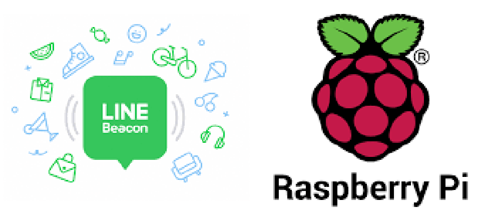
การสร้าง MQTT Server บน Raspberry Pi เพื่อใช้งาน Chatbot LINE ในฟาร์มอัจฉริยะ
Chatbot LINE from Raspberry Pi MQTT Server for Smart Farming

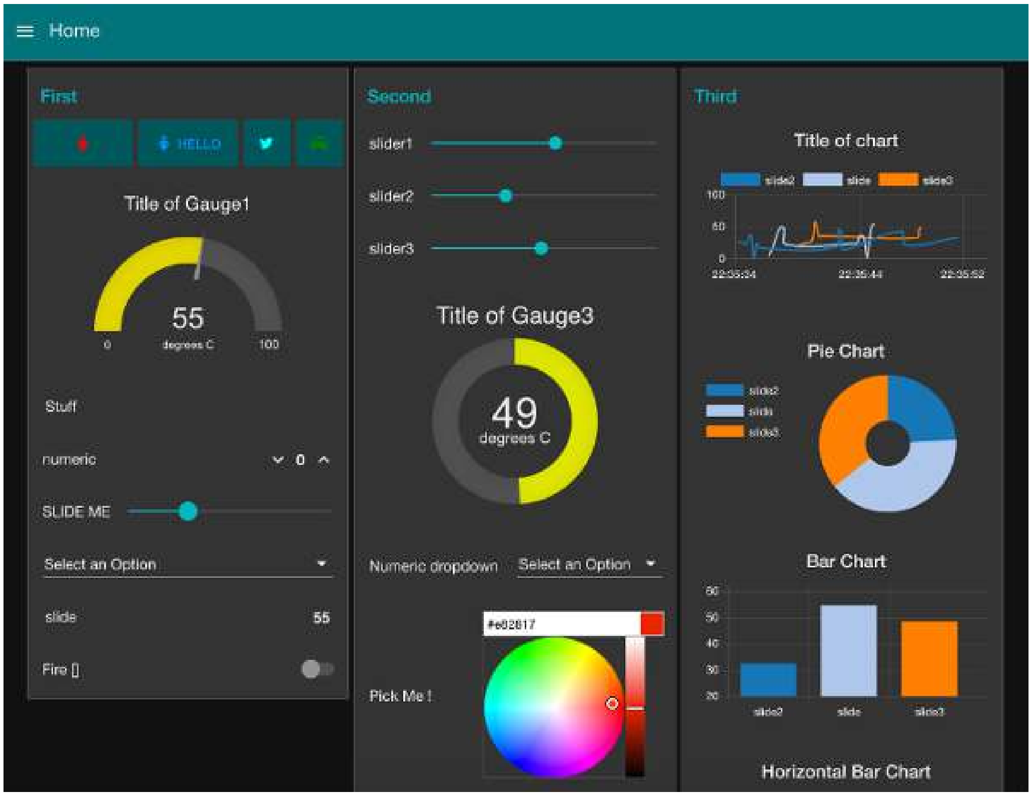
4/4 – LINE Bot on Raspberry PI

- การสร้าง UI ด้วย Node-RED
- การสร้าง UI ด้วย Node-RED สำหรับฟาร์มอัจฉริยะ
- การโปรแกรมเพื่อแจ้งเตือนผ่าน LINE ด้วย LINE API Python
- การโปรแกรมเพื่อแจ้งเตือนผ่าน LINE ด้วย Node-RED
- การโปรแกรมเพื่อโต้ตอบกับผู้ใช้งานผ่าน LINE
- คำถามท้ายบทเพื่อทดสอบความเข้าใจ



1/6 - การสร้าง UI ด้วย Node-RED

https://medium.com/mmp-li/node-red-dashboard-ทำเว็บด้วย-node-red-โดยไม่เขียนโค้ดสักตัว-ฉบับปี-2018-23345af6bf5d
https://medium.com/mmp-li/เริ่มต้นใช้งาน-node-red-ฉบับปี-2018-3fca5ed140f9
https://nerdiy.de/en/nodered-systemdaten-des-raspberrypis-auf-dem-dashboard-anzeigen/



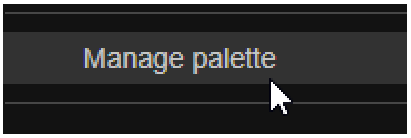
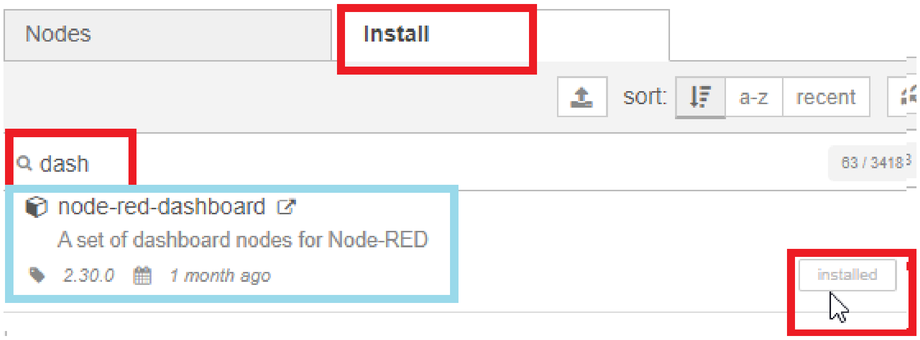
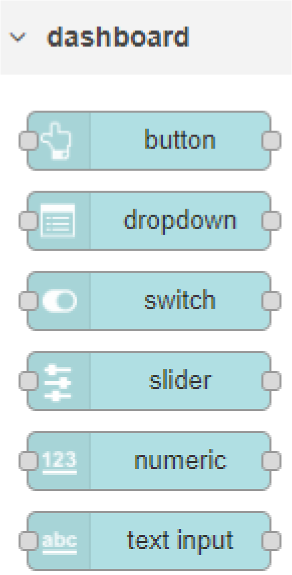
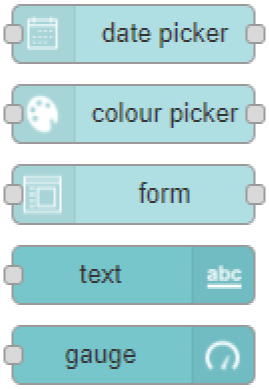
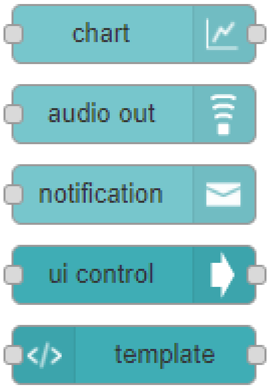
Node-RED Dashboard

คือ หน้าเว็ปโปรแกรม ที่ใช้สำหรับควบคุม/สังเกตุ ค่าต่างๆที่เราสนใจ ไม่ว่าจะเป็นการสั่งงานผ่าน MQTT ,การพล็อตกราฟเพื่อแสดงให้เห็นถึงความเปลี่ยนแปลง, การแสดงสถานะของอุปกรณ์ต่างๆ ที่สำคัญคือ “Node-RED Dashboard ทำงานแบบ Real Time ไม่ต้องรีเฟรชหน้าเว็บเวลามีการอัพเดท”

Lab401 – Node-RED Dashboard

1. แสดงค่าข้อมูลของ Raspberry Pi บน Node-RED Dashboard

   1.1 เพิ่มโหนด กลุ่ม Node-RED UI

<table>
<tr><td colspan="2">
</td><td>Manage palette</td></tr>
<tr><td colspan="2">
</td><td>Tab = Install
Filter = dash
ตรวจสอบ ชื่อ
node-red-dashboard
V2.30.0
Install</td></tr>
<tr><td>
</td><td>
</td><td>
</td></tr>
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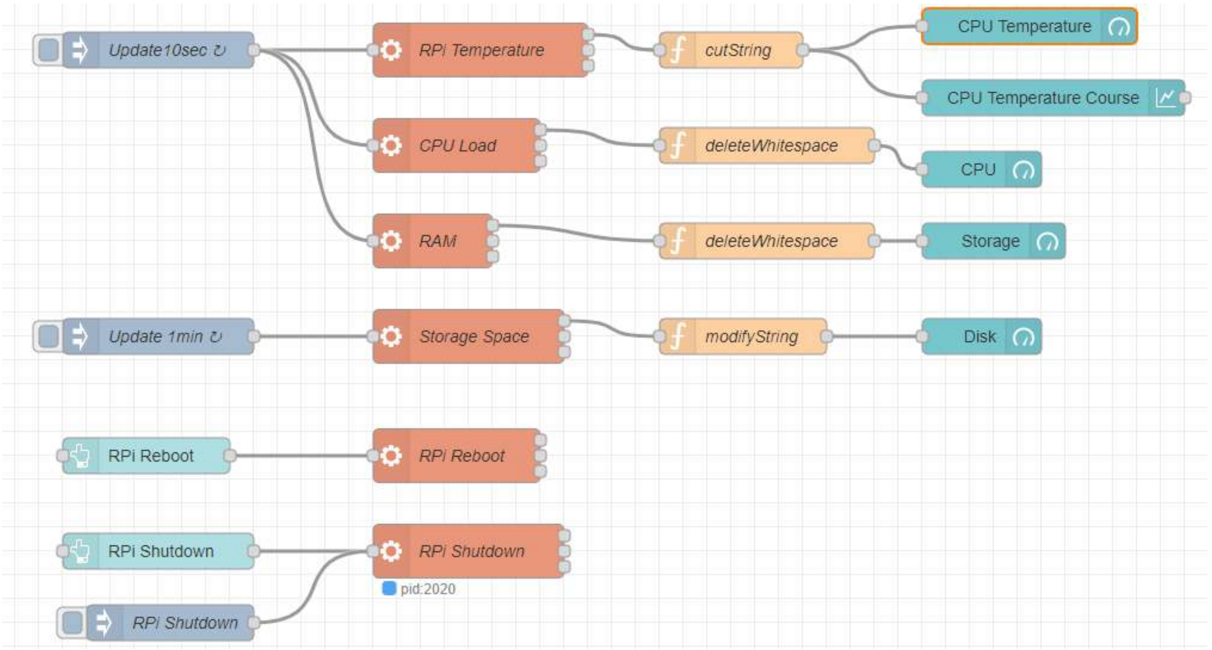
1.2 สร้าง Flow ใหม่



< Code ตาม Lab401a_RPi_monitor >

```
[{"id":"8d8ede65.bc90c","type":"tab","label":"Flow 1","disabled":false,"info":""},{"id":"8aa024f3.7775b8","type":"exec","z":"8d8ede65.bc90c","command":"vcgencmd
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Temperature","x":510,"y":200,"wires":[["75f6e734.61bd28"],[],[]]},{"id":"66bd6fde.6aa98","type":"inject","z":"8d8ede65.bc90c","name":"Update10sec","props":[{"p":"payload"},{"
p":"topic","vt":"str"}],"repeat":"10","crontab":"","once":false,"onceDelay":"","topic":"","payload":"","payloadType":"date","x":240,"y":200,"wires":[["8aa024f3.7775b8","37d6ed88
.286ca2","3b1184bd.4907ac"]]},{"id":"75f6e734.61bd28","type":"function","z":"8d8ede65.bc90c","name":"cutString","func":"str = msg.payload\nmsg.payload =
str.substring(5,9);\nreturn
msg;","outputs":1,"noerr":0,"x":720,"y":200,"wires":[["bda18f6c.a0d7c","af1542ed.df499"]]},{"id":"a6e3e16b.a9dc9","type":"exec","z":"8d8ede65.bc90c","command":"sudo
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Reboot","x":490,"y":540,"wires":[[],[],[]]},{"id":"52855703.cdec98","type":"exec","z":"8d8ede65.bc90c","command":"sudo shutdown -h
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$4}'","addpay":false,"append":"","useSpawn":"","timer":"","oldrc":false,"name":"CPU
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100*(($3+$5)/$2)}'","addpay":false,"append":"","useSpawn":"","timer":"","oldrc":false,"name":"RAM","x":470,"y":360,"wires":[["6864ad99.e64814"],[],[]]},{"id":"94a7e731.2c68d8
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Space","x":500,"y":440,"wires":[["d609d0f3.a9bf3"],[],[]]},{"id":"d609d0f3.a9bf3","type":"function","z":"8d8ede65.bc90c","name":"modifyString","func":"var re = /([0-9]{2})%/\nvar
idx = msg.payload.search(re);\nvar str = msg.payload;\nif (idx >=0) {\n    str = msg.payload.substring(idx, idx + 2);\n}\nmsg.payload = str;\nreturn
msg;","outputs":1,"noerr":0,"x":730,"y":440,"wires":[["bd6eb5e.cb08a48"]]},{"id":"48526816.b0aaf8","type":"inject","z":"8d8ede65.bc90c","name":"Update
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CPU Temperature
Course","chartType":"line","legend":"false","xformat":"HH:mm:ss","interpolate":"linear","nodata":"","dot":false,"ymin":"","ymax":"","removeOlder":"24","removeOlderPoints":"",
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,"outputs":1,"useDifferentColor":false,"x":990,"y":240,"wires":[[]]},{"id":"6864ad99.e64814","type":"function","z":"8d8ede65.bc90c","name":"deleteWhitespace","func":"var str =
msg.payload\nstr = str.trim();\nvar nr=parseInt(str);\nmsg.payload = nr.toFixed(1);\nreturn
msg;","outputs":1,"noerr":0,"x":750,"y":360,"wires":[["d204ea31.667318"]]},{"id":"32da55ec.24d81a","type":"function","z":"8d8ede65.bc90c","name":"deleteWhitespace","func":"
str = msg.payload\nmsg.payload = str.trim();\nreturn
msg;","outputs":1,"noerr":0,"x":750,"y":280,"wires":[["77393c0b.231ca4"]]},{"id":"37918b4.8c22074","type":"inject","z":"8d8ede65.bc90c","name":"RPi
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wires":[["52855703.cdec98"]]},{"id":"5fe5a9b.a8a6158","type":"ui_group","z":"8d8ede65.bc90c","name":"2","tab":"7e8708a2.0fc408","order":2,"disp":false,"width":"6","collapse":f
alse},{"id":"6b432a4a.06ad54","type":"ui_group","z":"8d8ede65.bc90c","name":"1","tab":"7e8708a2.0fc408","order":1,"disp":false,"width":"6","collapse":false},{"id":"7e8708a2.0fc
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```
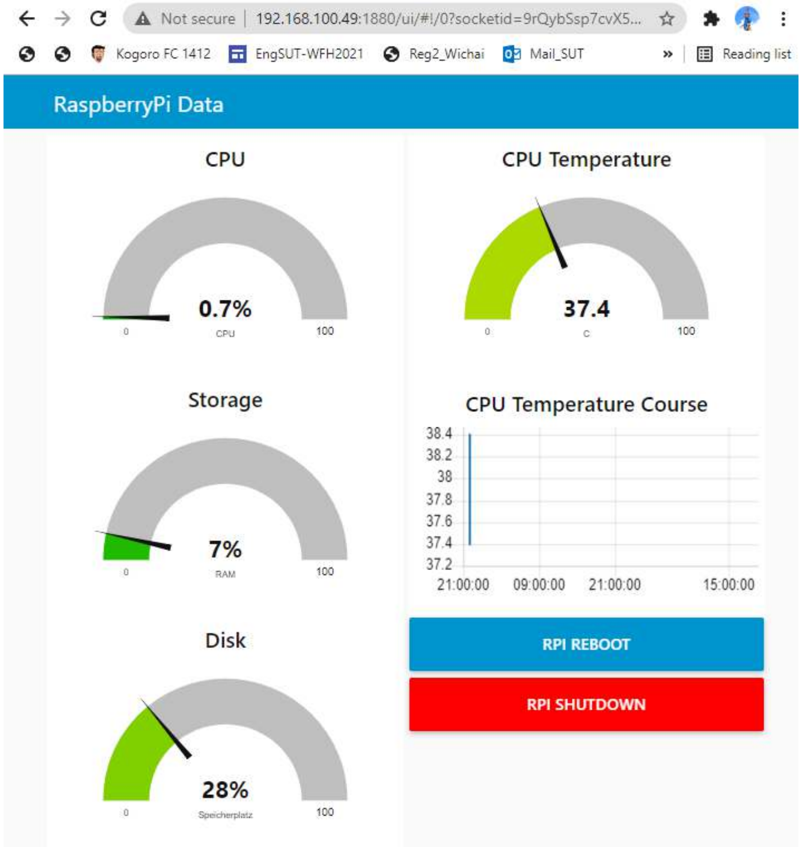
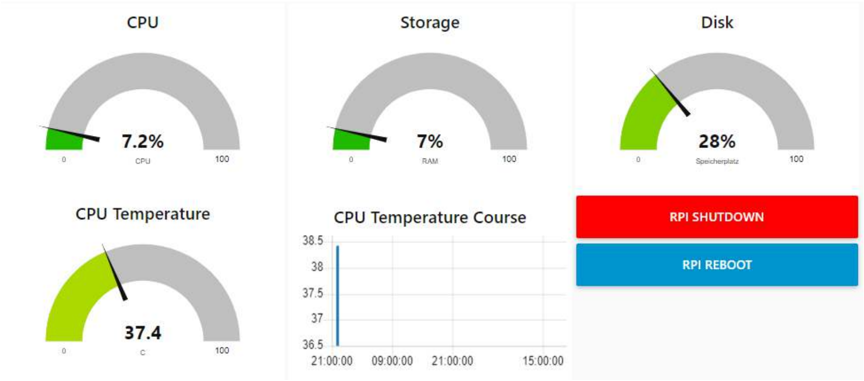
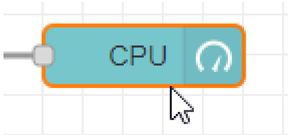
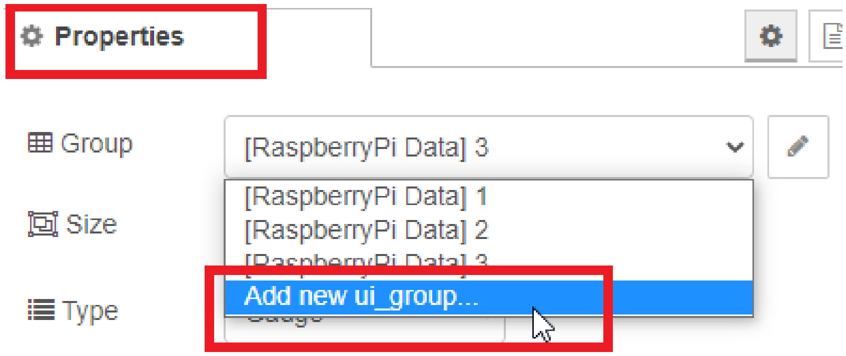
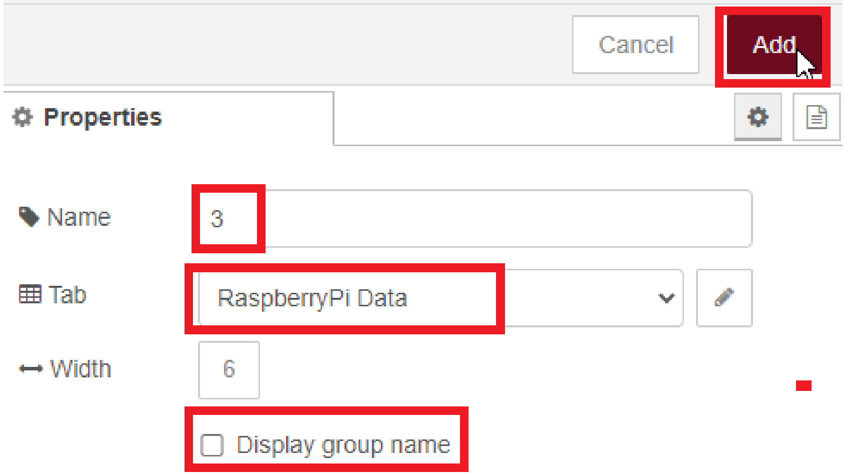
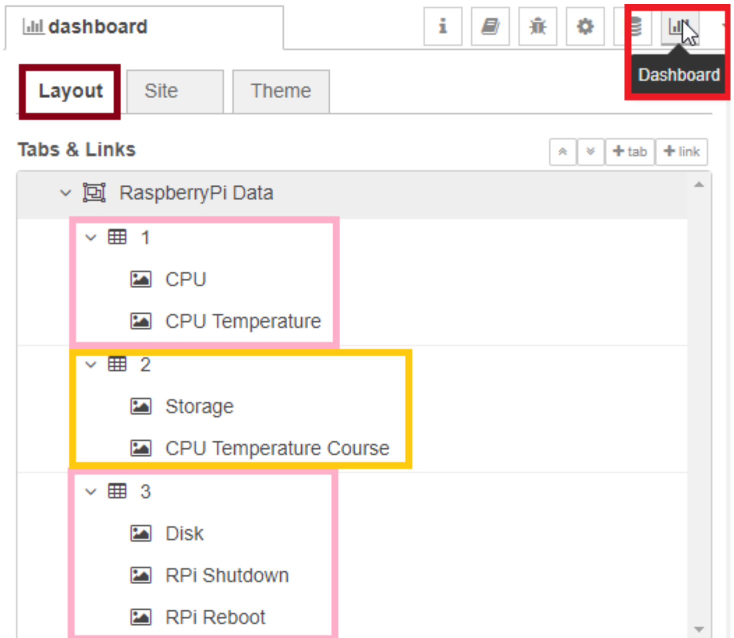

1.3 ทดสอบการทำงาน

 Not secure | 192.168.100.49:1880/ui/#!/0?socketid=9rQybSsp7cvX5... Kogoro FC 1412 EngSUT-WFH2021 Reg2_Wichai Mail_SUT Reading list RaspberryPi Data CPU 0.7% CPU 0 100 CPU Temperature 37.4 C 0 100 Storage 7% RAM 0 100 CPU Temperature Course 38.4 38.2 38 37.8 37.6 37.4 37.2 21:00:00 09:00:00 21:00:00 15:00:00 RPI REBOOT RPI SHUTDOWN Disk 28% Speicherplatz 0 100	192.168.100.49:1883/ui

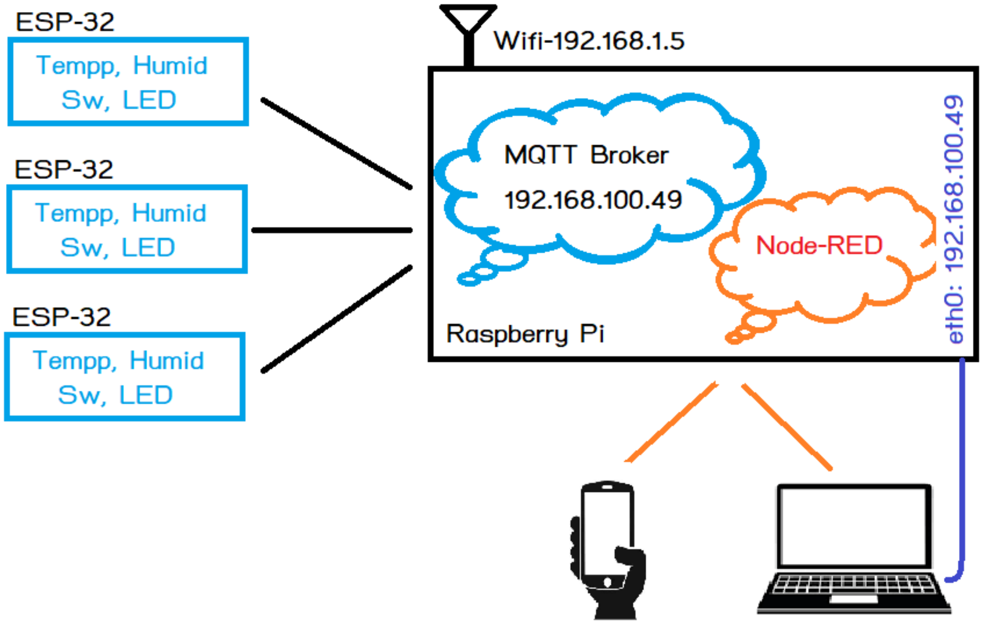
1.4 การปรับการแสดงผล

 CPU 7.2% CPU 0 100 Storage 7% RAM 0 100 Disk 28% Speicherplatz 0 100 CPU Temperature 37.4 C 0 100 CPU Temperature Course 38.5 38 37.5 37 36.5 21:00:00 09:00:00 21:00:00 15:00:00 RPI SHUTDOWN RPI REBOOT	ผลการทดสอบที่ต้องการ
	เพิ่ม column widget Click widget

 Properties Group [RaspberryPi Data] 3 [RaspberryPi Data] 1 [RaspberryPi Data] 2 [RaspberryPi Data] 3 Add new ui_group... Size Type	Add new ui_group
 Cancel Add Properties Name 3 Tab RaspberryPi Data Width 6 ☐ Display group name	Add Colum 3 In dashboard name Not display group
 dashboard Dashboard Layout Site Theme Tabs & Links RaspberryPi Data 1 CPU CPU Temperature 2 Storage CPU Temperature Course 3 Disk RPi Shutdown RPi Reboot	การย้ายตำแหน่ง Dashboard Layout ขยับตำแหน่ง บนล่าง

2/5 - การสร้าง UI ด้วย Node-RED สำหรับฟาร์มอัจฉริยะ

เป็นตัวอย่างโครงงานเพื่อแสดงระบบดูและควบคุมสิ่งแวดล้อมของโรงเรือนเลี้ยงไก่ บน Node-RED Dashboard การทำงานจะใช้ ESP32 สร้างข้อมูลเพื่อสื่อสารกับ RPi Server ผ่าน MQTT Protocol ระบบทั้งหมดจะทำงานเป็นระบบปิดภายในฟาร์ม ระบบที่จะใช้ทดสอบเป็นดังรูป

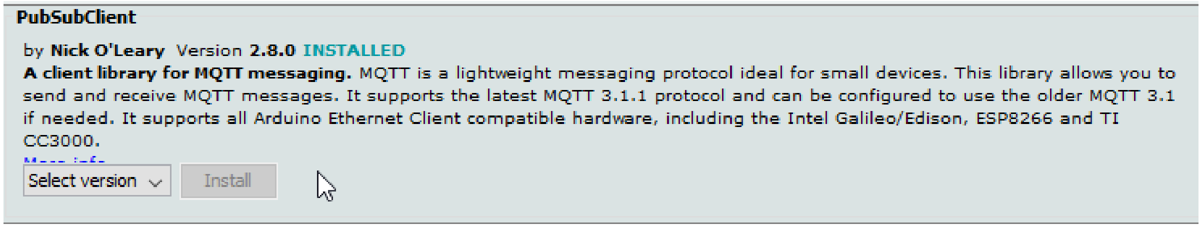


Lab402 – Node-RED Dashboard for Smart Farm

1. Raspberry Pi MQTT Server Start
   - User Name = mymqtt
   - User Password = myraspi

2. ESP-32 Library and Code

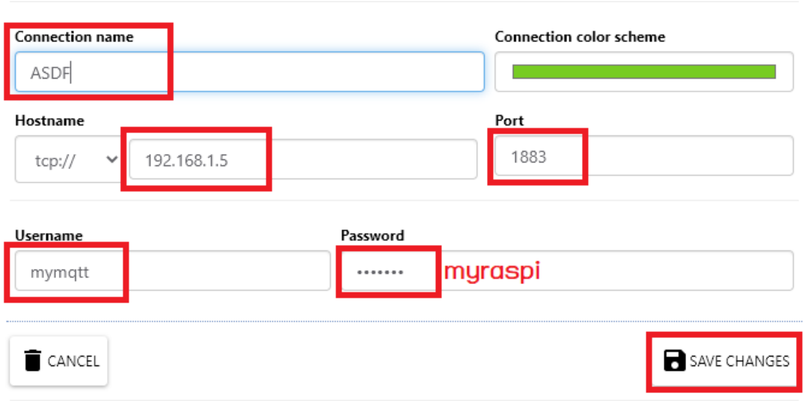
ตรวจสอบ PubSubClient by Nick O'Leary V2.8.0

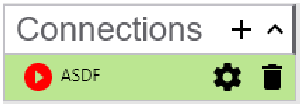
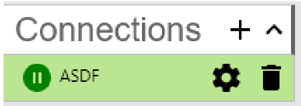
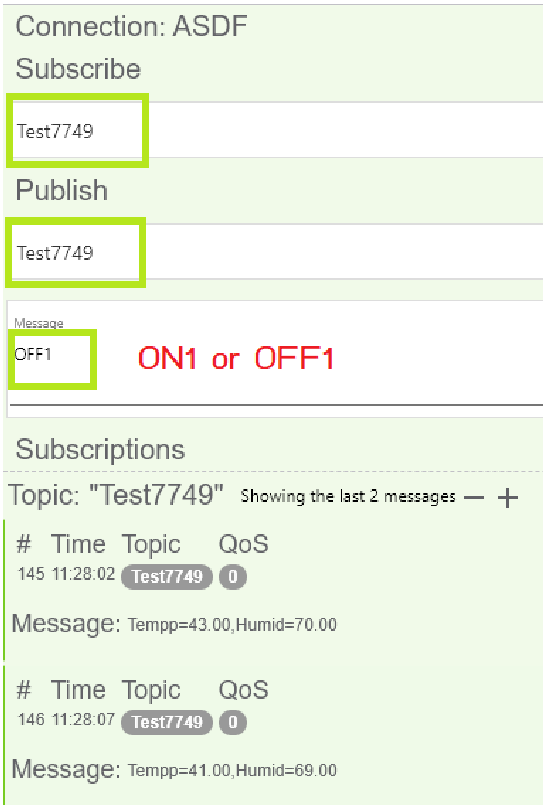

PubSubClient

by **Nick O'Leary** Version **2.8.0** INSTALLED
A client library for MQTT messaging. MQTT is a lightweight messaging protocol ideal for small devices. This library allows you to send and receive MQTT messages. It supports the latest MQTT 3.1.1 protocol and can be configured to use the older MQTT 3.1 if needed. It supports all Arduino Ethernet Client compatible hardware, including the Intel Galileo/Edison, ESP8266 and TI CC3000.
More info

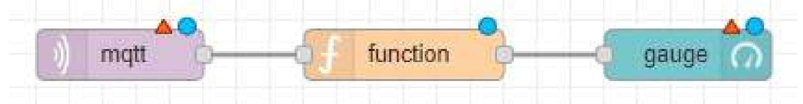
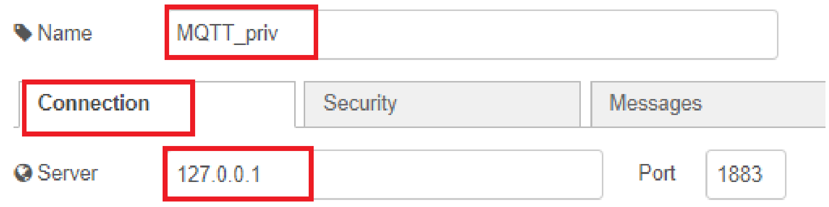
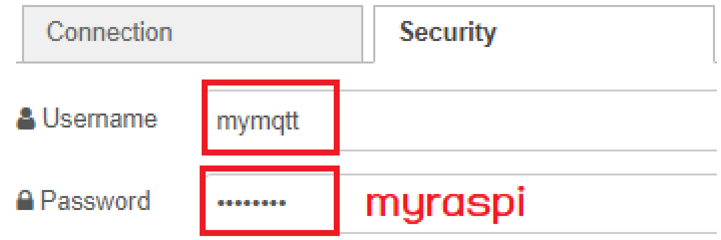
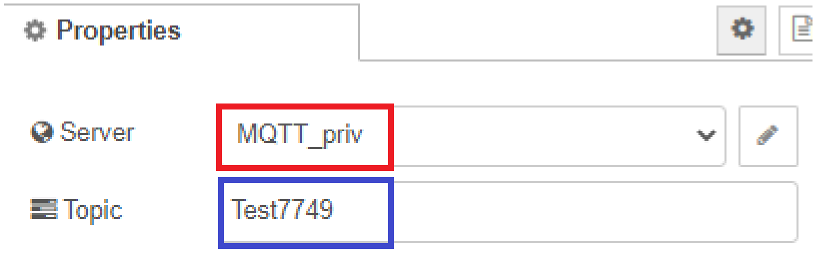
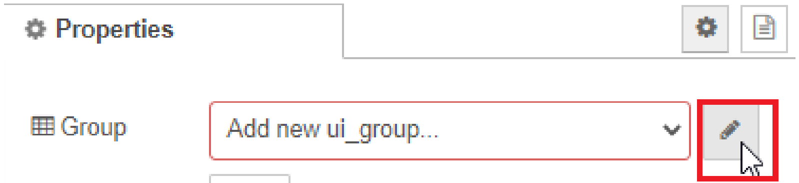
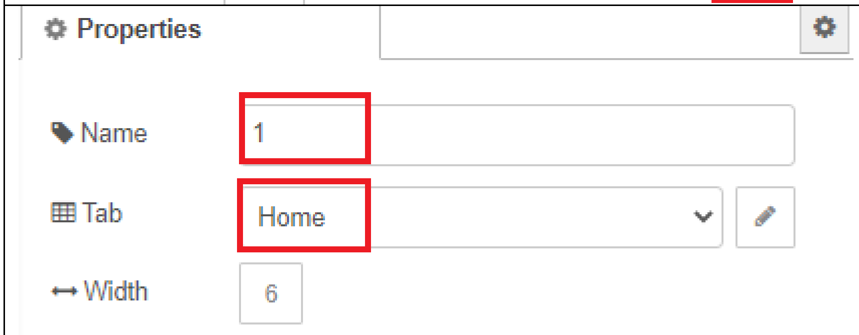
```
#include <WiFi.h>
#include <PubSubClient.h>

const char *ssid = "Mue.Home";
const char *password = "pk1212312121";
const char *mqtt_server = "192.168.1.5";
const int  mqtt_port = 1883;
const char *myName = "mymqtt";
const char *myPass = "myraspi";
const char *myTopic = "Test7749";
```

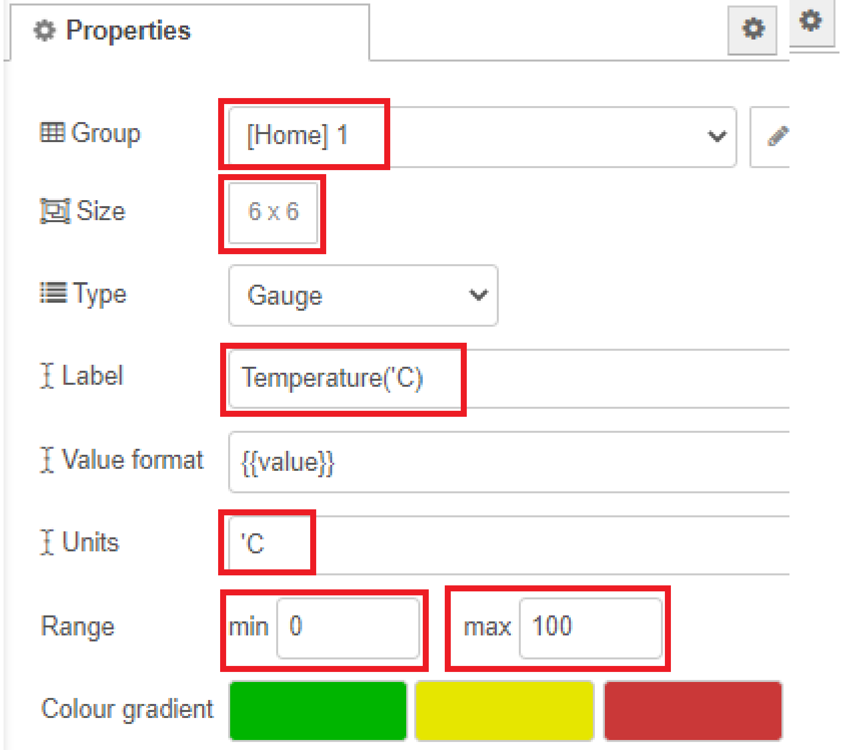
```
#define MSG_BUFFER_SIZE (50)
#define LED0_Pin 2
#define SW0_Pin  0

WiFiClient espClient;
PubSubClient client(espClient);

int SW0_Status = 99;
unsigned long lastMsg = 0;
char msg[MSG_BUFFER_SIZE];

void reconnect() {
  while (!client.connected()) {
    Serial.print("Attempting MQTT connection...");
    String clientId = "ESP32_Client-";
    clientId += String(random(0xffff), HEX);
    if (client.connect(clientId.c_str(), myName, myPass)) {
      Serial.println("connected");
      client.subscribe(myTopic);
    } else {
      Serial.print("failed, rc=");
      Serial.print(client.state());
      Serial.println(" try again in 5 seconds");
      delay(5000);
    }
  }
}

void callback(char* topic, byte* payload, unsigned int length)
{ char myPayLoad[50];
  Serial.print("Message arrived [");
  Serial.print(myTopic);
  Serial.print("] ");
  for (int i = 0; i < length; i++)
  { Serial.print((char)payload[i]);
    myPayLoad[i]    = payload[i];
    myPayLoad[i + 1]  = '\0'; // End of String
  }
  Serial.print("\n ---> ");   Serial.println(myPayLoad);
  myPayLoad[4] = '\0';  // String lessthan 4 Charector
  if ((String)myPayLoad == "ON1")    digitalWrite(LED0_Pin, HIGH);
  if ((String)myPayLoad == "OFF1")   digitalWrite(LED0_Pin, LOW);
}

void setup() {
  Serial.begin(115200);
  pinMode(LED0_Pin, OUTPUT);
  pinMode(SW0_Pin, INPUT_PULLUP);
  Serial.print("\n Connecting to ");
  Serial.println(ssid);
  WiFi.mode(WIFI_STA);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);  Serial.print(".");
  }
  Serial.println("\n WiFi connected");
  Serial.println("IP address: ");   Serial.println(WiFi.localIP());
  client.setServer(mqtt_server, mqtt_port);
  client.setCallback(callback);
}

void loop() {
  if (!client.connected()) {
    reconnect();
  }
  client.loop();

  if (digitalRead(SW0_Pin) != SW0_Status) {
    SW0_Status = digitalRead(SW0_Pin);
    Serial.println(SW0_Status == HIGH ? "Status Switch = OFF" : "Status Switch = ON");
    client.publish(myTopic, (SW0_Status == HIGH ? "SW_OFF" : "SW_ON"));
    delay(100);
  }

  unsigned long now = millis();
  if (now - lastMsg > 5000) {
    lastMsg = now;
    float Tempp = random(3000, 5000) / 100.0;
    float Humid = random(6000, 8000) / 100.0;
    snprintf (msg, MSG_BUFFER_SIZE, "Tempp=%0.2f,Humid=%0.2f", Tempp, Humid);
    Serial.print("Publish message: ");
    Serial.println(msg);
    client.publish(myTopic, msg);
  }
}
```

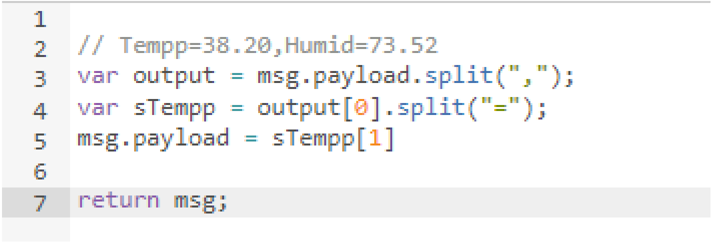

Connection name: ASDF
Connection color scheme
Hostname: tcp:// 192.168.1.5
Port: 1883
Username: mymqtt
Password: ••••••• myraspi
CANCEL
SAVE CHANGES
	Name = อะไรก็ได้
	Host = Wifi-IP:1883
	UName = mymqtt
	UPass = myraspi
	
	Save

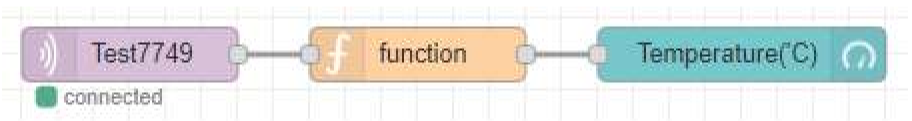
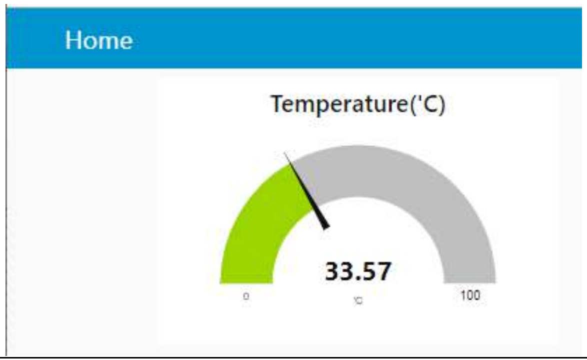
 Connections + ^ ASDF  Connections + ^ ASDF	สีแดง ไม่ทำงาน สีเขียว พร้อมทำงาน
 Connection: ASDF Subscribe Test7749 Publish Test7749 Message OFF1 ON1 or OFF1 Subscriptions Topic: "Test7749" Showing the last 2 messages — + # Time Topic QoS 145 11:28:02 Test7749 0 Message: Tempp=43.00,Humid=70.00 # Time Topic QoS 146 11:28:07 Test7749 0 Message: Tempp=41.00,Humid=69.00	การทดสอบ Topic = Test7749

3. Node-RED UI Mission 1/4 – Temperature Gauge

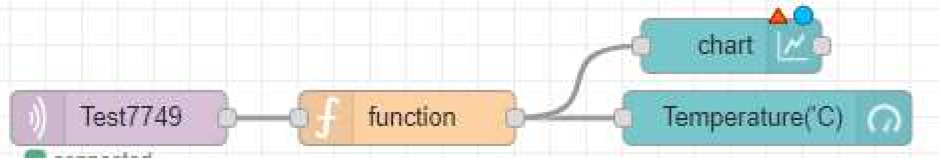
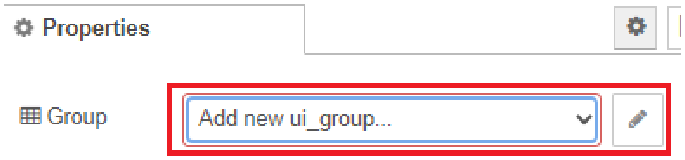
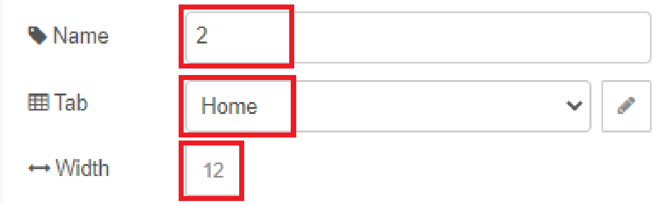
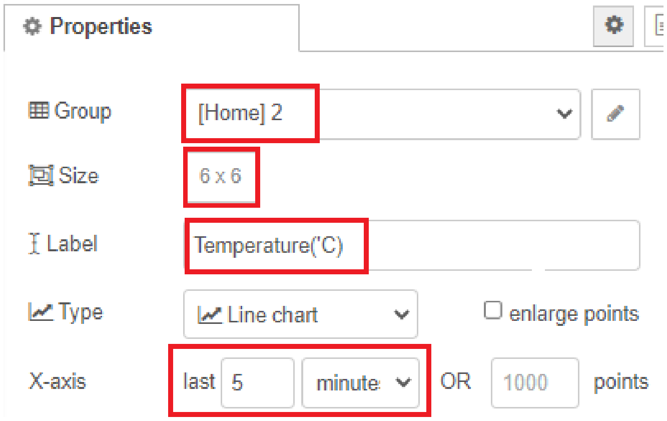
 mqtt function gauge	
 Name MQTT_priv Connection / Security / Messages Server 127.0.0.1 Port 1883	Mqtt node
 Connection / Security Username mymqtt Password •••••••• myraspi	Mqtt node
 Properties Server MQTT_priv Topic Test7749	Mqtt node
 Properties Group Add new ui_group...	Gaude node
 Properties Name 1 Tab Home Width 6	Gaude node

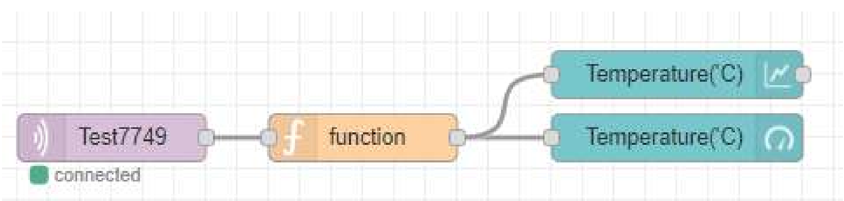
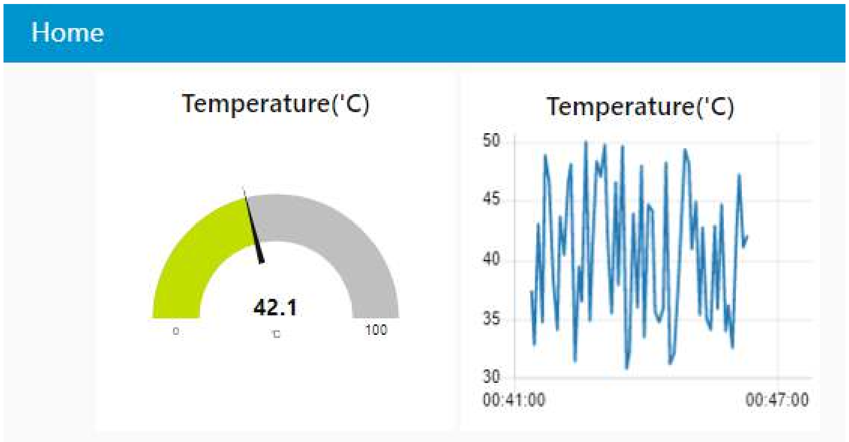
 Properties Group [Home] 1 Size 6 x 6 Type Gauge Label Temperature('C) Value format {{value}} Units 'C Range min 0 max 100 Colour gradient 🟩 🟨 🟥	Gaude node


// Tempp=38.20,Humid=73.52
var output = msg.payload.split(",");
var sTempp = output[0].split("=");
msg.payload = sTempp[1]
 	
return msg;
 	
// Tempp=38.20,Humid=73.52
var output = msg.payload.split(",");
var sTempp = output[0].split("=");
msg.payload = sTempp[1]
 	
return msg;
	Function Node

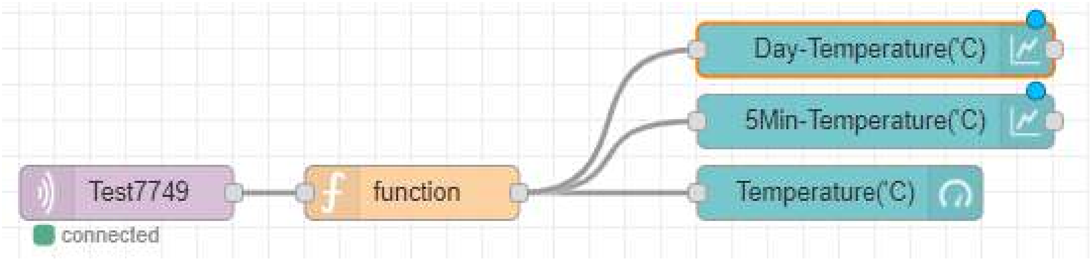
	พร้อมทดสอบ
	เรียนดูผ่าน xxx.xx.xx.x:1880/ui

4. Node-RED UI Mission 2/4 – Temperature Gauge and line chart

	Add Chart
Properties Group: Add new ui_group...	Click chart Add ui group
Name: 2 Tab: Home Width: 12	Colum 2 in Home
Properties Group: [Home] 2 Size: 6 x 6 Label: Temperature('C) Type: Line chart □ enlarge points X-axis: last 5 minute OR 1000 points	

 Test7749 connected function Temperature('C) Temperature('C)	พร้อมทดสอบ
 Home Temperature('C) 42.1 0 'C 100 Temperature('C) 50 45 40 35 30 00:41:00 00:47:00	ผลการทำงาน

5. เพิ่มอีกกราฟเพื่อบันทึกข้อมูลที่ยาวขึ้น

 Day-Temperature('C) 5Min-Temperature('C) Test7749 connected function Temperature('C)	

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msg.payload.split(\",\");\nvar sTempp = output[0].split(\"=\");\nmsg.payload = sTempp[1]\n\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":320,"y":200,"wires":[["23de89da.4a7286","f6f5e724.f30fe8","a8147c0.4a06888"]]},{"id":"23de89da.4a7286","typ
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erPoints":"","removeOlderUnit":"60","cutout":0,"useOneColor":false,"useUTC":false,"colors":["#1f77b4","#aec7e8","#ff7f0e","#2ca02c","#98df8a","#d62728","#ff9896","#9467bd","
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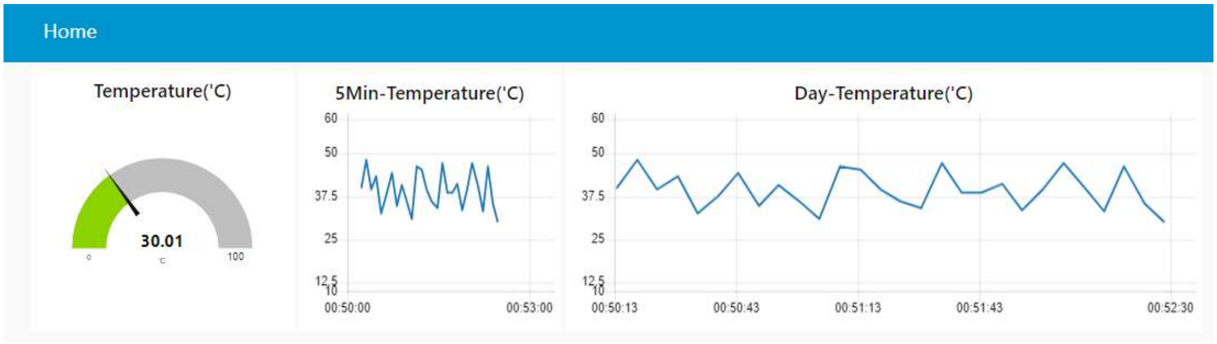
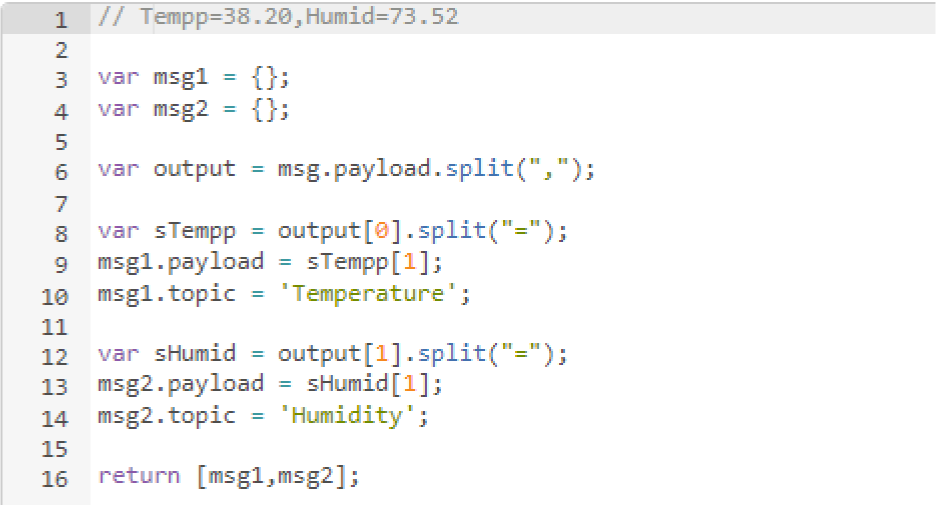


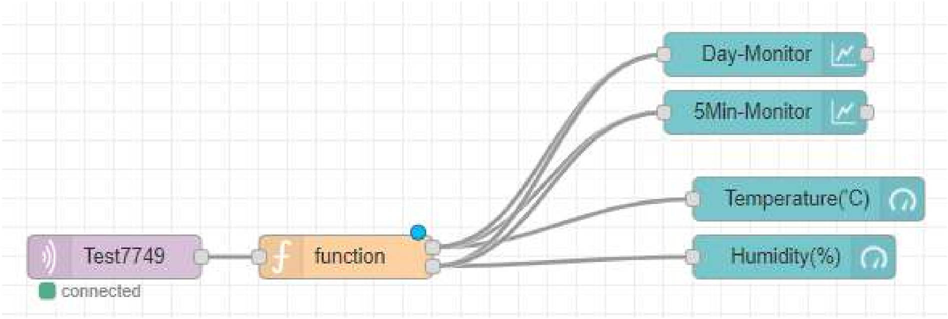
6. Node-RED UI Mission 3/4 – Temperature Gauge and line chart from 2 Data



```
// Tempp=38.20,Humid=73.52

var msg1 = {};
var msg2 = {};

var output = msg.payload.split(",");

var sTempp = output[0].split("=");
msg1.payload = sTempp[1];
msg1.topic = 'Temperature';

var sHumid = output[1].split("=");
msg2.payload = sHumid[1];
msg2.topic = 'Humidity';

return [msg1,msg2];
```

Update Function

```
// Tempp=38.20,Humid=73.52
var msg1 = {};
var msg2 = {};
var output = msg.payload.split(",");
var sTempp = output[0].split("=");
msg1.payload = sTempp[1];
msg1.topic = 'Temperature';
var sHumid = output[1].split("=");
msg2.payload = sHumid[1];
msg2.topic = 'Humidity';
return [msg1,msg2];
```



Update Flow

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c468"]]},{"id":"dcd518f7.44c468","type":"function","z":"8d8ede65.bc90c","name":"","func":"// Tempp=38.20,Humid=73.52 \n\nvar msg1 = {};\nvar msg2 = {};\n\nvar output =
msg.payload.split(\",\");\n\nvar sTempp = output[0].split(\"=\");\nmsg1.payload = sTempp[1];\nmsg1.topic = 'Temperature';\n\nvar sHumid = output[1].split(\"=\");\nmsg2.payload
= sHumid[1];\nmsg2.topic = 'Humidity';\n\nreturn
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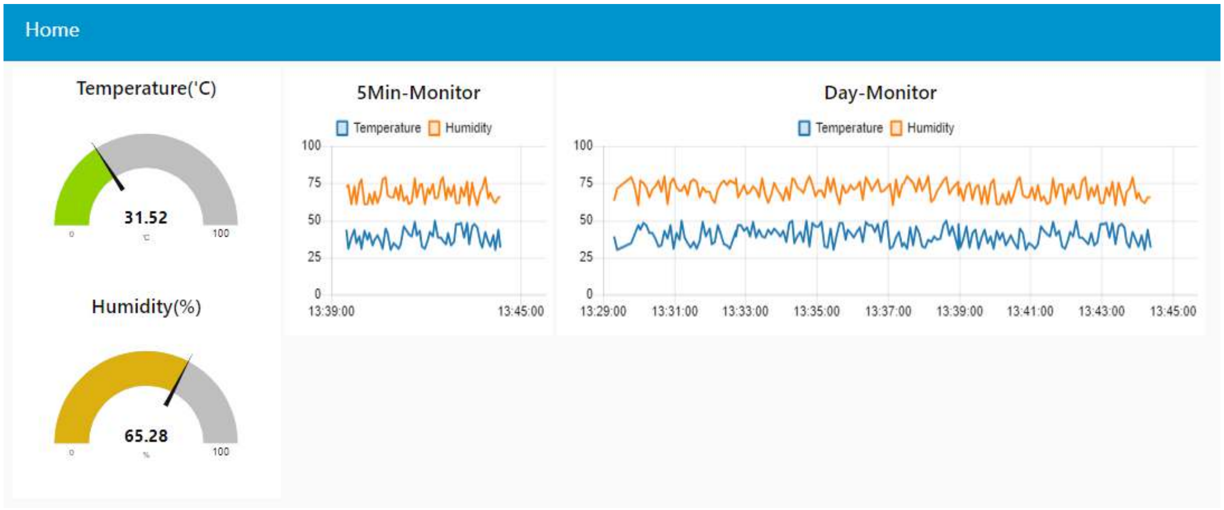
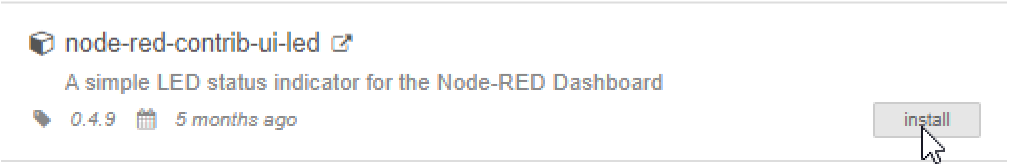


7. Node-RED UI Mission 4/4 – with monitor and control



node-red-contrib-ui-led

A simple LED status indicator for the Node-RED Dashboard

0.4.9 5 months ago

```
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output[0].split(\"=\");\nmsg1.payload = sTempp[1];\nmsg1.topic = 'Temperature';\n\nvar sHumid = output[1].split(\"=\");\nmsg2.payload =
sHumid[1];\nmsg2.topic = 'Humidity';\n\nreturn
[msg1,msg2];","outputs":2,"noerr":0,"initialize":"","finalize":"","libs":[],"x":300,"y":320,"wires":[["c31e4824.aebf28","8eff3667.95dcf8","77a5ac72.e33644"
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Monitor","chartType":"line","legend":"true","xformat":"HH:mm:ss","interpolate":"linear","nodata":"","dot":false,"ymin":"0","ymax":"100","removeOlder
":1,"removeOlderPoints":"","removeOlderUnit":"86400","cutout":0,"useOneColor":false,"useUTC":false,"colors":["#1f77b4","#ff7f0e","#0fffef","#2ca02c",
"#98df8a","#d62728","#ff9896","#9467bd","#c5b0d5"],"outputs":1,"useDifferentColor":false,"x":590,"y":180,"wires":[[]]},{"id":"11c2d779.976e69","type":
"ui_gauge","z":"8d8ede65.bc90c","name":"","group":"29de1dd2.698e12","order":4,"width":"5","height":"4","gtype":"gage","title":"Humidity(%)","label":
"%","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e600","#ca3838"],"seg1":"","seg2":"","x":610,"y":320,"wires":[]},{"id":"9cf31456.9
52a38","type":"ui_led","z":"8d8ede65.bc90c","order":2,"group":"67163726.764658","width":"5","height":"2","label":"Input
Monitor","labelPlacement":"left","labelAlignment":"center","colorForValue":[{"color":"#ff0000","value":"true","valueType":"bool"},{"color":"#008000","v
alue":"false","valueType":"bool"}],"allowColorForValueInMessage":false,"shape":"circle","showGlow":true,"name":"Input
Monitor","x":610,"y":380,"wires":[]},{"id":"148b7d53.08ad13","type":"ui_switch","z":"8d8ede65.bc90c","name":"","label":"Output
Control","tooltip":"","group":"67163726.764658","order":2,"width":"5","height":"1","passthru":true,"decouple":"false","topic":"topic","topicType":"msg",
"style":"","onvalue":"ON1","onvalueType":"str","onicon":"","oncolor":"","offvalue":"OFF1","offvalueType":"str","officon":"","offcolor":"","animate":false,
"x":100,"y":500,"wires":[["d9c08c8.771a57"]]},{"id":"d9c08c8.771a57","type":"mqtt
out","z":"8d8ede65.bc90c","name":"","topic":"Test7749","qos":"","retain":"","respTopic":"","contentType":"","userProps":"","correl":"","expiry":"","brok
er":"7436b594.5bbf3c","x":320,"y":500,"wires":[]},{"id":"d74c2697.e45cb8","type":"function","z":"8d8ede65.bc90c","name":"","func":"\nvar stsNow =
context.global.sts;\nif (msg.payload == 'SW_ON') {\n    stsNow = true;\n}\nif (msg.payload == 'SW_OFF') {\n    stsNow = false;\n}\ncontext.global.sts =
stsNow;\nmsg.payload = stsNow;\n\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":300,"y":380,"wires":[["9cf31456.952a38"]]}]
```
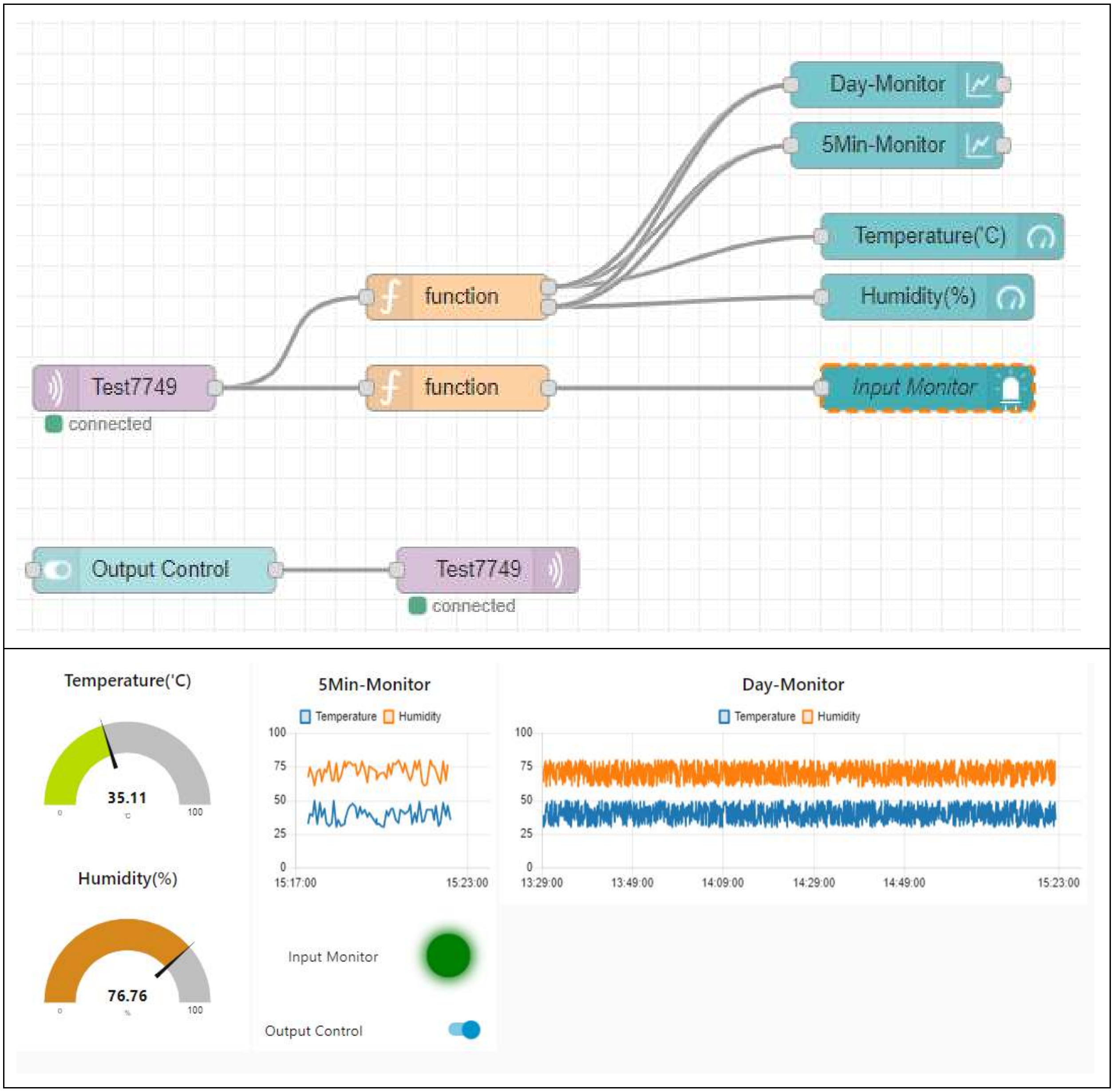


Day-Monitor
5Min-Monitor
Temperature('C)
Humidity(%)
function
Test7749
connected
function
Input Monitor
Output Control
Test7749
connected
Temperature('C)
35.11
°C
0
100
Humidity(%)
76.76
%
0
100
5Min-Monitor
Temperature
Humidity
100
75
50
25
0
15:17:00
15:23:00
Input Monitor
Output Control
Day-Monitor
Temperature
Humidity
100
75
50
25
0
13:29:00
13:49:00
14:09:00
14:29:00
14:49:00
15:23:00

3/6 - การโปรแกรมเพื่อแจ้งเตือนผ่าน LINE ด้วย LINE API Python

https://www.youtube.com/watch?v=rwkvgtXgCZs
https://github.com/carpedm20/LINE
https://www.on-fix.com/2020/01/chapter-10-line-notify.html

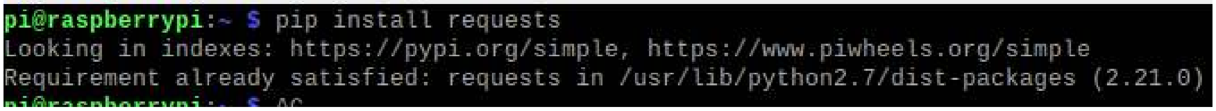
Lab403 – LINE Notify with Python

1. ทำการอัพเดท packet ของ raspbian ก่อน

```
sudo apt-get install update
sudo apt-get install upgrade
```

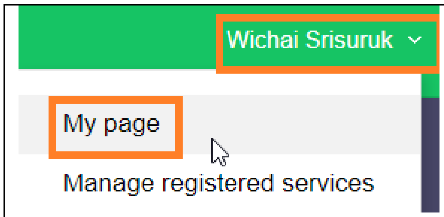
2. ติดตั้ง requests Library

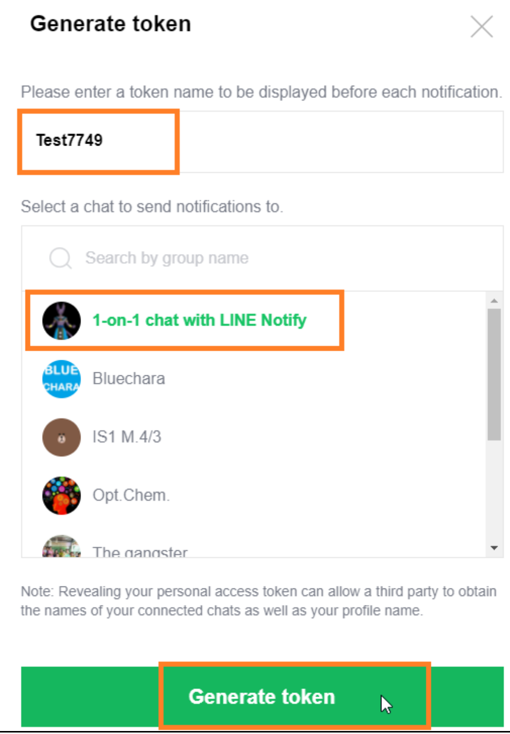
```
pip install requests
```



```
pi@raspberrypi:~ $ pip install requests
Looking in indexes: https://pypi.org/simple, https://www.piwheels.org/simple
Requirement already satisfied: requests in /usr/lib/python2.7/dist-packages (2.21.0)
pi@raspberrypi:~ $ ^C
```

3. เข้าไปที่ https://notify-bot.line.me/th/ เพื่อสร้าง Token Key





Generate token

Please enter a token name to be displayed before each notification.

Test7749

Select a chat to send notifications to.

Search by group name

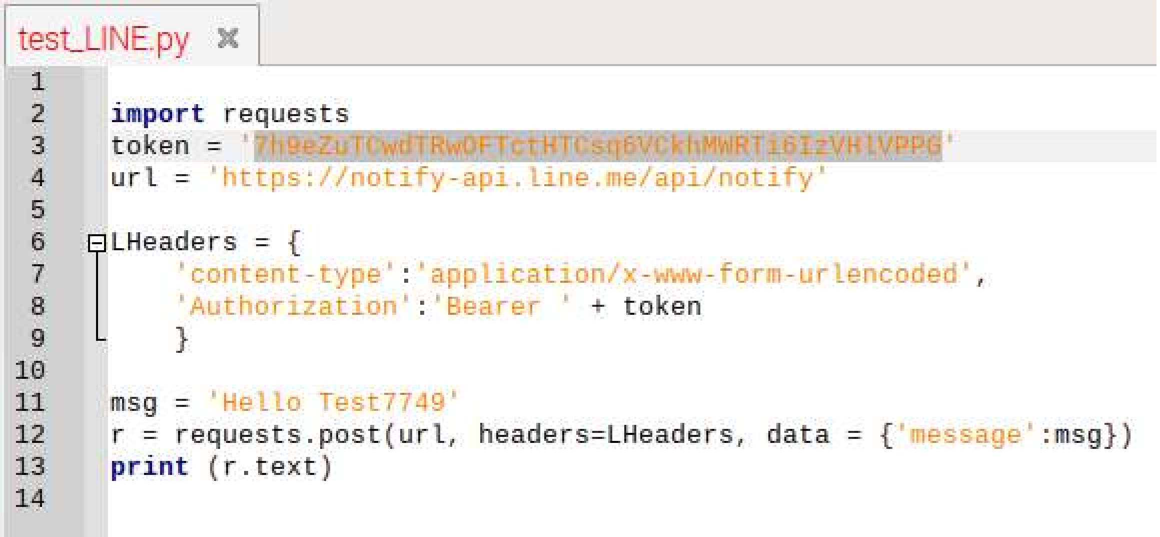
1-on-1 chat with LINE Notify
Bluechara
IS1 M.4/3
Opt.Chem.
The gangster

Note: Revealing your personal access token can allow a third party to obtain the names of your connected chats as well as your profile name.

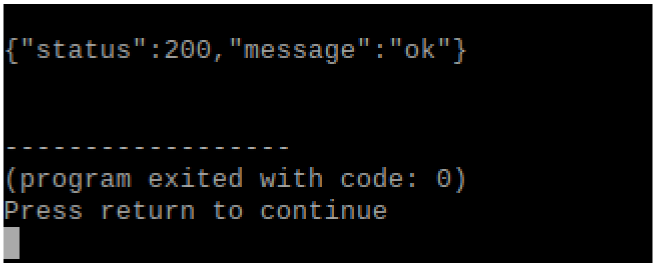
Generate token

4. ทดสอบส่งข้อความ “Hello Test-7749”

```
import requests
token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG'
url = 'https://notify-api.line.me/api/notify'

LHeaders = {'content-type':'application/x-www-form-urlencoded','Authorization':'Bearer '+token}
msg = 'Hello Test7749'
r = requests.post(url, headers=LHeaders, data = {'message':msg})
print (r.text)
```



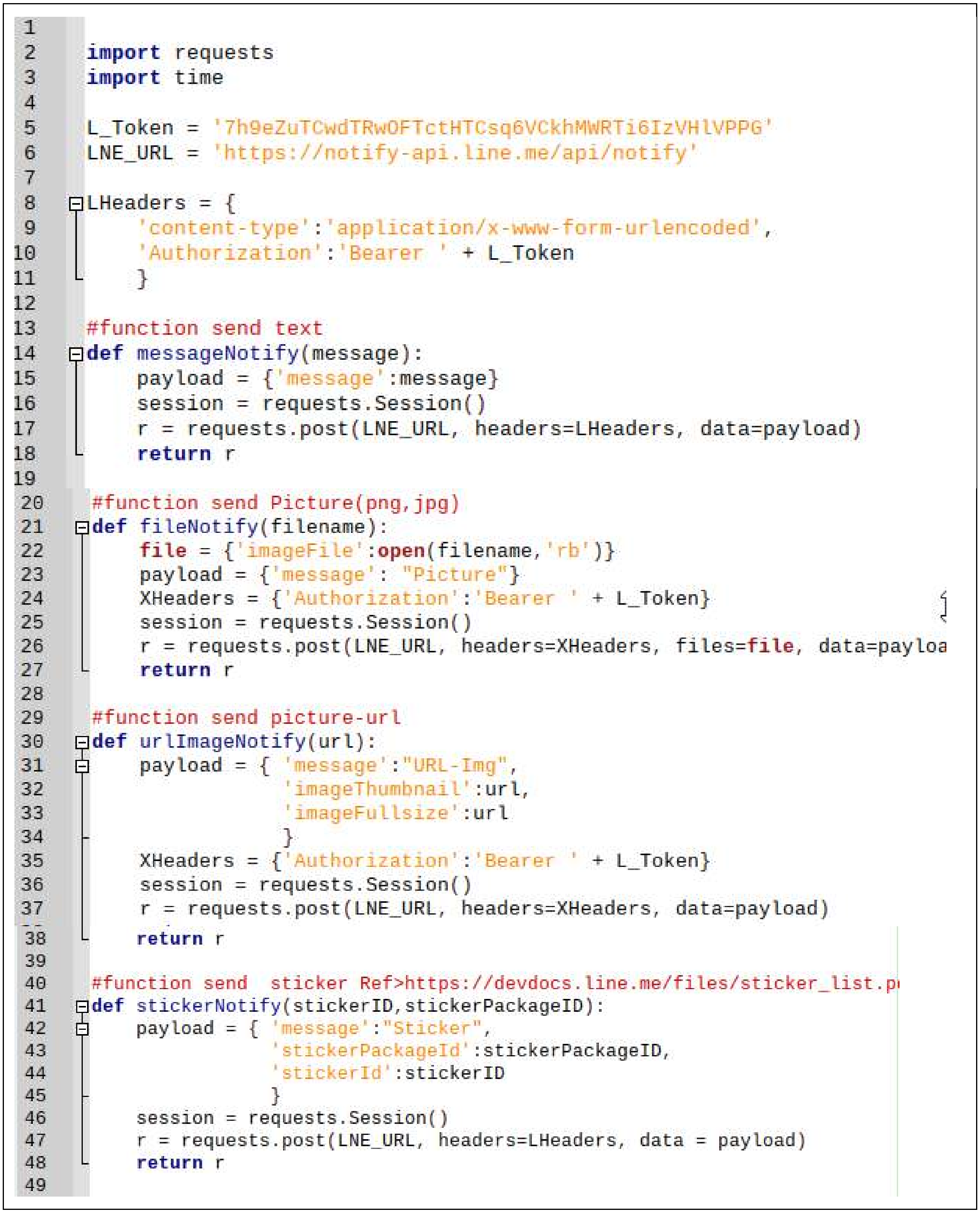
```

import requests
token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG'
url = 'https://notify-api.line.me/api/notify'

LHeaders = {
    'content-type':'application/x-www-form-urlencoded',
    'Authorization':'Bearer ' + token
    }

msg = 'Hello Test7749'
r = requests.post(url, headers=LHeaders, data = {'message':msg})
print (r.text)

```



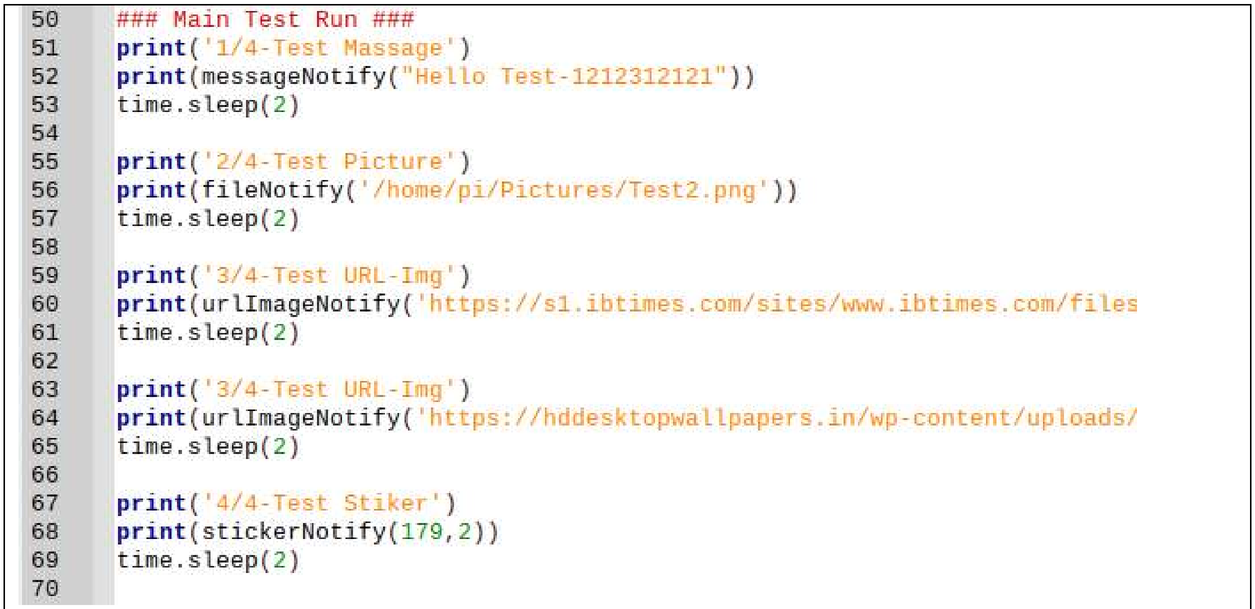
```
{"status":200,"message":"ok"}


------------------
(program exited with code: 0)
Press return to continue
```

5. ทดสอบส่งข้อความ รูปภาพ รูปภาพผ่านลิงค์ และ Sticker

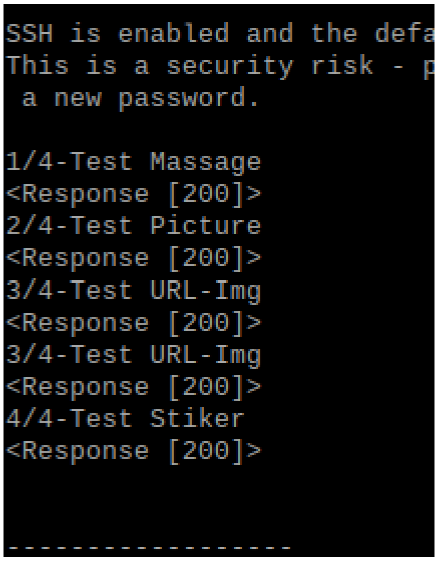
```
import requests
import time

L_Token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG'
LNE_URL = 'https://notify-api.line.me/api/notify'

LHeaders = {
   'content-type':'application/x-www-form-urlencoded',
   'Authorization':'Bearer ' + L_Token
   }

#function send text
def messageNotify(message):
   payload = {'message':message}
   session = requests.Session()
   r = requests.post(LNE_URL, headers=LHeaders, data=payload)
   return r

#function send Picture(png,jpg)
def fileNotify(filename):
   file = {'imageFile':open(filename,'rb')}
   payload = {'message': "Picture"}
   XHeaders = {'Authorization':'Bearer ' + L_Token}
   session = requests.Session()
   r = requests.post(LNE_URL, headers=XHeaders, files=file, data=payload)
   return r

#function send picture-url
def urlImageNotify(url):
   payload = {           'message':"URL-Img",
                         'imageThumbnail':url,
                         'imageFullsize':url
                         }
   XHeaders = {'Authorization':'Bearer ' + L_Token}
   session = requests.Session()
   r = requests.post(LNE_URL, headers=XHeaders, data=payload)
   return r

#function send  sticker Ref>https://devdocs.line.me/files/sticker_list.pdf
def stickerNotify(stickerID,stickerPackageID):
   payload = {           'message':"Sticker",
                         'stickerPackageId':stickerPackageID,
                         'stickerId':stickerID
                         }
   session = requests.Session()
   r = requests.post(LNE_URL, headers=LHeaders, data = payload)
   return r

### Main Test Run ###
print('1/4-Test Massage')
print(messageNotify("Hello Test-1212312121"))
time.sleep(2)

print('2/4-Test Picture')
print(fileNotify('/home/pi/Pictures/Test2.png'))
time.sleep(2)

print('3/4-Test URL-Img')
print(urlImageNotify('https://s1.ibtimes.com/sites/www.ibtimes.com/files/styles/full/public/2017/05/26/ladybug-7435621920.jpg'))
time.sleep(2)

print('3/4-Test URL-Img')
print(urlImageNotify('https://hddesktopwallpapers.in/wp-content/uploads/2015/09/insect-picture.jpg'))
time.sleep(2)

print('4/4-Test Stiker')
print(stickerNotify(179,2))
time.sleep(2)
```



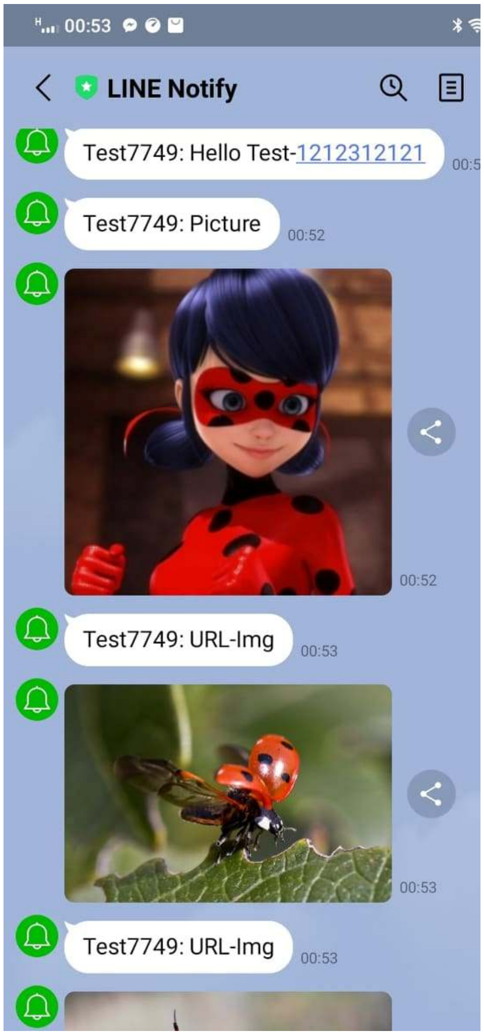
```

import requests
import time

L_Token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG'
LNE_URL = 'https://notify-api.line.me/api/notify'

LHeaders = {
    'content-type':'application/x-www-form-urlencoded',
    'Authorization':'Bearer ' + L_Token
    }

#function send text
def messageNotify(message):
    payload = {'message':message}
    session = requests.Session()
    r = requests.post(LNE_URL, headers=LHeaders, data=payload)
    return r

#function send Picture(png,jpg)
def fileNotify(filename):
    file = {'imageFile':open(filename,'rb')}
    payload = {'message': "Picture"}
    XHeaders = {'Authorization':'Bearer ' + L_Token}
    session = requests.Session()
    r = requests.post(LNE_URL, headers=XHeaders, files=file, data=payloa
    return r

#function send picture-url
def urlImageNotify(url):
    payload = { 'message':"URL-Img",
                'imageThumbnail':url,
                'imageFullsize':url
                }
    XHeaders = {'Authorization':'Bearer ' + L_Token}
    session = requests.Session()
    r = requests.post(LNE_URL, headers=XHeaders, data=payload)
    return r

#function send  sticker Ref>https://devdocs.line.me/files/sticker_list.p
def stickerNotify(stickerID,stickerPackageID):
    payload = { 'message':"Sticker",
                'stickerPackageId':stickerPackageID,
                'stickerId':stickerID
                }
    session = requests.Session()
    r = requests.post(LNE_URL, headers=LHeaders, data = payload)
    return r

```



```
### Main Test Run ###
print('1/4-Test Massage')
print(messageNotify("Hello Test-1212312121"))
time.sleep(2)

print('2/4-Test Picture')
print(fileNotify('/home/pi/Pictures/Test2.png'))
time.sleep(2)

print('3/4-Test URL-Img')
print(urlImageNotify('https://s1.ibtimes.com/sites/www.ibtimes.com/files
time.sleep(2)

print('3/4-Test URL-Img')
print(urlImageNotify('https://hddesktopwallpapers.in/wp-content/uploads/
time.sleep(2)

print('4/4-Test Stiker')
print(stickerNotify(179,2))
time.sleep(2)

```



```
SSH is enabled and the defa
This is a security risk - p
 a new password.

1/4-Test Massage
<Response [200]>
2/4-Test Picture
<Response [200]>
3/4-Test URL-Img
<Response [200]>
3/4-Test URL-Img
<Response [200]>
4/4-Test Stiker
<Response [200]>


------------------
```



Test7749: Hello Test-1212312121 00:5

Test7749: Picture 00:52

00:52

Test7749: URL-Img 00:53

00:53

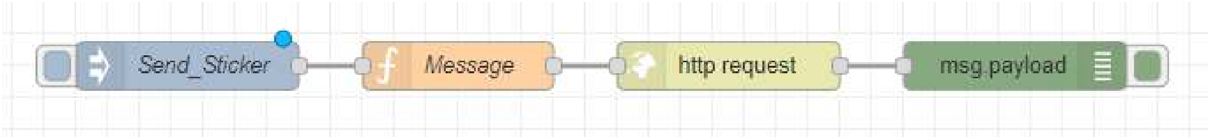
Test7749: URL-Img 00:53

4/6 - การโปรแกรมเพื่อแจ้งเตือนผ่าน LINE ด้วย Node-RED

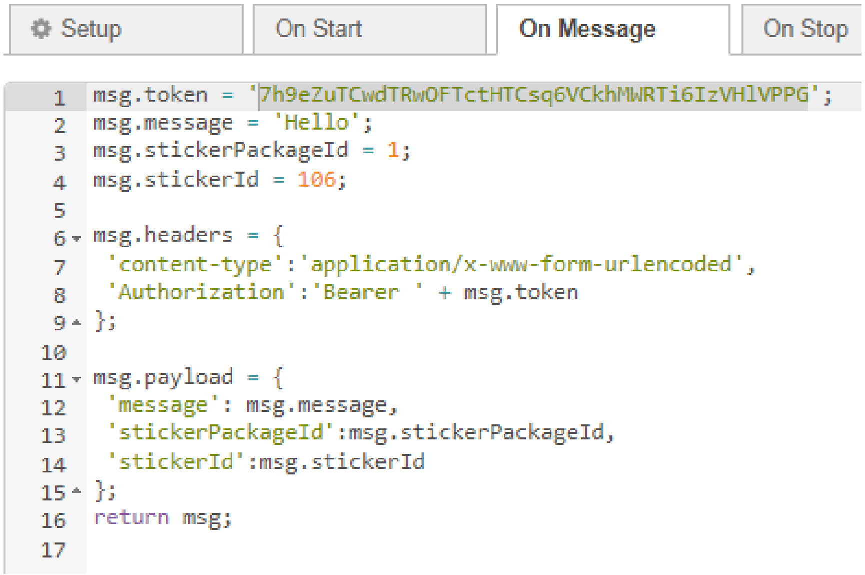
https://jackrobotics.me/จับ-line-notify-ยัด-node-red-โดยใช้ความสามารถเดิมของ-node-red-1730d83c067c

Lab404 – LINE Notify with NODE-RED

1. Send Sticker with Node-RED



[{"id":"50d97bcf.d02684","type":"tab","label":"Flow LINE","disabled":false,"info":""},{"id":"8cb66889.d96b28","type":"http request","z":"50d97bcf.d02684","name":"","method":"POST","ret":"txt","paytoqs":"ignore","url":"https://notify-api.line.me/api/notify","tls":"","persist":false,"proxy":"","authType":"","x":530,"y":200,"wires":[["6d47b0ce.054b2"]]},{"id":"6d47b0ce.054b2","type":"debug","z":"50d97bcf.d02684","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","statusVal":"","statusType":"auto","x":710,"y":200,"wires":[]},{"id":"51ef834a.3d95ec","type":"function","z":"50d97bcf.d02684","name":"Message","func":"msg.token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG';\nmsg.message = 'Hello';\nmsg.stickerPackageId = 1;\nmsg.stickerId = 106;\n\nmsg.headers = {\n 'content-type':'application/x-www-form-urlencoded',\n 'Authorization':'Bearer ' + msg.token\n};\n\nmsg.payload = {\n 'message': msg.message,\n 'stickerPackageId':msg.stickerPackageId,\n 'stickerId':msg.stickerId\n};\nreturn msg;\n","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":360,"y":200,"wires":[["8cb66889.d96b28"]]},{"id":"75e765f7.d089fc","type":"inject","z":"50d97bcf.d02684","name":"Send_Sticker","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"","crontab":"","once":false,"onceDelay":0.1,"topic":"","payload":"","payloadType":"date","x":190,"y":200,"wires":[["51ef834a.3d95ec"]]}]



```
msg.token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG';
msg.message = 'Hello';
msg.stickerPackageId = 1;
msg.stickerId = 106;

msg.headers = {
  'content-type':'application/x-www-form-urlencoded',
  'Authorization':'Bearer ' + msg.token
};

msg.payload = {
  'message': msg.message,
  'stickerPackageId':msg.stickerPackageId,
  'stickerId':msg.stickerId
};
return msg;
```

Change

# Token Key in function

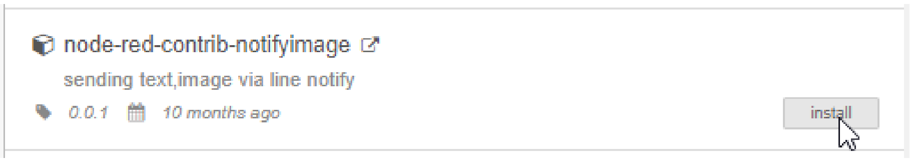
# Massage

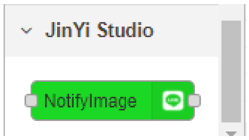
# Sticker Packed ID

# Sticker ID

Sticker List: https://devdocs.line.me/files/sticker_list.pdf

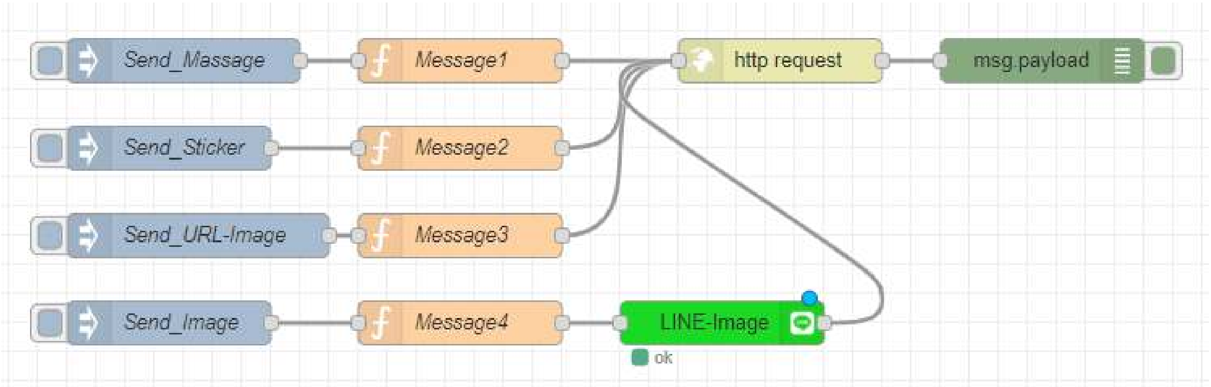
2. Send Massage, Image, URL-Image, Sticker with Node-RED


node-red-contrib-notifyimage
sending text,image via line notify
0.0.1
10 months ago
install



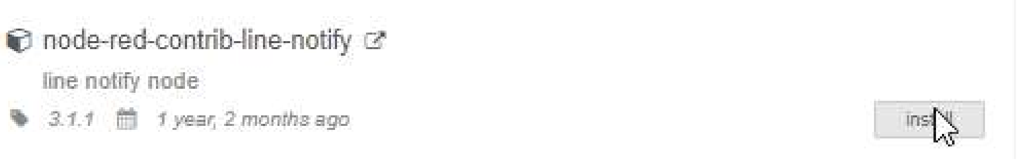
Add Node =
node-red-contrib-notifyimage
V0.0.1

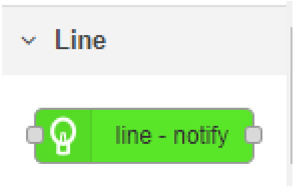
[{"id":"50d97bcf.d02684","type":"tab","label":"Flow LINE","disabled":false,"info":""},{"id":"8cb66889.d96b28","type":"http request","z":"50d97bcf.d02684","name":"","method":"POST","ret":"txt","paytoqs":"ignore","url":"https://notify-api.line.me/api/notify","tls":"","persist":false,"proxy":"","authType":"","x":590,"y":200,"wires":[["6d47b0ce.054b2"]]},{"id":"6d47b0ce.054b2","type":"debug","z":"50d97bcf.d02684","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","targetType":"msg","statusVal":"","statusType":"auto","x":770,"y":200,"wires":[]},{"id":"51ef834a.3d95ec","type":"function","z":"50d97bcf.d02684","name":"Message1","func":"var token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG';\nvar message = 'LINE-Massage Test-12123';\n\nmsg.headers = {\n   'content-type':'application/x-www-form-urlencoded',\n   'Authorization':'Bearer ' + token\n};\n\nmsg.payload = {\n   'message': message\n};\nreturn msg;\n","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":370,"y":200,"wires":[["8cb66889.d96b28"]]},{"id":"75e765f7.d089fc","type":"inject","z":"50d97bcf.d02684","name":"Send_Massage","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"","crontab":"","once":false,"onceDelay":0.1,"topic":"","payload":"","payloadType":"date","x":180,"y":200,"wires":[["51ef834a.3d95ec"]]},{"id":"80860978.fca738","type":"inject","z":"50d97bcf.d02684","name":"Send_Sticker","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"","crontab":"","once":false,"onceDelay":0.1,"topic":"","payload":"","payloadType":"date","x":170,"y":260,"wires":[["d94f6383.f36cc"]]},{"id":"3a6e1caf.c237f4","type":"function","z":"50d97bcf.d02684","name":"Message3","func":"\nvar url_img = 'https://s1.ibtimes.com/sites/www.ibtimes.com/files/styles/full/public/2017/05/26/ladybug-7435621920.jpg';\n// var url_img = 'https://hddesktopwallpapers.in/wp-content/uploads/2015/09/insect-picture.jpg';\nvar token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG';\nvar message = 'LINE-URL Image';\n\nmsg.headers = {\n   'content-type':'application/x-www-form-urlencoded',\n 'Authorization':'Bearer ' + token\n};\n\nmsg.payload = {\n   'message':message,\n\t'imageThumbnail':url_img,\n\t'imageFullsize':url_img\n   };\n\nreturn msg;\n","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":370,"y":320,"wires":[["8cb66889.d96b28"]]},{"id":"77d0259a.f90a3c","type":"inject","z":"50d97bcf.d02684","name":"Send_URL-Image","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"","crontab":"","once":false,"onceDelay":0.1,"topic":"","payload":"","payloadType":"date","x":190,"y":320,"wires":[["3a6e1caf.c237f4"]]},{"id":"996e05a5.2b4c98","type":"inject","z":"50d97bcf.d02684","name":"Send_Image","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"","crontab":"","once":false,"onceDelay":0.1,"topic":"","payload":"Hallo Image Test","payloadType":"str","x":170,"y":380,"wires":[["997fd0d3.27d59"]]},{"id":"d94f6383.f36cc","type":"function","z":"50d97bcf.d02684","name":"Message2","func":"var token = '7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG';\nvar message = 'LINE-Sticker';\nvar stickerPackageId = 1;\nvar stickerId = 106;\n\nmsg.headers = {\n   'content-type':'application/x-www-form-urlencoded',\n   'Authorization':'Bearer ' + token\n};\n\nmsg.payload = {\n   'message': message,\n   'stickerPackageId':stickerPackageId,\n 'stickerId':stickerId\n};\n\nreturn msg;\n","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":370,"y":260,"wires":[["8cb66889.d96b28"]]},{"id":"7edcb5f1.7e8d1c","type":"NotifyImage","z":"50d97bcf.d02684","name":"LINE-Image","tmsg":"","imgfile":"/home/pi/Pictures/Test2.png","AccToken":"7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6IzVHlVPPG","x":550,"y":380,"wires":[["8cb66889.d96b28"]]},{"id":"997fd0d3.27d59","type":"function","z":"50d97bcf.d02684","name":"Message4","func":"var message = 'Send Image Data';\nmsg.payload = message;\nreturn msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":370,"y":380,"wires":[["7edcb5f1.7e8d1c"]]}]



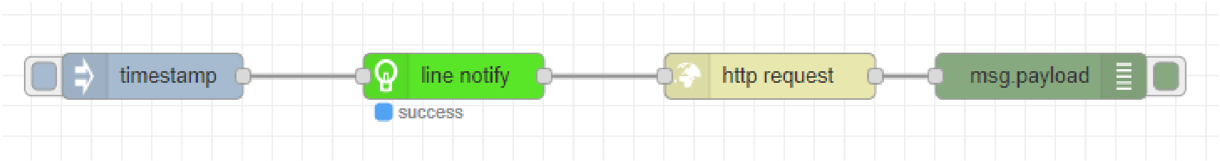
Function Change	LINE Image Change
# Token Key in function	# Token Key in function
# Massage	# Massage
# Sticker Packed ID, Sticker ID	# Image File
# Image URL	

3. ทดสอบการใช้งานด้วย LINE-Notify node



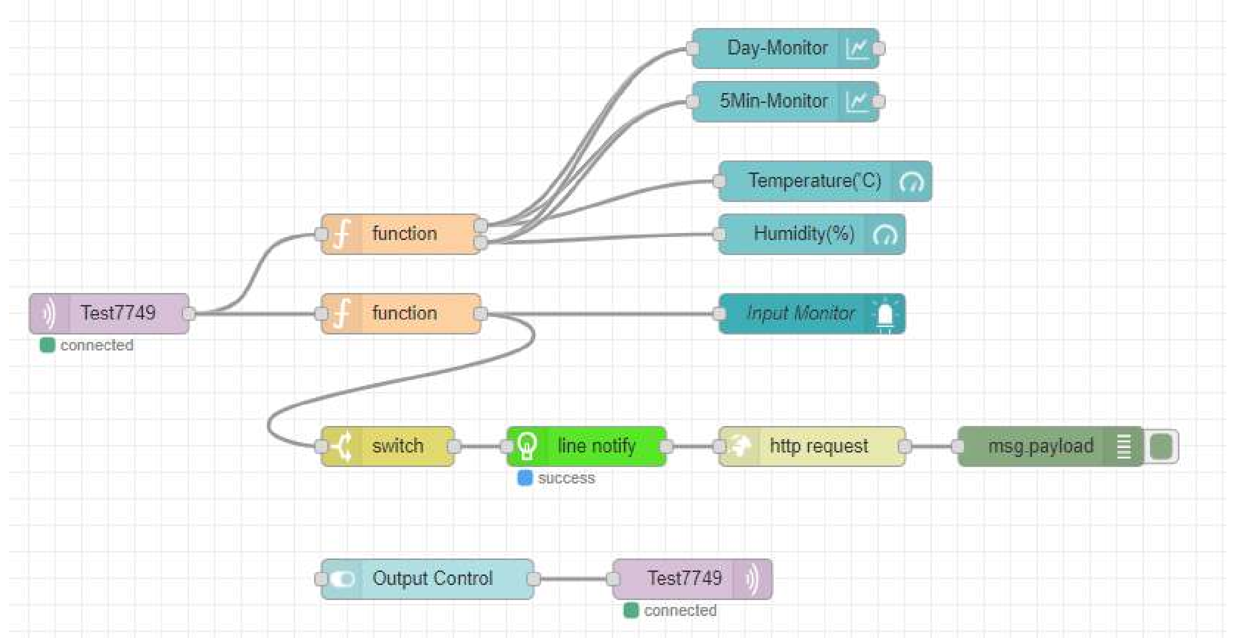


Add Node =
node-red-contrib-line-notify
V03.1.1



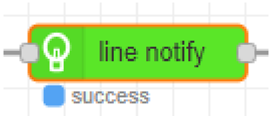
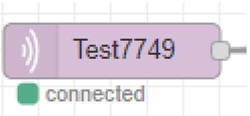
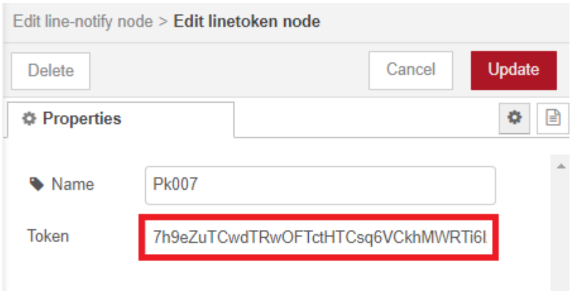
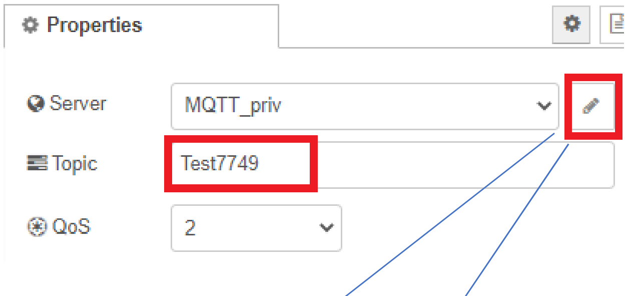
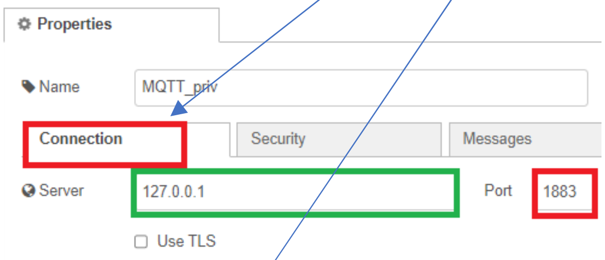
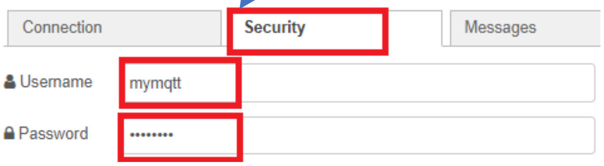
```
[{"id":"6790d352.2280ac","type":"tab","label":"Flow 2","disabled":false,"info":""},{"id":"ca2e8cd2.5bd98","type":"line-notify","z":"6790d352.2280ac","name":"","message":"Test-
wichai
1212312121","contentType":"message","imageThumbnail":"","imageUrl":"","sticker":"default","stickerPackageId":"11","stickerId":"1","silent":false,"creds":"e7f1169c.042098","x":
420,"y":180,"wires":[["15fc8190.012b2e"]]},{"id":"15fc8190.012b2e","type":"http
request","z":"6790d352.2280ac","name":"","method":"POST","ret":"txt","paytoqs":"ignore","url":"https://notify-
api.line.me/api/notify","tls":"","persist":false,"proxy":"","authType":"","x":630,"y":180,"wires":[["b23ae221.44489"]]},{"id":"b23ae221.44489","type":"debug","z":"6790d352.2280a
c","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","targetType":"msg","statusVal":"","statusType":"auto","x":810,"y":180,"wires":[]}
,{"id":"88d3a65e.a258c8","type":"inject","z":"6790d352.2280ac","name":"","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"","crontab":"","once":false,"onceDelay":0.1,
"topic":"","payload":"","payloadType":"date","x":220,"y":180,"wires":[["ca2e8cd2.5bd98"]]},{"id":"e7f1169c.042098","type":"linetoken","name":"Pk007"}]
```

4. If Press Switch 0 on ESP32 then LINE Alert

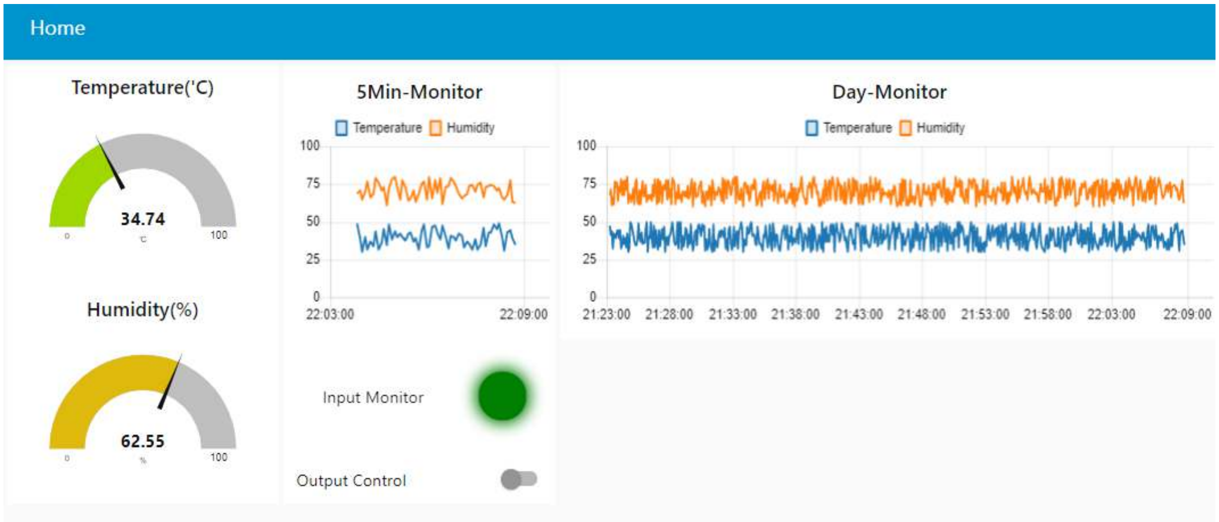


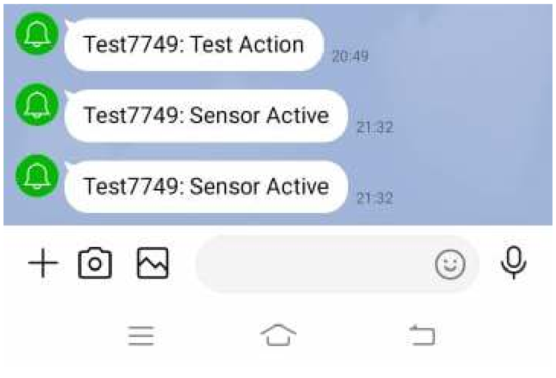
```
[{"id":"b4545e9a.9b369","type":"tab","label":"Flow 1","disabled":false,"info":""},{"id":"111e9d5c.f217e3","type":"mqtt
in","z":"b4545e9a.9b369","name":"","topic":"Test7749","qos":"2","datatype":"auto","broker":"7436b594.5bbf3c","nl":false,"rap":true,"rh":0,"x":80,"y":380,"wires":[["ffe782c.47e0
28","82029a36.1810a8"]]},{"id":"ffe782c.47e028","type":"function","z":"b4545e9a.9b369","name":"","func":"// Tempp=38.20,Humid=73.52 \n\nvar msg1 = {};\nvar msg2 =
{};\n\nvar output = msg.payload.split(\",\");\n\nvar sTempp = output[0].split(\"=\");\nmsg1.payload = sTempp[1];\nmsg1.topic = 'Temperature';\n\nvar sHumid =
output[1].split(\"=\");\nmsg2.payload = sHumid[1];\nmsg2.topic = 'Humidity';\n\nreturn
[msg1,msg2];","outputs":2,"noerr":0,"initialize":"","finalize":"","libs":[],"x":300,"y":320,"wires":[["c96d025.dfdd7","7cc448ff.dcfe38","800789e1.2a4a88"],["2d1291a4.754b5e","800
789e1.2a4a88","7cc448ff.dcfe38"]]},{"id":"c96d025.dfdd7","type":"ui_gauge","z":"b4545e9a.9b369","name":"","group":"29de1dd2.698e12","order":2,"width":"5","height":"4","gty
pe":"gage","title":"Temperature('C)","label":"'C","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e600","#ca3838"],"seg1":"","seg2":"","x":620,"y":280,"wires":[]
},{"id":"7cc448ff.dcfe38","type":"ui_chart","z":"b4545e9a.9b369","name":"","group":"67163726.764658","order":1,"width":"5","height":"5","label":"5Min-
Monitor","chartType":"line","legend":"true","xformat":"HH:mm:ss","interpolate":"linear","nodata":"","dot":false,"ymin":"0","ymax":"100","removeOlder":"5","removeOlderPoints
":"","removeOlderUnit":"60","cutout":0,"useOneColor":false,"useUTC":false,"colors":["#1f77b4","#ff7f0e","#0fffef","#2ca02c","#98df8a","#d62728","#ff9896","#9467bd","#c5b0d5"
],"outputs":1,"useDifferentColor":false,"x":590,"y":220,"wires":[[]]},{"id":"800789e1.2a4a88","type":"ui_chart","z":"b4545e9a.9b369","name":"","group":"70b4a6cc.14fd78","order"
:0,"width":"12","height":"5","label":"Day-
Monitor","chartType":"line","legend":"true","xformat":"HH:mm:ss","interpolate":"linear","nodata":"","dot":false,"ymin":"0","ymax":"100","removeOlder":1,"removeOlderPoints":
"","removeOlderUnit":"86400","cutout":0,"useOneColor":false,"useUTC":false,"colors":["#1f77b4","#ff7f0e","#0fffef","#2ca02c","#98df8a","#d62728","#ff9896","#9467bd","#c5b0d
5"],"outputs":1,"useDifferentColor":false,"x":590,"y":180,"wires":[[]]},{"id":"2d1291a4.754b5e","type":"ui_gauge","z":"b4545e9a.9b369","name":"","group":"29de1dd2.698e12","or
der":4,"width":"5","height":"4","gtype":"gage","title":"Humidity(%)","label":"%","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e600","#ca3838"],"seg1":"","se
g2":"","x":610,"y":320,"wires":[]},{"id":"735b6bbd.28ef84","type":"ui_led","z":"b4545e9a.9b369","order":2,"group":"67163726.764658","width":"5","height":"2","label":"Input
Monitor","labelPlacement":"left","labelAlignment":"center","colorForValue":[{"color":"#ff0000","value":"true","valueType":"bool"},{"color":"#008000","value":"false","valueType":
"bool"}],"allowColorForValueInMessage":false,"shape":"circle","showGlow":true,"name":"Input
Monitor","x":610,"y":380,"wires":[]},{"id":"57b6fa14.a6a764","type":"ui_switch","z":"b4545e9a.9b369","name":"","label":"Output
Control","tooltip":"","group":"67163726.764658","order":2,"width":"5","height":"1","passthru":true,"decouple":"false","topic":"topic","topicType":"msg","style":"","onvalue":"ON
1","onvalueType":"str","onicon":"","oncolor":"","offvalue":"OFF1","offvalueType":"str","officon":"","offcolor":"","animate":false,"x":320,"y":580,"wires":[["cf7925d7.59d308"]]},{"i
d":"cf7925d7.59d308","type":"mqtt
out","z":"b4545e9a.9b369","name":"","topic":"Test7749","qos":"","retain":"","respTopic":"","contentType":"","userProps":"","correl":"","expiry":"","broker":"7436b594.5bbf3c","x
":520,"y":580,"wires":[]},{"id":"82029a36.1810a8","type":"function","z":"b4545e9a.9b369","name":"","func":"\nvar stsNow = context.global.sts;\nif (msg.payload == 'SW_ON') {\n
stsNow = true;\n}\nif (msg.payload == 'SW_OFF') {\n    stsNow = false;\n}\ncontext.global.sts = stsNow;\nmsg.payload = stsNow;\n\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":300,"y":380,"wires":[["735b6bbd.28ef84","1b1fb1d5.7dfa5e"]]},{"id":"712bba79.2f1a44","type":"line-
notify","z":"b4545e9a.9b369","name":"","message":"Sensor Active
XXXXXXXXXXXXXX","contentType":"message","imageThumbnail":"","imageUrl":"","sticker":"default","stickerPackageId":"11","stickerId":"1","silent":false,"creds":"19d67910.19d69
7","x":440,"y":480,"wires":[["5cc4b560.7f147c"]]},{"id":"5cc4b560.7f147c","type":"http
request","z":"b4545e9a.9b369","name":"","method":"POST","ret":"txt","paytoqs":"ignore","url":"https://notify-
api.line.me/api/notify","tls":"","persist":false,"proxy":"","authType":"","x":610,"y":480,"wires":[["ad97f101.44399"]]},{"id":"ad97f101.44399","type":"debug","z":"b4545e9a.9b369"
,"name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","targetType":"msg","statusVal":"","statusType":"auto","x":790,"y":480,"wires":[]},{"
id":"1b1fb1d5.7dfa5e","type":"switch","z":"b4545e9a.9b369","name":"","property":"payload","propertyType":"msg","rules":[{"t":"eq","v":"1","vt":"str"}],"checkall":"true","repair"
:false,"outputs":1,"x":290,"y":480,"wires":[["712bba79.2f1a44"]]},{"id":"7436b594.5bbf3c","type":"mqtt-
broker","name":"MQTT_priv","broker":"127.0.0.1","port":"1883","clientid":"","usetls":false,"protocolVersion":"4","keepalive":"60","cleansession":true,"birthTopic":"","birthQos":"
0","birthPayload":"","birthMsg":{},"closeTopic":"","closeQos":"0","closePayload":"","closeMsg":{},"willTopic":"","willQos":"0","willPayload":"","willMsg":{},"sessionExpiry":""},{"id"
:"29de1dd2.698e12","type":"ui_group","name":"1","tab":"67e2957.e504f6c","order":1,"disp":false,"width":"5","collapse":false},{"id":"67163726.764658","type":"ui_group","name"
:"2","tab":"67e2957.e504f6c","order":2,"disp":false,"width":"5","collapse":false},{"id":"70b4a6cc.14fd78","type":"ui_group","name":"3","tab":"67e2957.e504f6c","order":3,"disp":f
alse,"width":"12","collapse":false},{"id":"19d67910.19d697","type":"linetoken","name":"LINE2Me"},{"id":"67e2957.e504f6c","type":"ui_tab","name":"Home","icon":"dashboard","
disabled":false,"hidden":false}]
```

4.1 แก้ไข

1. LINE Token Key	2. MQTT Server {IP, Topic}
 	
 Edit line-notify node > **Edit linetoken node** Name: Pk007 Token: 7h9eZuTCwdTRwOFTctHTCsq6VCkhMWRTi6l	 Server: MQTT_priv Topic: Test7749 QoS: 2
	 Name: MQTT_priv Server: 127.0.0.1 Port: 1883 □ Use TLS
	 Username: mymqtt Password: ••••••••

4.2 ผลการทดสอบ





Test7749: Test Action 20:49

Test7749: Sensor Active 21:32

Test7749: Sensor Active 21:32

5/6 - การโปรแกรมเพื่อโต้ตอบกับผู้ใช้งานผ่าน Chatbot LINE

https://www.youtube.com/watch?v=PO_5fD47HlE

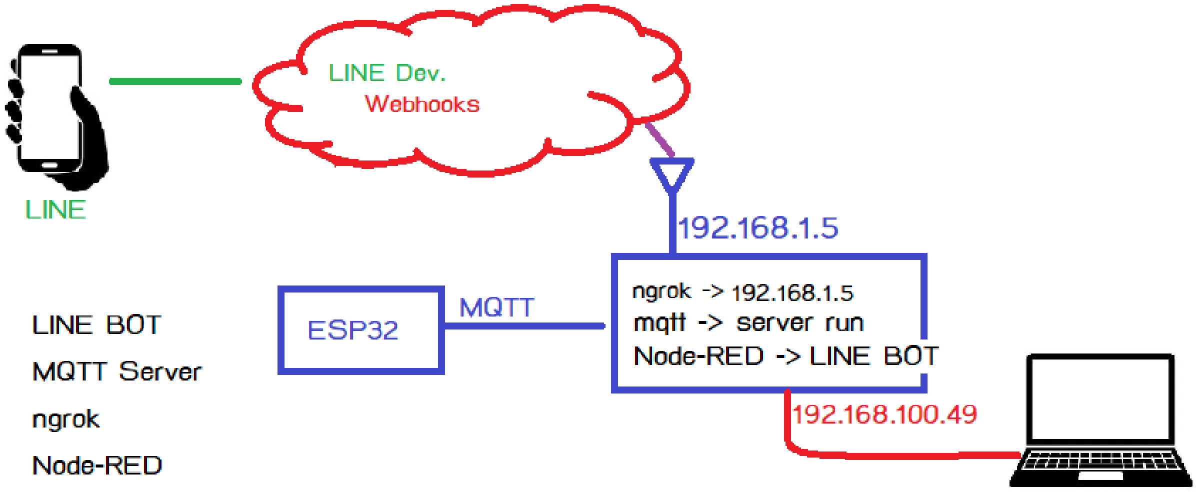
https://www.youtube.com/watch?v=4KKIEmWYCGQ

https://thisdavej.com/how-to-host-a-raspberry-pi-web-server-on-the-internet-with-ngrok/

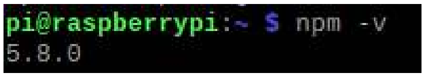
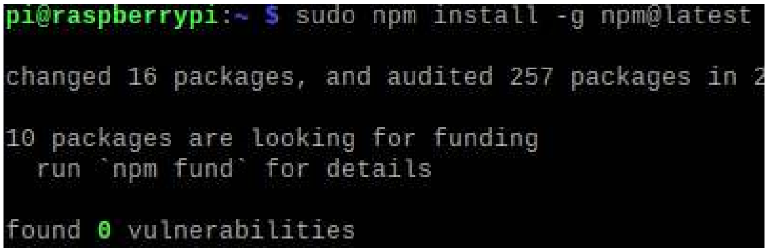
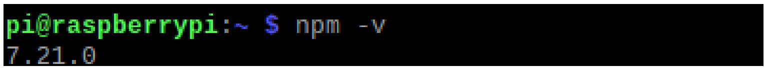
https://medium.com/@nattaponsirikamonnet/สร้าง-bot-ด้วย-line-messaging-api-d7de644ac892

Lab405 – LINE Chatbot with NODE-RED

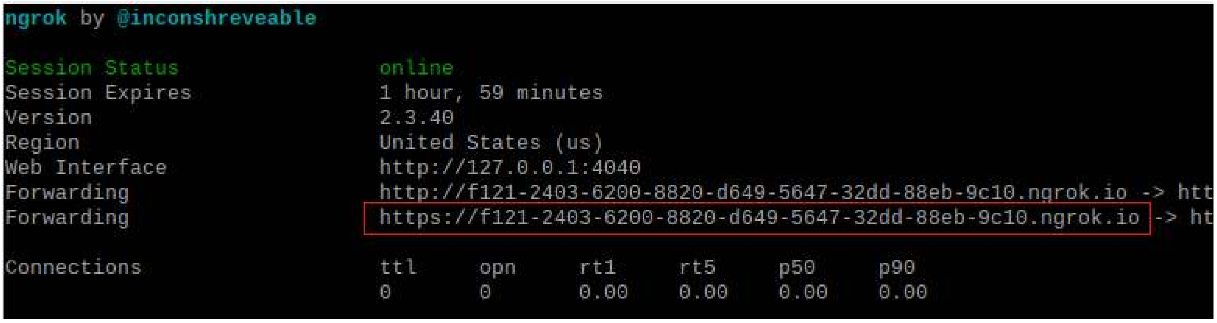
1. ระบบที่ทดสอบ



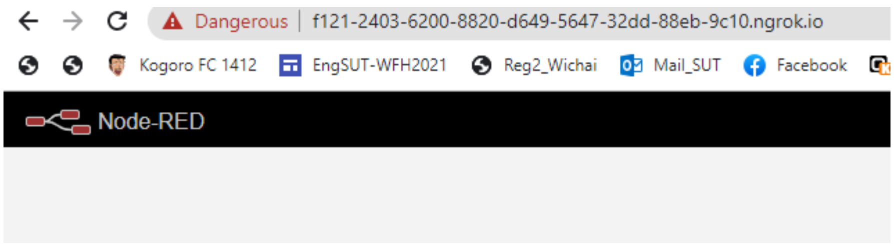
2. ติดตั้ง ngrok เพื่อทำ port forwarding

npm -v	ตรวจสอบ npm Version
 pi@raspberrypi:~ $ npm -v 5.8.0	
sudo npm install -g npm@latest	Update npm
 pi@raspberrypi:~ $ sudo npm install -g npm@latest changed 16 packages, and audited 257 packages in 2 10 packages are looking for funding run `npm fund` for details found 0 vulnerabilities	ล่าสุด V 7.21.0
sudo npm install --unsafe-perm -g ngrok	Install ngrok
sudo reboot	
npm -v	
 pi@raspberrypi:~ $ npm -v 7.21.0	V 7.21.0

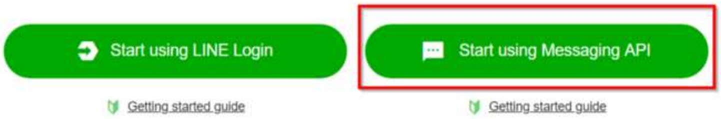
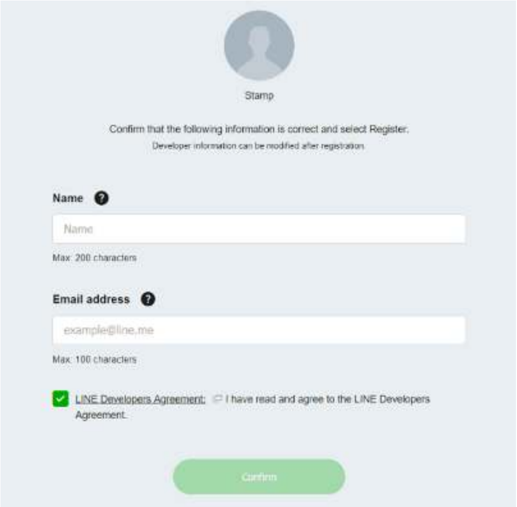
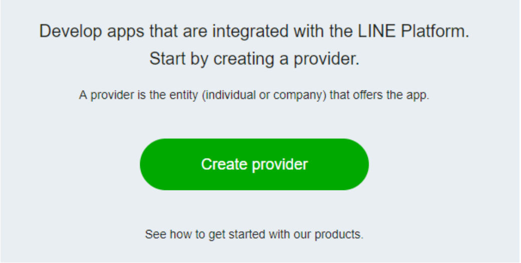
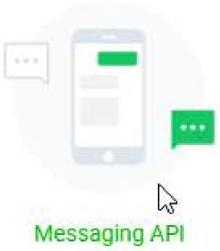
ngrok http 192.168.1.5:1880	Start ngrok

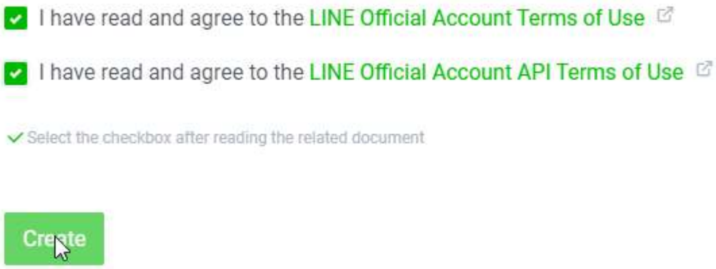
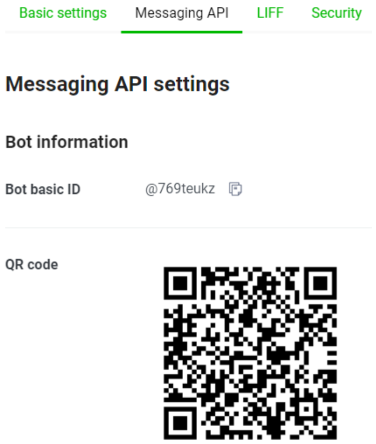


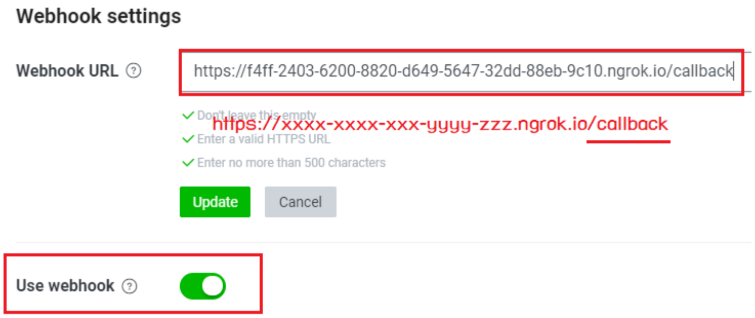
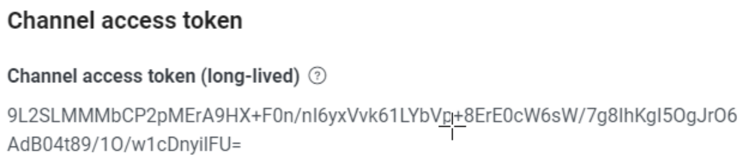
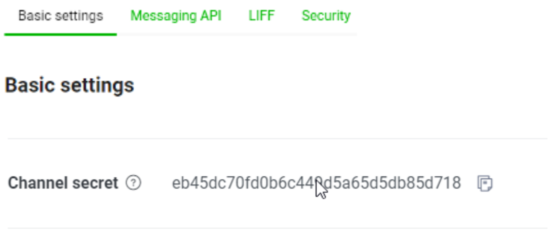
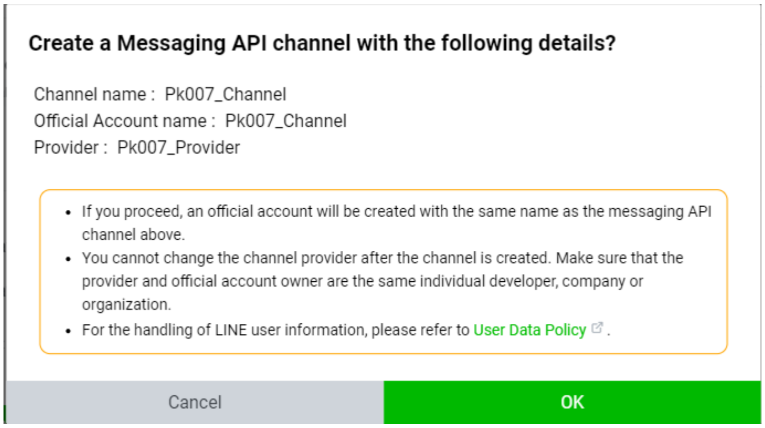
```
ngrok by @inconshreveable

Session Status                online
Session Expires               1 hour, 59 minutes
Version                       2.3.40
Region                        United States (us)
Web Interface                 http://127.0.0.1:4040
Forwarding                    http://f121-2403-6200-8820-d649-5647-32dd-88eb-9c10.ngrok.io -> htt
Forwarding                    https://f121-2403-6200-8820-d649-5647-32dd-88eb-9c10.ngrok.io -> ht

Connections                   ttl     opn     rt1     rt5     p50     p90
                              0       0       0.00    0.00    0.00    0.00
```

 Dangerous f121-2403-6200-8820-d649-5647-32dd-88eb-9c10.ngrok.io Kogoro FC 1412 EngSUT-WFH2021 Reg2_Wichai Mail_SUT Facebook Node-RED	start node-red เพื่อ ทดสอบ ngrok ทดสอบเข้าใช้งานผ่าน web browser

3. เข้าใช้งานและตั้งค่า LINE Bot

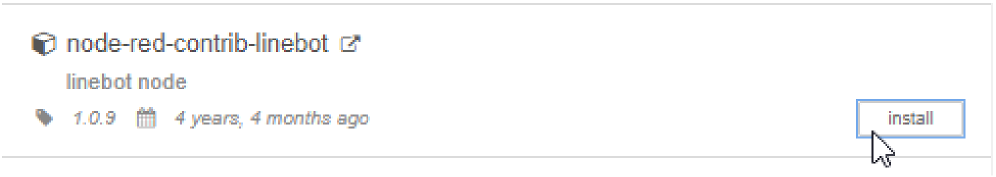
3.1 login LINE Bot >> https://developers.line.biz/en/	
3.2 เลือก Start Using Massing API	
 Start using LINE Login Start using Messaging API Getting started guide Getting started guide	
3.3 จากนั้น Login ด้วย email และ password ที่ได้ผูกไว้กับแอปพลิเคชัน line	
3.4 หลังจาก Login แล้ว หน้าถัดไปให้ใส่ชื่อที่จะต้องแสดงบนหน้า console และใส่ email ที่ต้องการให้เป็น admin (แนะนำให้ใส่เป็น email ที่ login เข้ามาเมื่อสักครู่)	
Stamp Confirm that the following information is correct and select Register. Developer information can be modified after registration. Name Name Max: 200 characters Email address example@line.me Max: 100 characters ☑ LINE Developers Agreement: I have read and agree to the LINE Developers Agreement. Confirm	
3.5 จากนั้นกด Create Provider -- > กำหนดชื่อ → เลือก Massaging API	>> Pk007_Provider
Develop apps that are integrated with the LINE Platform. Start by creating a provider. A provider is the entity (individual or company) that offers the app. Create provider See how to get started with our products.	
3.6 สร้าง Channel ใน Provider เลือก Massage API	>> Pk007_Channel
	

3.7 กำหนดชื่อ Channel Name - - , Create	
 ☑ I have read and agree to the LINE Official Account Terms of Use ☑ I have read and agree to the LINE Official Account API Terms of Use ✓ Select the checkbox after reading the related document Create	
3.8 Add Friend	
 Basic settings Messaging API LIFF Security **Messaging API settings** **Bot information** **Bot basic ID** @769teukz **QR code**	

3.9 Set Web Hook	
 **Webhook settings** **Webhook URL** ⓘ https://f4ff-2403-6200-8820-d649-5647-32dd-88eb-9c10.ngrok.io/callback ✓ Don't leave this empty https://xxxx-xxxx-xxx-yyyy-zzz.ngrok.io/callback ✓ Enter a valid HTTPS URL ✓ Enter no more than 500 characters **Use webhook** ⓘ ●	อย่าลืม /callback
3.10 Get Channel Access Token	
 **Channel access token** **Channel access token (long-lived)** ⓘ 9L2SLMMMbCP2pMErA9HX+F0n/nI6yxVvk61LYbVp+8ErE0cW6sW/7g8IhKgI5OgJrO6 AdB04t89/1O/w1cDnyiIFU=	
3.11 Get Chanel Secret	
 **Basic settings** **Channel secret** ⓘ eb45dc70fd0b6c440d5a65d5db85d718	
 **Create a Messaging API channel with the following details?** Channel name : Pk007_Channel Official Account name : Pk007_Channel Provider : Pk007_Provider • If you proceed, an official account will be created with the same name as the messaging API channel above. • You cannot change the channel provider after the channel is created. Make sure that the provider and official account owner are the same individual developer, company or organization. • For the handling of LINE user information, please refer to User Data Policy . 	

4. ตั้งค่า Node-RED

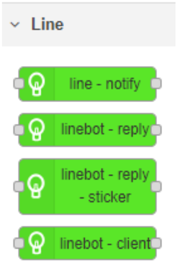
4.1 Add Node


node-red-contrib-linebot

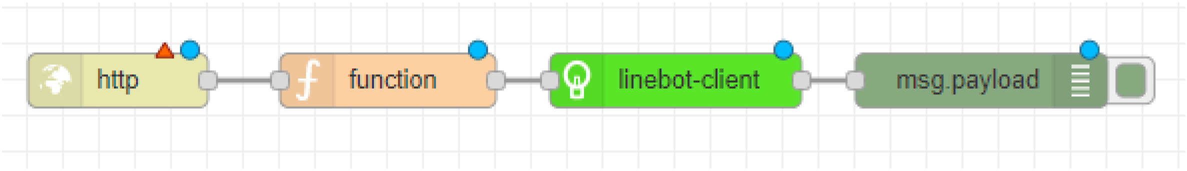
linebot node

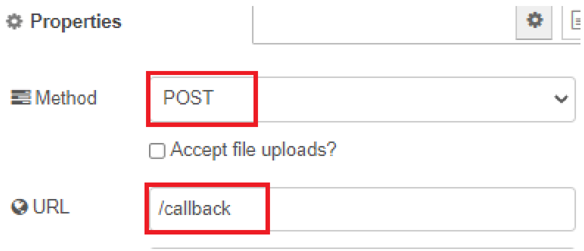
1.0.9 4 years, 4 months ago

install



4.2 place 4 node and config



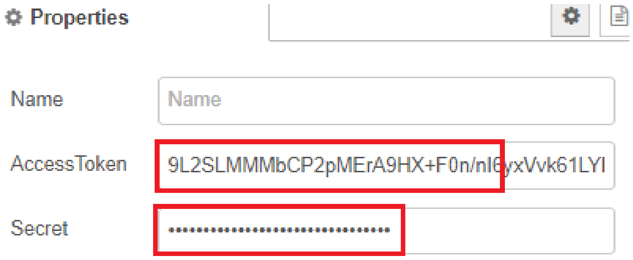

Properties

Method: POST

□ Accept file uploads?

URL: /callback

http


Properties

Name: Name

AccessToken: 9L2SLMMMbCP2pMErA9HX+F0n/nl6yxVvk61LYI

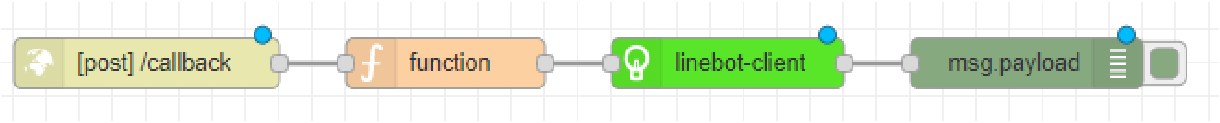
Secret: ••••••••••••••••••••••••••••••••

Linebot-client

```
var receive_msg = msg.payload;
if(receive_msg.events[0].message.type=="text"){
   if(receive_msg.events[0].message.text=="Hello"){
      reply = {type:'text', text:"Hello to"};
}

else if(receive_msg.events[0].message.text=="Sticker"){
   reply = {
      type: "sticker",
      packageId: 11537,
      stickerId: 52002744
   }
}

else if(receive_msg.events[0].message.text=="Sound"){
   reply = {
      type: "audio",
      originalContentUrl: "https://mokmoon.com/audios/line.mp3",
      duration: 1000
   }
}

else if(receive_msg.events[0].message.text=="Video"){
   reply = {
      type: "video",
```

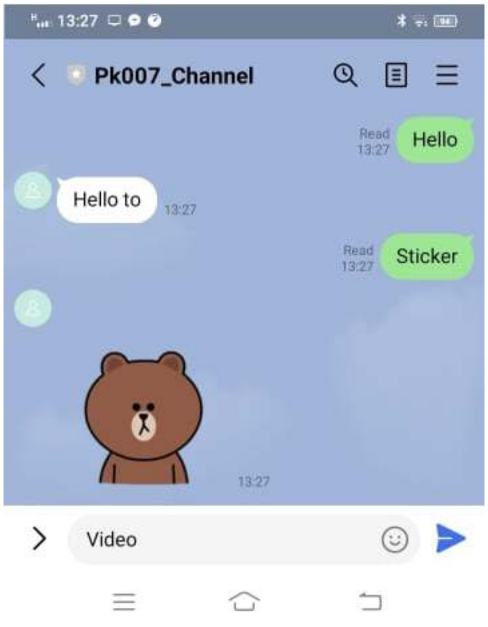
function

```
    originalContentUrl: "https://mokmoon.com/videos/Brown.mp4",
    previewImageUrl: "https://linefriends.com/img/bangolufs..."
  }
}

else{ reply = {type:'text', text:"I Don't Know"}
  }
}

var value = [receive_msg,reply];
msg.payload = value;
return msg;
```



[{"id":"f051a57f.edfdb8","type":"tab","label":"Flow 3","disabled":false,"info":""},{"id":"ca26da3.0998128","type":"linebot-client","z":"f051a57f.edfdb8","name":"","channelAccessToken":"9L2SLMMMbCP2pMErA9HX+F0n/nI6yxVvk61LYbVp+8ErE0cW6sW/7g8IhKgI5OgJrO6+3MwINhLIGdU/70CFYal5qNCBCBWHms7MymW7zybuv591B7Weo21gMky+LVSrl3z2rTbQcwuJjwmNVwsSsAdB04t89/1O/w1cDnyilFU=","channelSecret":"eb45dc70fd0b6c449d5a65d5db85d718","x":510,"y":300,"wires":[["d16c0df5.b432e"]]},{"id":"34e8c7c7.4295a8","type":"http in","z":"f051a57f.edfdb8","name":"","url":"/callback","method":"post","upload":false,"swaggerDoc":"","x":160,"y":300,"wires":[["9c59f23e.f0484"]]},{"id":"9c59f23e.f0484","type":"function","z":"f051a57f.edfdb8","name":"","func":"var receive_msg = msg.payload;\n\nif(receive_msg.events[0].message.type==\"text\")\n   {   if(receive_msg.events[0].message.text==\"Hello\")\n   {   reply = {type:'text', text:\"Hello to\"\n   };\n   }\n   \n   else if(receive_msg.events[0].message.text==\"Sticker\"){\n   reply = {\n   type: \"sticker\",\n   packageId: 11537,\n   stickerId: 52002744\n   }\n   }\n   \n   else if(receive_msg.events[0].message.text==\"Sound\"){\n   reply = {\n   type: \"audio\",\n   originalContentUrl: \"https://mokmoon.com/audios/line.mp3\",\n   duration: 1000 \n   }\n   }\n   \n   else if(receive_msg.events[0].message.text==\"Video\"){\n   reply = {\n   type: \"video\",\n   originalContentUrl: \"https://mokmoon.com/videos/Brown.mp4\",\n   previewImageUrl: \"https://linefriends.com/img/bangolufs...\"\n   }\n   }\n   \n   else\n   {   reply = {\n   type:'text', text:\"i don't know\"\n   }\n   }\n}\n\nvar value = [receive_msg,reply];\nmsg.payload = value;\nreturn msg;\n","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":340,"y":300,"wires":[["ca26da3.0998128"]]},{"id":"d16c0df5.b432e","type":"debug","z":"f051a57f.edfdb8","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"false","statusVal":"","statusType":"auto","x":690,"y":300,"wires":[]}]

5. ทดสอบการทำงาน

 13:27 Pk007_Channel Read 13:27 Hello Hello to 13:27 Read 13:27 Sticker 13:27 Video	Hello Sticker Sound Video

6. ปรับปรุง Node-RED เพื่อโต้ตอบ { Tempp, Humid, Sensor, On, Off }

```
[{"id":"8d8ede65.bc90c","type":"tab","label":"Flow 1","disabled":false,"info":""},{"id":"223e1297.90f16e","type":"mqtt
in","z":"8d8ede65.bc90c","name":"","topic":"Test7749","qos":"2","datatype":"auto","broker":"7436b594.5bbf3c","nl":false,"rap":true,"rh":0,"x":80,"y":380,"wires":[["dcd518f7.44c
468","d74c2697.e45cb8"]]},{"id":"dcd518f7.44c468","type":"function","z":"8d8ede65.bc90c","name":"","func":"// Tempp=38.20,Humid=73.52 \n\nvar msg1 = {};\nvar msg2 =
{};\n\nvar output = msg.payload.split(\",\");\n\nvar sTempp = output[0].split(\"=\");\nmsg1.payload = sTempp[1];\nmsg1.topic = 'Temperature';\n\nvar sHumid =
output[1].split(\"=\");\nmsg2.payload = sHumid[1];\nmsg2.topic = 'Humidity';\n\ncontext.global.tempp = sTempp[1];\ncontext.global.humid = sHumid[1];\n\nreturn
[msg1,msg2];","outputs":2,"noerr":0,"initialize":"","finalize":"","libs":[],"x":300,"y":320,"wires":[["c31e4824.aebf28","8eff3667.95dcf8","77a5ac72.e33644"],["11c2d779.976e69","77
a5ac72.e33644","8eff3667.95dcf8"]]},{"id":"c31e4824.aebf28","type":"ui_gauge","z":"8d8ede65.bc90c","name":"","group":"29de1dd2.698e12","order":2,"width":"5","height":"4","
gtype":"gage","title":"Temperature('C)","label":"'C","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e600","#ca3838"],"seg1":"","seg2":"","x":620,"y":280,"wires
":[]},{"id":"8eff3667.95dcf8","type":"ui_chart","z":"8d8ede65.bc90c","name":"","group":"67163726.764658","order":1,"width":"5","height":"5","label":"5Min-
Monitor","chartType":"line","legend":"true","xformat":"HH:mm:ss","interpolate":"linear","nodata":"","dot":false,"ymin":"0","ymax":"100","removeOlder":"5","removeOlderPoints
":"","removeOlderUnit":"60","cutout":0,"useOneColor":false,"useUTC":false,"colors":["#1f77b4","#ff7f0e","#0fffef","#2ca02c","#98df8a","#d62728","#ff9896","#9467bd","#c5b0d5"
],"outputs":1,"useDifferentColor":false,"x":590,"y":220,"wires":[[]]},{"id":"77a5ac72.e33644","type":"ui_chart","z":"8d8ede65.bc90c","name":"","group":"70b4a6cc.14fd78","order"
:0,"width":"12","height":"5","label":"Day-
Monitor","chartType":"line","legend":"true","xformat":"HH:mm:ss","interpolate":"linear","nodata":"","dot":false,"ymin":"0","ymax":"100","removeOlder":1,"removeOlderPoints":
"","removeOlderUnit":"86400","cutout":0,"useOneColor":false,"useUTC":false,"colors":["#1f77b4","#ff7f0e","#0fffef","#2ca02c","#98df8a","#d62728","#ff9896","#9467bd","#c5b0d
5"],"outputs":1,"useDifferentColor":false,"x":590,"y":180,"wires":[[]]},{"id":"11c2d779.976e69","type":"ui_gauge","z":"8d8ede65.bc90c","name":"","group":"29de1dd2.698e12","or
der":4,"width":"5","height":"4","gtype":"gage","title":"Humidity(%)","label":"%","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e600","#ca3838"],"seg1":"","se
g2":"","x":610,"y":320,"wires":[]},{"id":"9cf31456.952a38","type":"ui_led","z":"8d8ede65.bc90c","order":2,"group":"67163726.764658","width":"5","height":"2","label":"Input
Monitor","labelPlacement":"left","labelAlignment":"center","colorForValue":[{"color":"#ff0000","value":"true","valueType":"bool"},{"color":"#008000","value":"false","valueType":
"bool"}],"allowColorForValueInMessage":false,"shape":"circle","showGlow":true,"name":"Input
Monitor","x":610,"y":380,"wires":[]},{"id":"148b7d53.08ad13","type":"ui_switch","z":"8d8ede65.bc90c","name":"","label":"Output
Control","tooltip":"","group":"67163726.764658","order":2,"width":"5","height":"1","passthru":true,"decouple":"false","topic":"topic","topicType":"msg","style":"","onvalue":"ON
1","onvalueType":"str","onicon":"","oncolor":"","offvalue":"OFF1","offvalueType":"str","officon":"","offcolor":"","animate":false,"x":320,"y":580,"wires":[["e888d28f.66d7b","d9c0
8c8.771a57"]]},{"id":"d9c08c8.771a57","type":"mqtt
out","z":"8d8ede65.bc90c","name":"","topic":"Test7749","qos":"","retain":"","respTopic":"","contentType":"","userProps":"","correl":"","expiry":"","broker":"7436b594.5bbf3c","x
":740,"y":660,"wires":[]},{"id":"d74c2697.e45cb8","type":"function","z":"8d8ede65.bc90c","name":"","func":"\nvar stsNow = context.global.sts;\nif (msg.payload == 'SW_ON') {\n
stsNow = true;\n}\nif (msg.payload == 'SW_OFF') {\n    stsNow = false;\n}\ncontext.global.sts = stsNow;\nmsg.payload = stsNow;\n\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":300,"y":380,"wires":[["9cf31456.952a38","7361a603.940dd8"]]},{"id":"9356efb2.7423c","type":"line-
notify","z":"8d8ede65.bc90c","name":"","message":"Sensor
Active","contentType":"message","imageThumbnail":"","imageUrl":"","sticker":"default","stickerPackageId":"11","stickerId":"1","silent":false,"creds":"e7f1169c.042098","x":440,"y
":480,"wires":[["9a15535c.6306c"]]},{"id":"9a15535c.6306c","type":"http
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api.line.me/api/notify","tls":"","persist":false,"proxy":"","authType":"","x":610,"y":480,"wires":[["74463afa.96bee4"]]},{"id":"74463afa.96bee4","type":"debug","z":"8d8ede65.bc90
c","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","targetType":"msg","statusVal":"","statusType":"auto","x":790,"y":480,"wires":[]}
,{"id":"7361a603.940dd8","type":"switch","z":"8d8ede65.bc90c","name":"","property":"payload","propertyType":"msg","rules":[{"t":"eq","v":"1","vt":"str"}],"checkall":"true","rep
air":false,"outputs":1,"x":290,"y":480,"wires":[["9356efb2.7423c"]]},{"id":"7687b771.357d48","type":"linebot-
client","z":"8d8ede65.bc90c","name":"","channelAccessToken":"9L2SLMMMbCP2pMErA9HX+F0n/nI6yxVvk61LYbVp+8ErE0cW6sW/7g8IhKgI5OgJrO6+3MwINhLIGdU/70CFYal5qNCBC
BWHms7MymW7zybuv591B7Weo21gMky+LVSrl3z2rTbQcwuJjwmNVwsSsAdB04t89/1O/w1cDnyilFU=","channelSecret":"eb45dc70fd0b6c449d5a65d5db85d718","x":530,"y":760,"wir
es":[["20ea3126.f8d48e"]]},{"id":"894da13.a263a6","type":"http
in","z":"8d8ede65.bc90c","name":"","url":"/callback","method":"post","upload":false,"swaggerDoc":"","x":180,"y":760,"wires":[["bb726d8b.070d5"]]},{"id":"bb726d8b.070d5","typ
e":"function","z":"8d8ede65.bc90c","name":"","func":"var receive_msg = msg.payload;\n\nif(receive_msg.events[0].message.type==\"text\")\n   {
if(receive_msg.events[0].message.text==\"Hello\")\n         {   reply = {type:'text', text:\"Hello to\"\n         };\n       }\n       \n       else
if(receive_msg.events[0].message.text==\"Tempp\")\n         {   reply = {type:'text', text: context.global.tempp\n         };\n       }\n       \n       else
if(receive_msg.events[0].message.text==\"Humid\")\n         {   reply = {type:'text', text: context.global.humid\n         };\n       }\n\n       else
if(receive_msg.events[0].message.text==\"Sensor\")\n         {   var xSensor = 'Sensor Off'\n             if(context.global.sts){xSensor = 'Sensor On'}\n             reply = {type:'text', text:
xSensor\n         };\n       }\n\n       else if(receive_msg.events[0].message.text==\"On\")\n         {   context.global.ctrl = 'ON1'\n             reply = {type:'text', text: \"Ok On\"\n
};\n       }\n\n       else if(receive_msg.events[0].message.text==\"Off\")\n         {   context.global.ctrl = 'OFF1'\n             reply = {type:'text', text: \"Ok Off\"\n         };\n       }\n   \n
else\n         {   reply = {\n             type:'text', text:\"i don't know\"\n             }\n         }\n   }\n\nvar value = [receive_msg,reply];\nmsg.payload = value;\nreturn
msg;\n","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":360,"y":760,"wires":[["7687b771.357d48"]]},{"id":"20ea3126.f8d48e","type":"debug","z":"8d8ede65.bc90c","n
ame":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"false","statusVal":"","statusType":"auto","x":710,"y":760,"wires":[]},{"id":"e888d28f.66d7b","ty
pe":"function","z":"8d8ede65.bc90c","name":"","func":"context.global.ctrl = msg.payload\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":600,"y":580,"wires":[[]]},{"id":"4d476749.741828","type":"inject","z":"8d8ede65.bc90c","name":"","props":[{"p":
"payload"},{"p":"topic","vt":"str"}],"repeat":"10","crontab":"","once":false,"onceDelay":0.1,"topic":"","payload":"","payloadType":"date","x":330,"y":660,"wires":[["5c832cf3.dab6
14"]]},{"id":"5c832cf3.dab614","type":"function","z":"8d8ede65.bc90c","name":"","func":"msg.payload = context.global.ctrl \nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":500,"y":660,"wires":[["d9c08c8.771a57"]]},{"id":"7436b594.5bbf3c","type":"mqtt-
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alse,"width":"12","collapse":false},{"id":"e7f1169c.042098","type":"linetoken","name":"Pk007"},{"id":"67e2957.e504f6c","type":"ui_tab","name":"Home","icon":"dashboard","disa
bled":false,"hidden":false}]
```

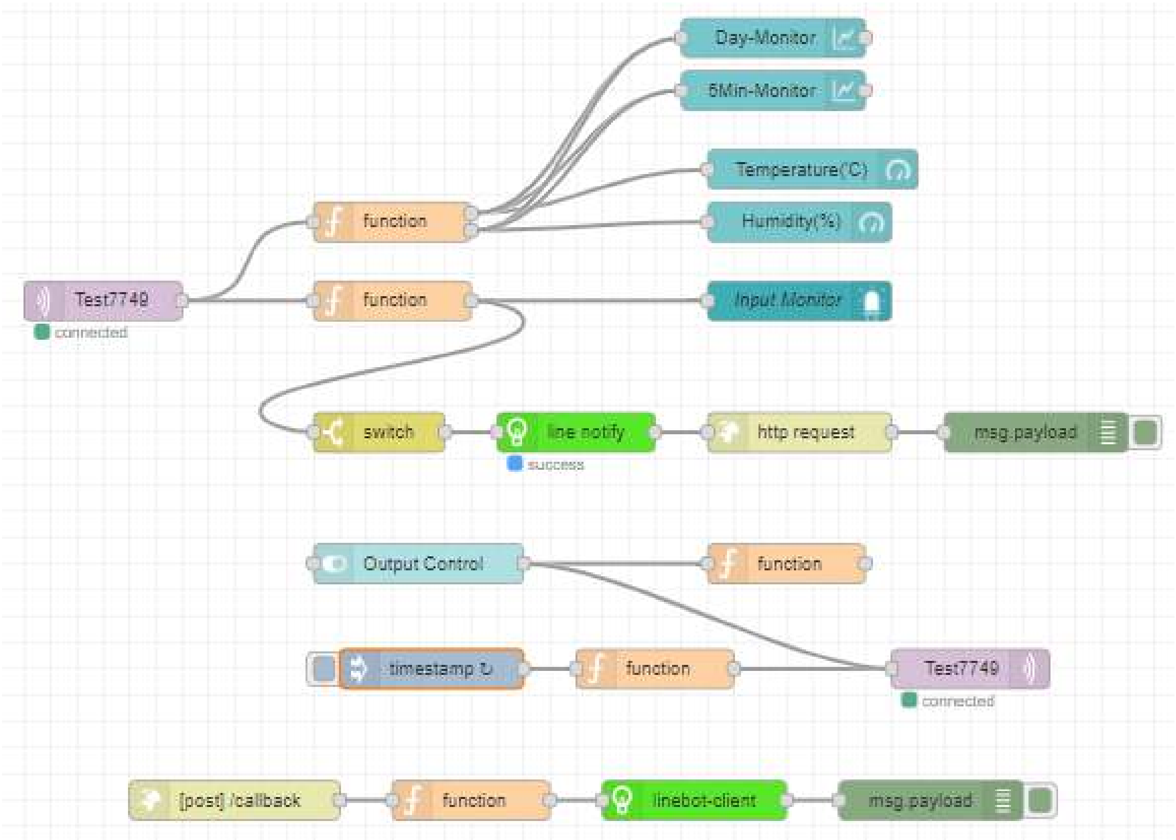

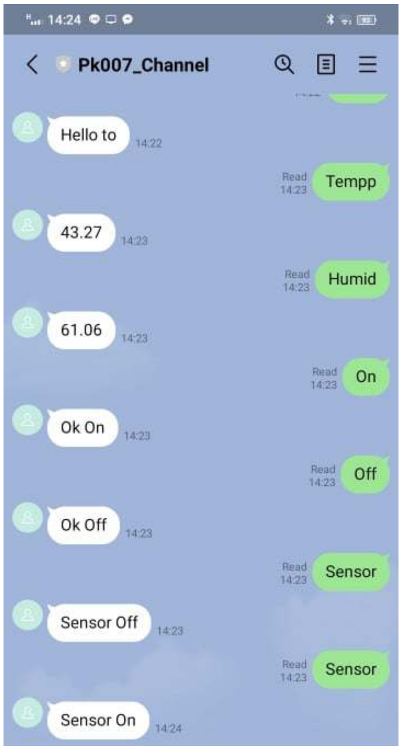
14:24

Pk007_Channel

Hello to 14:22

Read 14:23 Tempp

43.27 14:23

Read 14:23 Humid

61.06 14:23

Read 14:23 On

Ok On 14:23

Read 14:23 Off

Ok Off 14:23

Read 14:23 Sensor

Sensor Off 14:23

Read 14:23 Sensor

Sensor On 14:24

แก้ไข

MQTT Server -> { IP, Topic}
LINE Notify -> Token
LINE Bot → {Token Key, Secret}
Ngrok → IP Forward

ทดสอบโต้ตอบด้วย

Tempp
Humid
Sensor
On
Off

การสร้าง MQTT Server บน Raspberry Pi เพื่อใช้งาน Chatbot LINE ในฟาร์มอัจฉริยะ Chatbot LINE from Raspberry Pi MQTT Server for Smart Farming
ชื่อ-สกุล :
6/6 - คำถามท้ายบทเพื่อทดสอบความเข้าใจ

Quiz_401 – RPi Smart Farm

- แสดงรูป โปรแกรม ของผลการทำงานตามหัวข้อ การสร้าง UI ด้วย Node-RED สำหรับฟาร์มอัจฉริยะ

Capture Node-RED Flow
Node-RED Code
รูปการทดสอบ 1: UI Result
รูปการทดสอบ 2:
รูปการทดสอบ 3
รูปการทดสอบ 4
รูปการทดสอบ 5

Quiz_402 – LINE Notify

- แสดงรูป โปรแกรม ของผลการทำงานตามหัวข้อ การส่งข้อความด้วย Node-RED สำหรับฟาร์มอัจฉริยะ

Capture Node-RED Flow
Node-RED Code
รูปการทดสอบ 1
รูปการทดสอบ 2:
รูปการทดสอบ 3
รูปการทดสอบ 4
รูปการทดสอบ 5

Quiz_403 – LINE Chatbot

- แสดงรูป โปรแกรม ของผลการทำงานตามหัวข้อ การโต้ตอบด้วยข้อความสำหรับฟาร์มอัจฉริยะ

Capture Node-RED Flow
Node-RED Code
รูปการทดสอบ 1
รูปการทดสอบ 2:
รูปการทดสอบ 3
รูปการทดสอบ 4
รูปการทดสอบ 5
รูปการทดสอบ 6