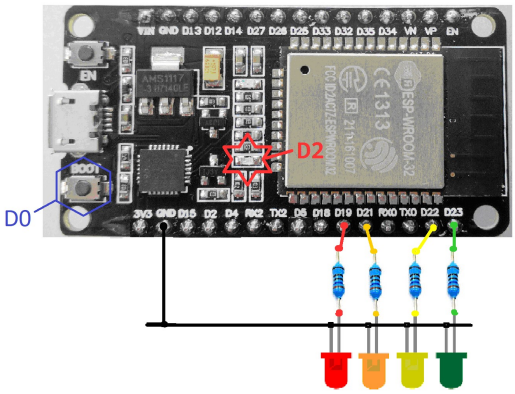
แนวทางการใช้งานอินเทอร์เน็ตของสรรพสิ่งในระบบการผลิต

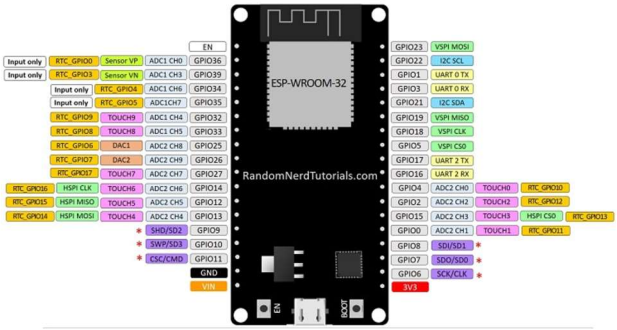
IoT Approaches to Manufacturing System

ชื่อ-สกุล : B6310646 สุภานัน เรืองสุข

3/3. คำถามท้ายบทเพื่อทดสอบความเข้าใจ

Quiz_301 – 4 External LED Control



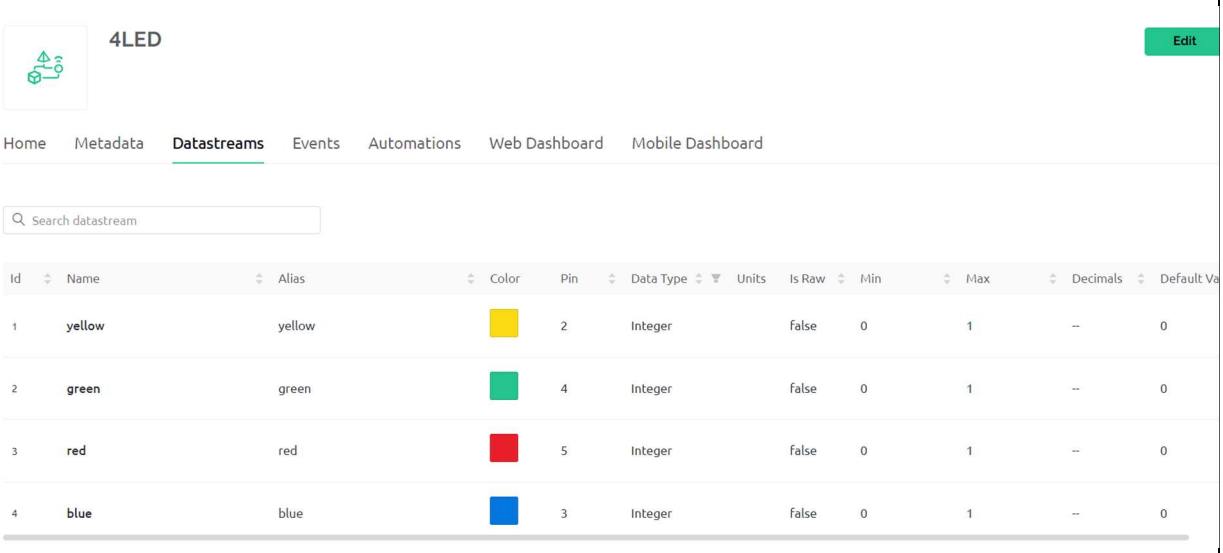


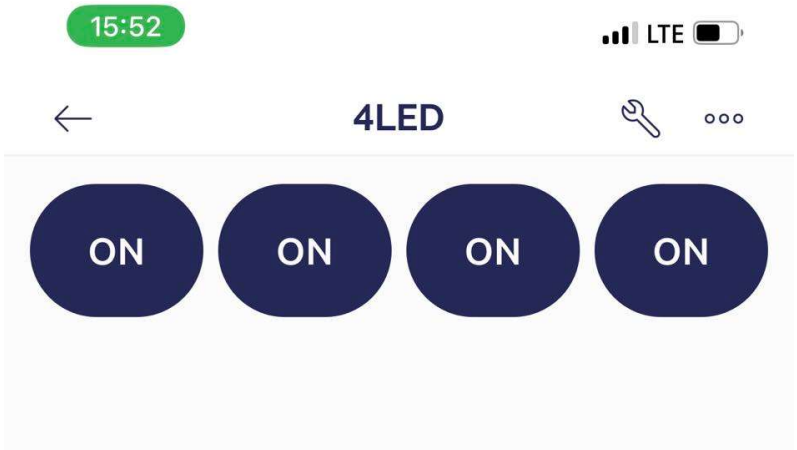
< Test Code >

```
//Blynk
#define BLYNK_PRINT Serial

#define BLYNK_TEMPLATE_ID "TMPL6Mi8FFufQ"
#define BLYNK_TEMPLATE_NAME "4LED"
#define BLYNK_AUTH_TOKEN "Yhbd5nxPXx9oBdoZNabz7dvZtP8WN-wd"
#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "meow";
char pass[] = "meowmeow";

void setup()
{
```

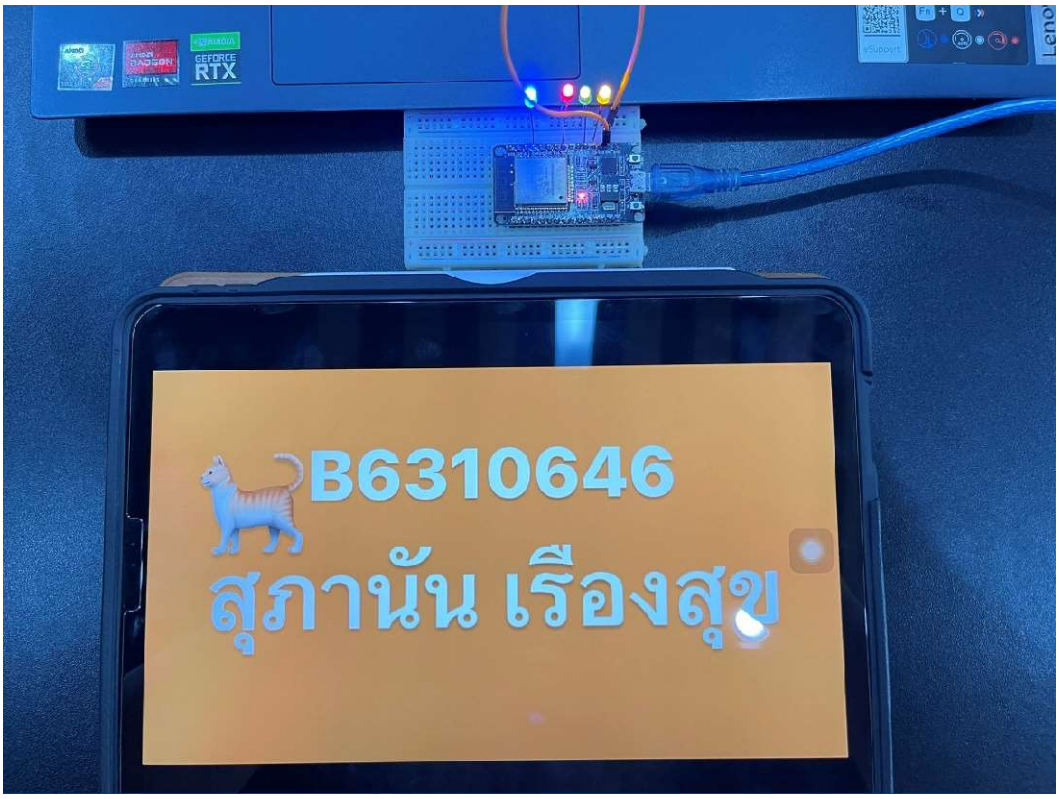
```
 // Debug console
 Serial.begin(9600);

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

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

รูปหน้าจอ Blynk

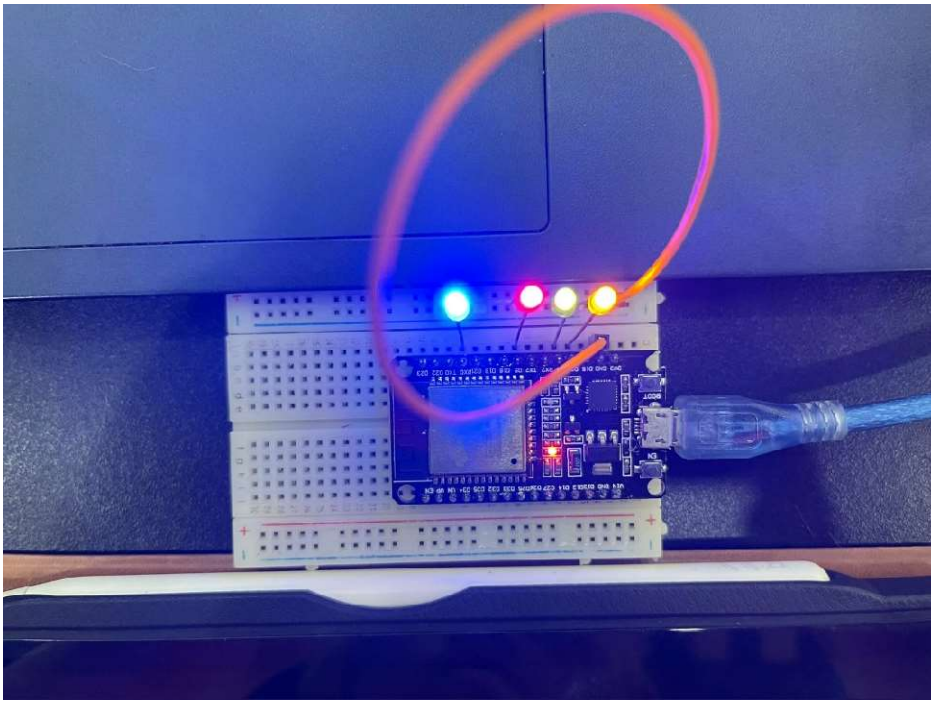




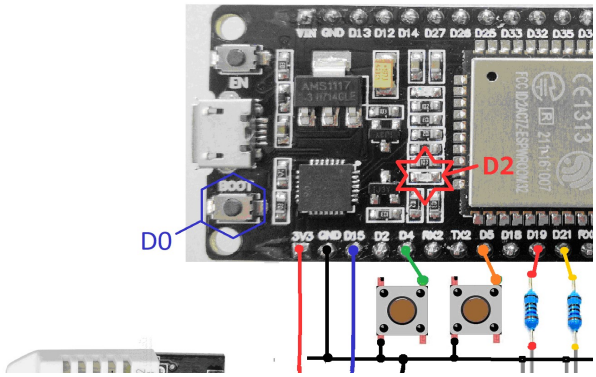
รูปการต่อวงจร – 1



รูปการต่อวงจร – 2



Quiz_302 – DHT22 + 4 LED + 2 Switch



< Test Code >

```
//Blynk
#define BLYNK_PRINT Serial
#define BLYNK_TEMPLATE_ID "TMPL6Mi8FFufQ"
#define BLYNK_TEMPLATE_NAME "4LED"
#define BLYNK_AUTH_TOKEN "Yhbd5nxPXx9oBdoZNabz7dvZtP8WN-wd"
#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>
#include "DHTesp.h"
#define DHT22_Pin 15
const int btnPin1 = 18; //
const int btnPin2 = 19; //
boolean btnState = false;
WidgetLED blynk_LED(V0);
BlynkTimer timer; // Announcing the timer
boolean btnState2 = false;
WidgetLED blynk_LED2(V1);
// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "meow";
char pass[] = "meowmeow";
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(btnPin1, 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(V5, temperature);
  Blynk.virtualWrite(V6, humidity);
  boolean isPressed = (digitalRead(btnPin1) == 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

```
4LED_DHT22_BT_with_Blynk
void myTimerEvent() {
  float humidity = dht.getHumidity();
  float temperature = dht.getTemperature();
  Blynk.virtualWrite(V5, temperature);
  Blynk.virtualWrite(V6, humidity);
  boolean isPressed = (digitalRead(btnPin1) == 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();
}
```

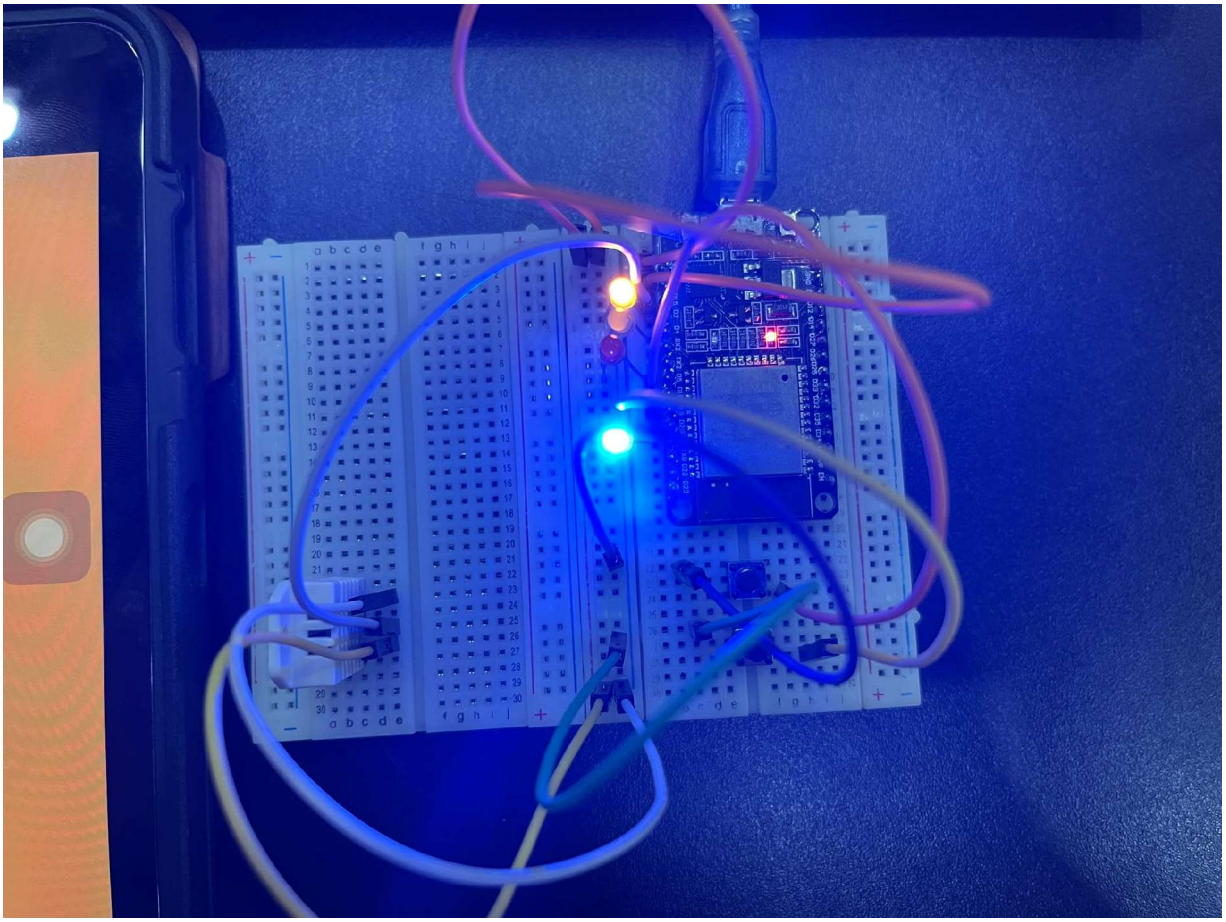
```
COM3
Temp('C) >> 24.3, Humidity(%) >> 42.2
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 43.4
Temp('C) >> 24.3, Humidity(%) >> 43.4
Temp('C) >> 24.3, Humidity(%) >> 43.0
Temp('C) >> 24.3, Humidity(%) >> 43.0
Temp('C) >> 24.3, Humidity(%) >> 42.6
Temp('C) >> 24.3, Humidity(%) >> 42.6
Temp('C) >> 24.3, Humidity(%) >> 42.2
Temp('C) >> 24.3, Humidity(%) >> 42.2
Temp('C) >> 24.3, Humidity(%) >> 42.2
Temp('C) >> 24.3, Humidity(%) >> 42.2
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 42.2
Temp('C) >> 24.3, Humidity(%) >> 42.2
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 42.3
Temp('C) >> 24.3, Humidity(%) >> 42.3
Autoscroll  Show timestamp
```

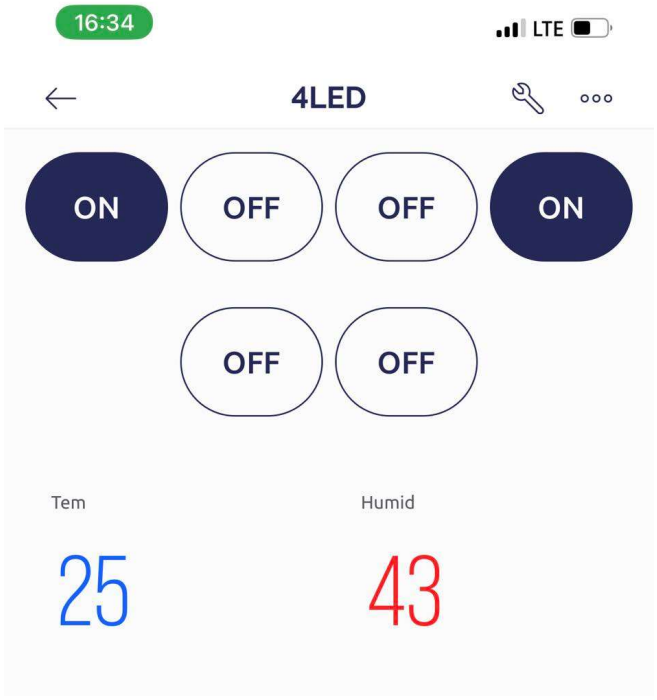
Id	Name	Alias	Color	Pin	Data Type	Units	Is Raw	Min	Max	Decimals	Default Valu
1	yellow	yellow		2	Integer		false	0	1	--	0
2	green	green		4	Integer		false	0	1	--	0
3	red	red		5	Integer		false	0	1	--	0
4	blue	blue		3	Integer		false	0	1	--	0
5	BT1	BT1		V0	Integer		false	0	1	--	0

Id	Name	Alias	Color	Pin	Data Type	Units	Is Raw	Min	Max	Decimals	Default Valu
4	blue	blue		3	Integer		false	0	1	--	0
5	BT1	BT1		V0	Integer		false	0	1	--	0
6	BT2	BT2		V1	Integer		false	0	1	--	0
7	tem	tem		V5	Integer		false	0	100	--	0
8	humid	humid		V6	Integer		false	0	100	--	0

รูปการต่อวงจร – 1

รูปการต่อวงจร – 2

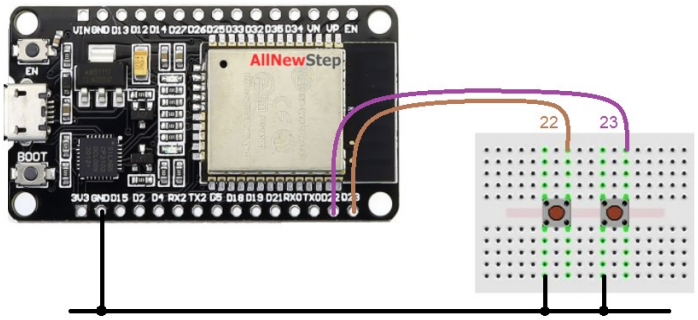




Quiz_303 – Social Alert

ทดสอบการส่งข้อมูลไป ☐ LINE สำหรับสวิตซ์กด 3 ตัว

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

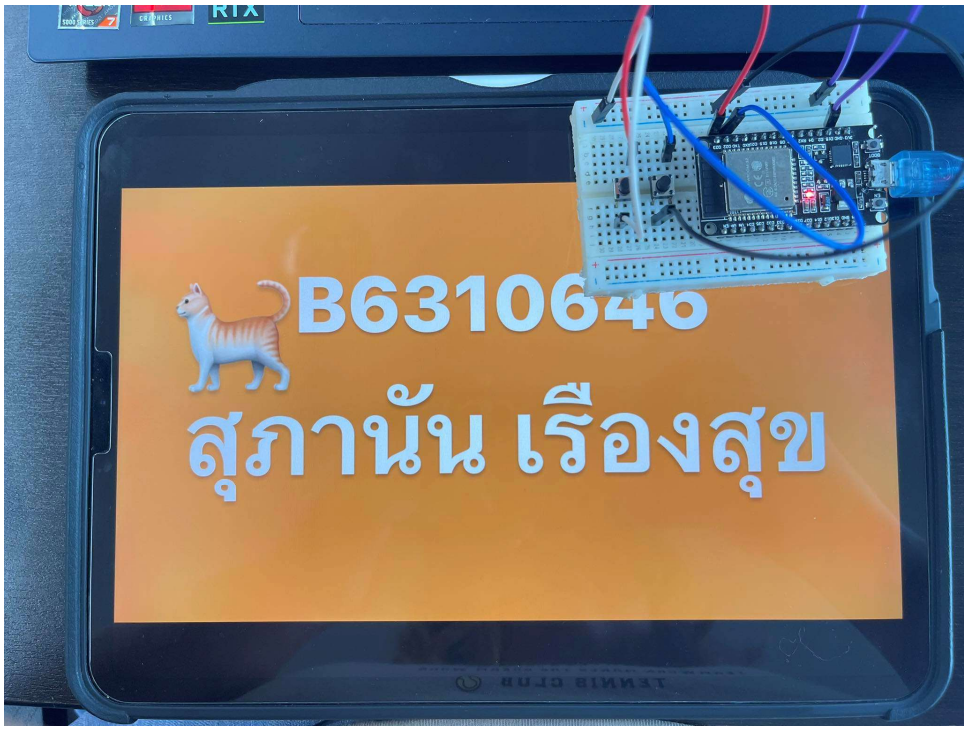



```
< Test Code >
#include <WiFi.h>
#include <HTTPClient.h>
#define WIFI_SSID "meow"
#define WIFI_PASS "meowmeow"
#define WebHooksKey "cMzh_G_IU01wts9_GJdxE8"

#define WebHooksEventNane "meowtestt"
#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);
```

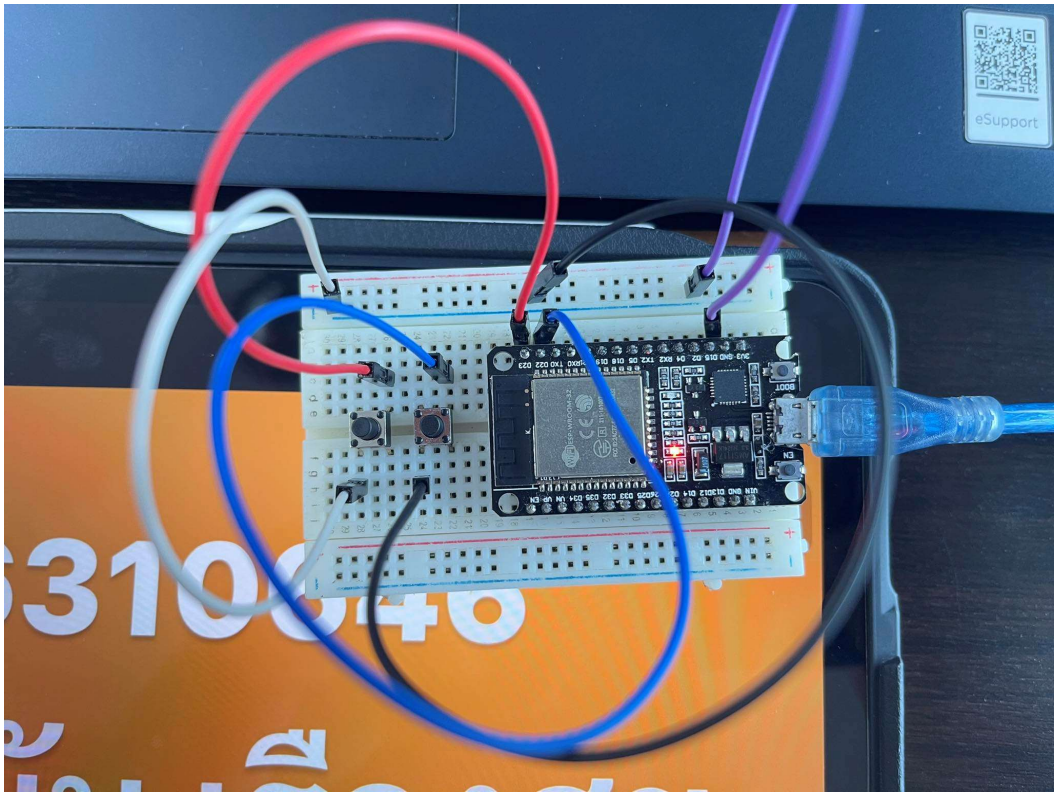
```
  randomSeed(analogRead(33));
}
void loop() {
  if (digitalRead(testSwitch0) == LOW) {
    String serverName = "http://maker.ifttt.com/trigger/" +
String(WebHooksEventNane) + "/with/key/" + String(WebHooksKey);
    String httpRequestData = "value1=" + String("Door Open Alarm");
    Serial.println("Server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

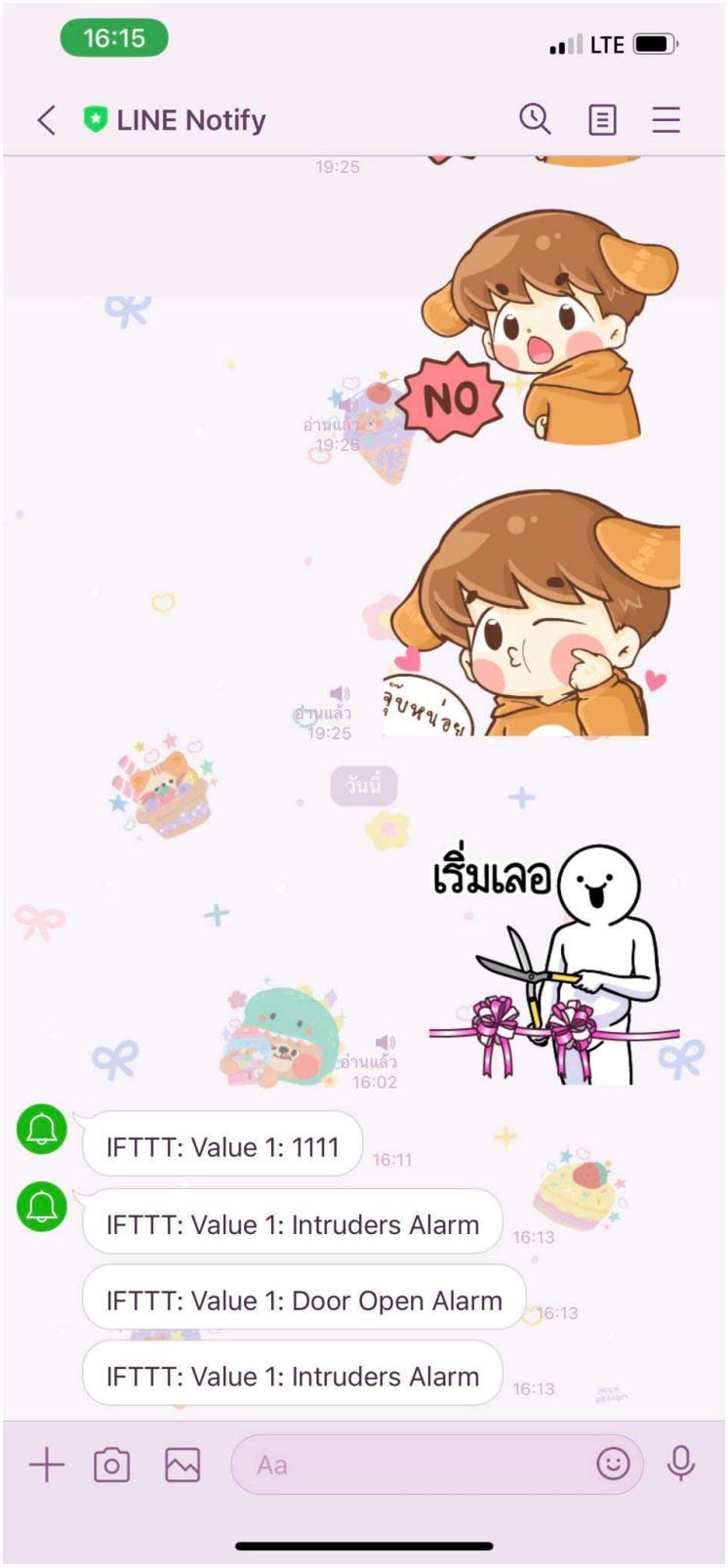
รูปการต่อวงจร – 1



รูปการต่อวงจร – 2

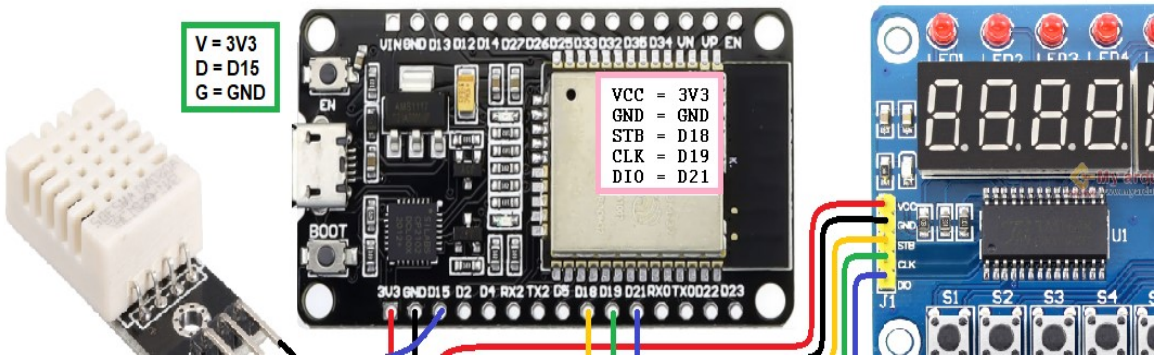


รูปหน้าจอ LINE ผลการทดสอบ



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 >

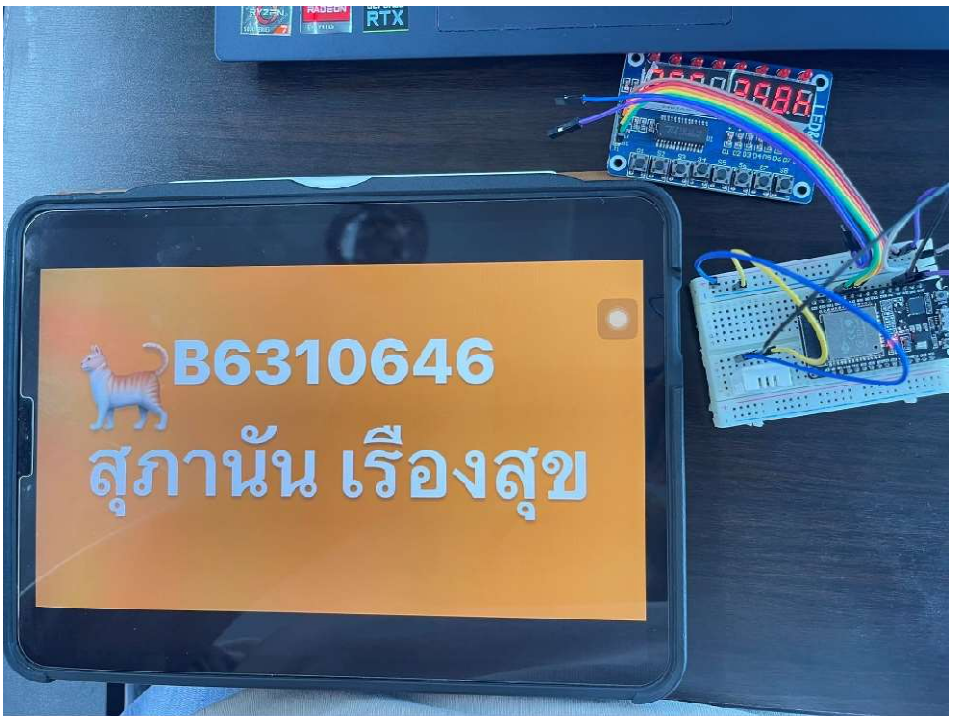
```
#include <WiFi.h>
#include <HTTPClient.h>
#include "DHTesp.h"
#include <TM1638plus.h>
#define WIFI_SSID "meow"
#define WIFI_PASS "meowmeow"
#define WebHooksKey "cMzh_G_IU01wts9_GJdxE8"
#define WebHooksEventNane "ggsheet" //meowggsheet
#define WebHooksEventNane_LINE "meowtestt"
#define My_NAME "B6310646"
#define Pin_DHT22 15
#define Brd_STB 18
#define Brd_CLK 19
#define Brd_DIO 21
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();
```

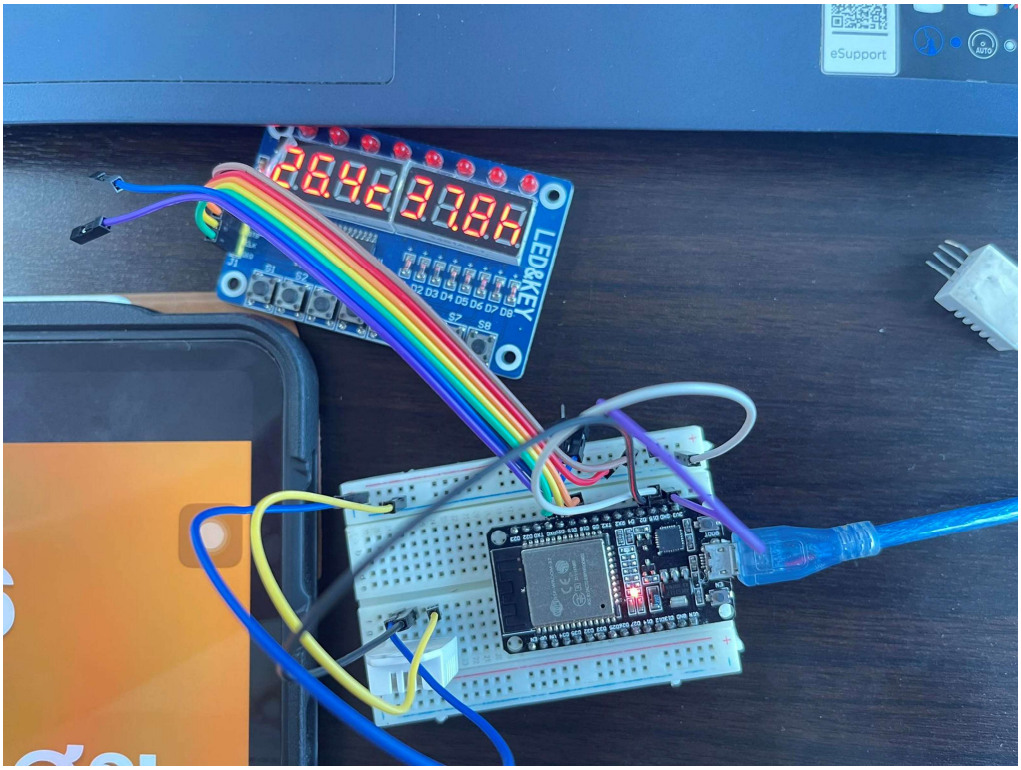
```
    if (httpResponseCode == 200)
      Serial.println(" --> Successfully sent");
    else
      Serial.println(" --> Failed!");
  }
  else {
    Serial.println("WiFi Disconnected");
  }
  if (temperature > 28) {
    String serverName = "http://maker.ifttt.com/trigger/" +
String(WebHooksEventNane_LINE) + "/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 = 5;
  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

IFTTT_Maker_Webhooks_Events

File Edit View Insert Format Data Tools Extensions Help

Share

F24

	A	B	C	D	E
24	May 27, 2023 at 05:41PM	ggsheet	B6310646	Temp =25.20	Humid = 11.70
25	May 27, 2023 at 05:41PM	ggsheet	B6310646	Temp =26.60	Humid = 12.70
26	May 27, 2023 at 05:41PM	ggsheet	B6310646	Temp =26.00	Humid = 9.60
27	May 27, 2023 at 05:41PM	ggsheet	B6310646	Temp =27.80	Humid = 12.60
28	May 27, 2023 at 05:41PM	ggsheet	B6310646	Temp =25.60	Humid = 9.50
29	May 27, 2023 at 05:42PM	ggsheet	B6310646	Temp =26.40	Humid = 12.30
30	May 27, 2023 at 05:42PM	ggsheet	B6310646	Temp =26.10	Humid = 14.90
31	May 27, 2023 at 05:42PM	ggsheet	B6310646	Temp =27.40	Humid = 42.60
32	May 27, 2023 at 05:42PM	ggsheet	B6310646	Temp =28.30	Humid = 91.50
33	May 27, 2023 at 05:42PM	ggsheet	B6310646	Temp =28.60	Humid = 99.90
34					
35					
36					


เริ่มเลอ
อ่านแล้ว
17:19
IFTTT: IFTTT Temperature: 29.10
17:20
IFTTT: IFTTT Temperature: 30.00
17:20
IFTTT: IFTTT Temperature: 31.20
17:20
IFTTT: IFTTT Temperature: 30.40
17:21
IFTTT: IFTTT Temperature: 29.40
17:21
IFTTT: IFTTT Temperature: 28.80
17:21
IFTTT: IFTTT Temperature: 28.40
17:21
IFTTT: IFTTT Temperature: 28.20
17:21
Aa