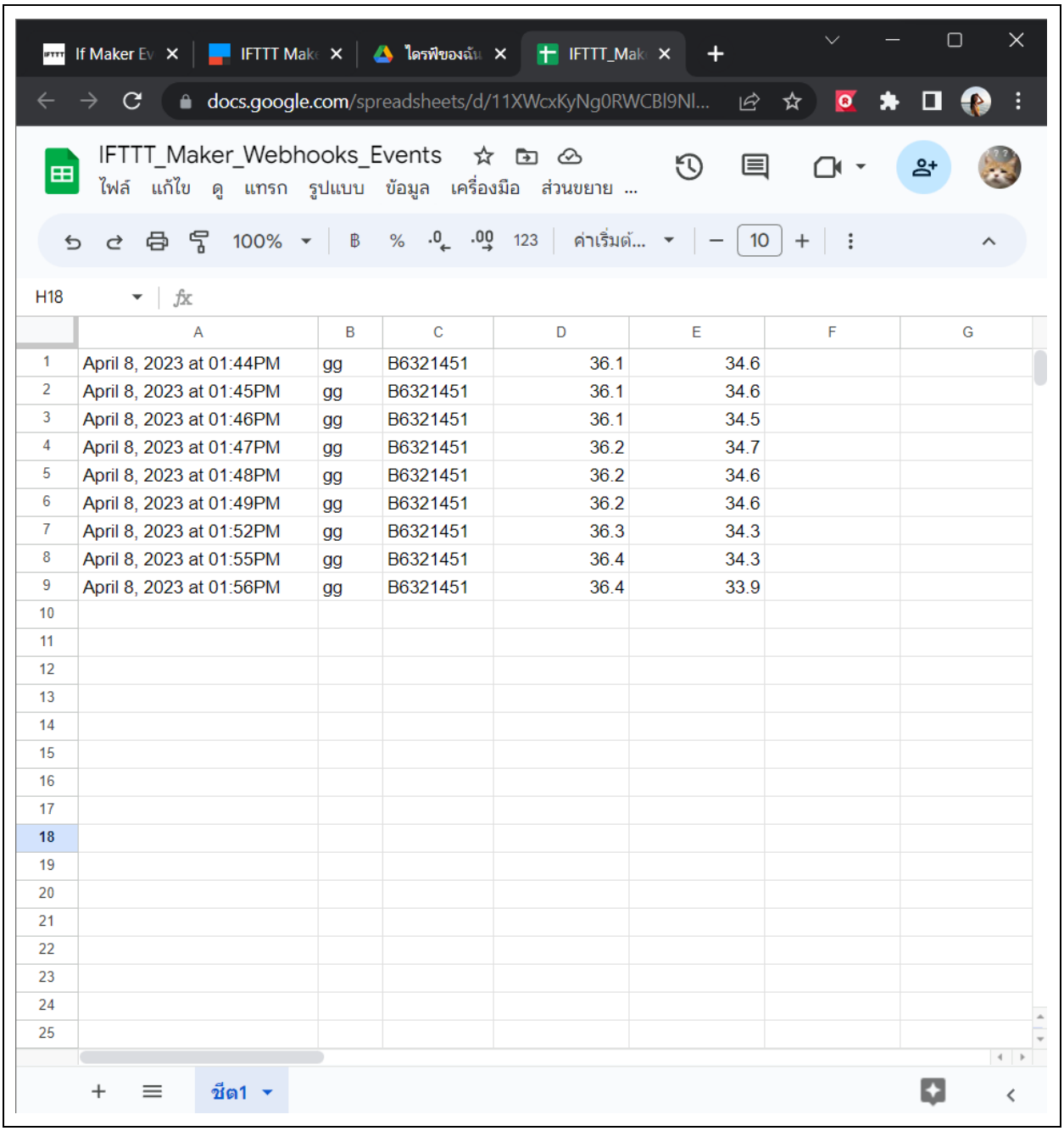


รูปการต่อวงจร – 2



รูปหน้าจอ **LINE** ผลการทดสอบ





	A	B	C	D	E	F	G
1	April 8, 2023 at 01:44PM	gg	B6321451	36.1	34.6		
2	April 8, 2023 at 01:45PM	gg	B6321451	36.1	34.6		
3	April 8, 2023 at 01:46PM	gg	B6321451	36.1	34.5		
4	April 8, 2023 at 01:47PM	gg	B6321451	36.2	34.7		
5	April 8, 2023 at 01:48PM	gg	B6321451	36.2	34.6		
6	April 8, 2023 at 01:49PM	gg	B6321451	36.2	34.6		
7	April 8, 2023 at 01:52PM	gg	B6321451	36.3	34.3		
8	April 8, 2023 at 01:55PM	gg	B6321451	36.4	34.3		
9	April 8, 2023 at 01:56PM	gg	B6321451	36.4	33.9		
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							