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

ชื่อ-สกุล : วราสิริ ลิ้มประเสริฐ B6214005

6/6 – คำถามท้ายบทเพื่อทดสอบความเข้าใจ

Quiz_101 – ทดสอบ RPi4 GPIO with Python

Python.1 - Python Switch control LED >> กดติด ปล่อยดับ

```
import RPi.GPIO as GPIO # Add GPIO library to a Python sketch
import time # Add time library to a Python sketch
LED_pin = 32 # Ref Board
SW_Pin = 36
GPIO.setmode(GPIO.BOARD) #Setup GPIO using GPIO.Pin
GPIO.setup(LED_pin, GPIO.OUT) #Setup pin to output
GPIO.setup(SW_Pin, GPIO.IN, pull_up_down = GPIO.PUD_UP) #Setup pin to input and Pull-Up
while True:
        if (GPIO.input(SW_Pin)==0): # Read Botton pin
                GPIO.output(LED_pin,GPIO.HIGH) # Set LED pin to HIGH
                print("Input = 0, HIGH")
        else: GPIO.output(LED_pin,GPIO.LOW) # Set LED pin to LOW
                print("Input = 1, LOW")
time.sleep(0.5)
```

itled> *

```
1  import RPi.GPIO as GPIO # Add GPIO library to a Python sketch
2  import time # Add time library to a Python sketch
3  LED_pin = 32 # Ref Board
4  SW_Pin = 36
5  GPIO.setmode(GPIO.BOARD) #Setup GPIO using GPIO.Pin
6  GPIO.setup(LED_pin, GPIO.OUT) #Setup pin to output
7  GPIO.setup(SW_Pin, GPIO.IN, pull_up_down = GPIO.PUD_UP) #Setup pin to input and Pull-Up
8  while True:
9      if (GPIO.input(SW_Pin)==0): # Read Botton pin
0          GPIO.output(LED_pin,GPIO.HIGH) # Set LED pin to HIGH
1          print("Input = 0, HIGH")
2      else: GPIO.output(LED_pin,GPIO.LOW) # Set LED pin to LOW
3          print("Input = 1, LOW")
4      time.sleep(0.5)
5
```


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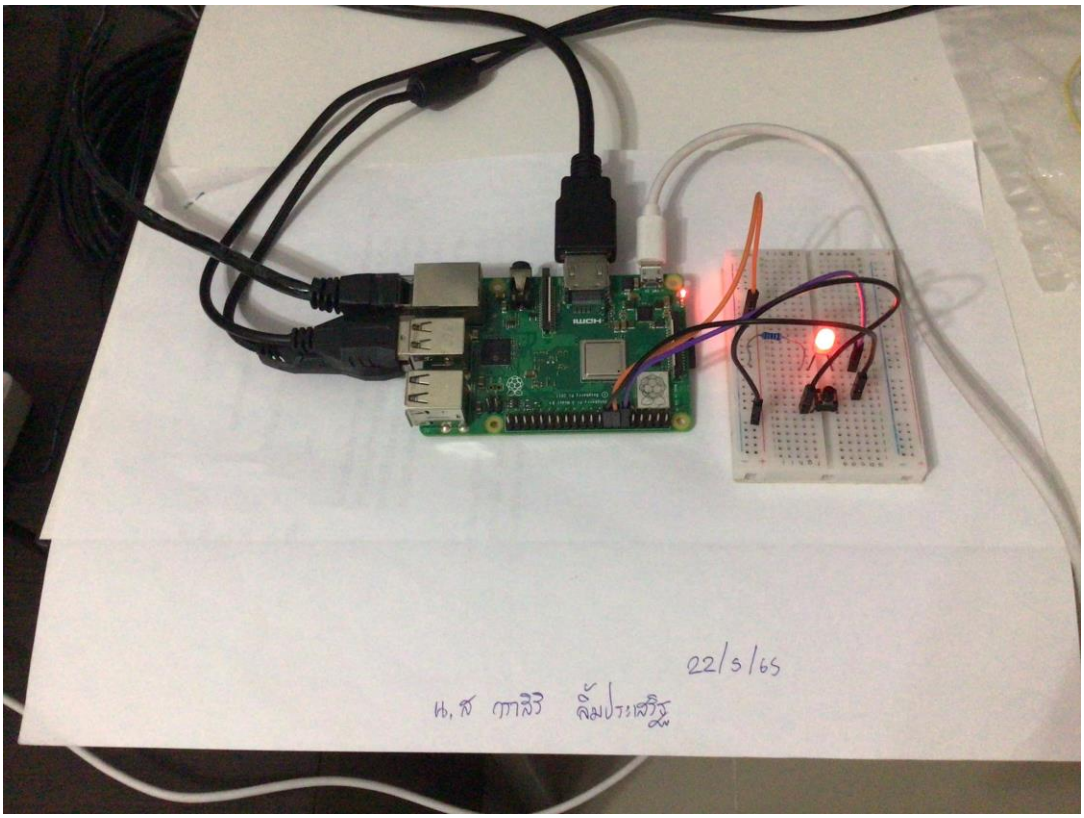

22/5/65

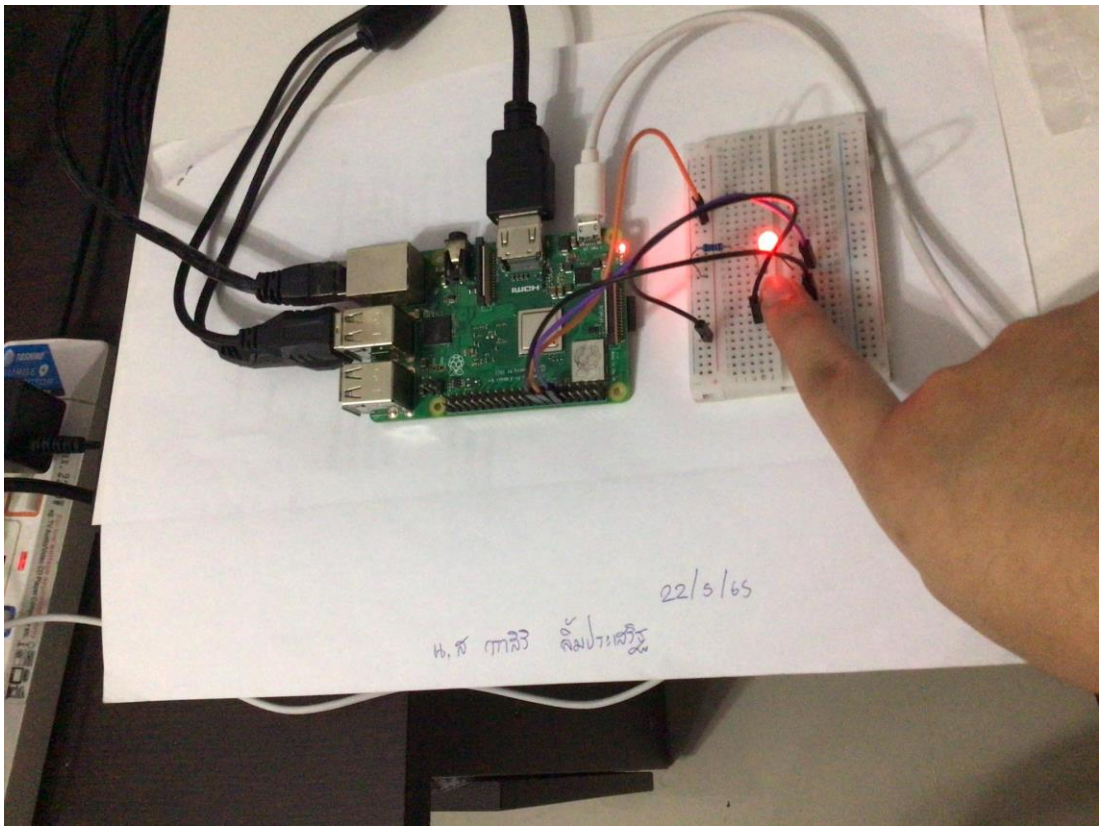
Python.2 - Python Switch control LED >> กดติด กดดับ

```
import RPi.GPIO as GPIO # Add GPIO library to a Python sketch
import time # Add time library to a Python sketch
LED_pin = 32 # Ref Board
SW_Pin = 36
num = 0
GPIO.setmode(GPIO.BOARD) #Setup GPIO using GPIO.Pin
GPIO.setup(LED_pin, GPIO.OUT) #Setup pin to output
GPIO.setup(SW_Pin, GPIO.IN, pull_up_down = GPIO.PUD_UP)
#Setup pin to input and Pull-Up
while True:
  if (GPIO.input(SW_Pin)==0): # Read Botton pin
    num += 1
    if(num % 2 != 0):
      GPIO.output(LED_pin,GPIO.HIGH) # Set LED pin to HIGH
      print("HIGH")
    else:
      GPIO.output(LED_pin,GPIO.LOW) # Set LED pin to LOW
      print("LOW")
  time.sleep(0.5)
```

```
1  import RPi.GPIO as GPIO # Add GPIO library to a Python sketch
2  import time # Add time library to a Python sketch
3  LED_pin = 32 # Ref Board
4  SW_Pin = 36
5  num = 0
6  GPIO.setmode(GPIO.BOARD) #Setup GPIO using GPIO.Pin
7  GPIO.setup(LED_pin, GPIO.OUT) #Setup pin to output
8  GPIO.setup(SW_Pin, GPIO.IN, pull_up_down = GPIO.PUD_UP)
9  #Setup pin to input and Pull-Up
10 while True:
11   if (GPIO.input(SW_Pin)==0): # Read Botton pin
12     num += 1
13     if(num % 2 != 0):
14       GPIO.output(LED_pin,GPIO.HIGH) # Set LED pin to HIGH
15       print("HIGH")
16     else:
17       GPIO.output(LED_pin,GPIO.LOW) # Set LED pin to LOW
18       print("LOW")
19   time.sleep(0.5)
20
```

```
SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set
 a new password.

/home/pi/t01.py:8: RuntimeWarning: This channel is already in use, continuing an
yway.  Use GPIO.setwarnings(False) to disable warnings.
  GPIO.setup(LED_pin, GPIO.OUT)
HIGH
LOW
HIGH
LOW
HIGH
```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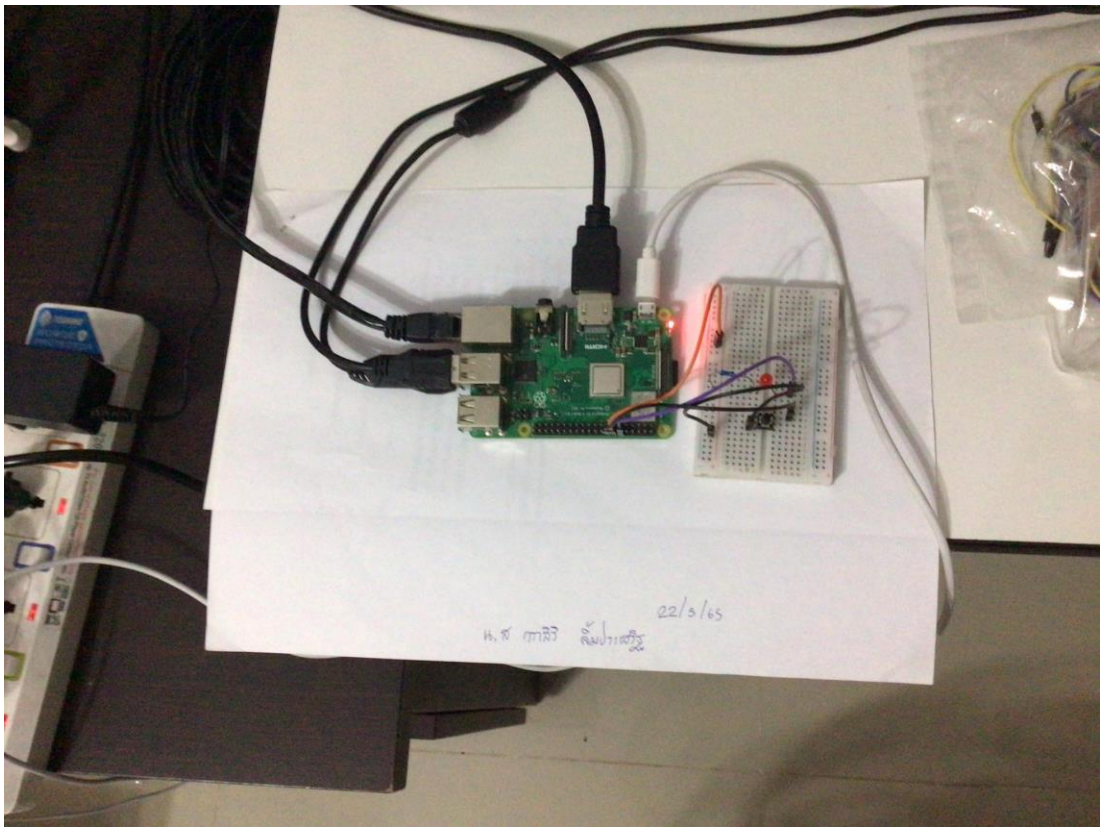
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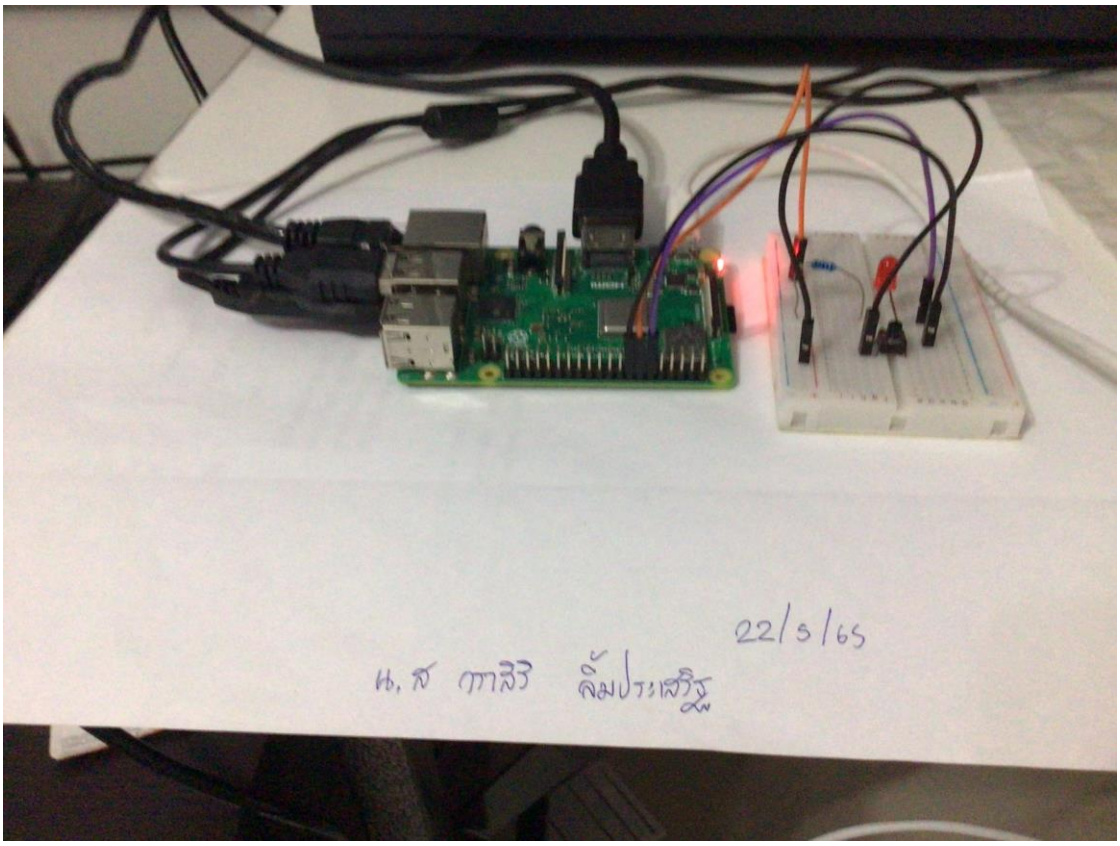
POython.3 - Python Switch >> Switch Counter

```
import RPi.GPIO as GPIO # Add GPIO library to a Python sketch
import time # Add time library to a Python sketch
LED_pin = 32 # Ref Board
SW_Pin = 36
num = 0
GPIO.setmode(GPIO.BOARD) #Setup GPIO using GPIO.Pin
GPIO.setup(LED_pin, GPIO.OUT) #Setup pin to output
GPIO.setup(SW_Pin, GPIO.IN, pull_up_down = GPIO.PUD_UP)

#Setup pin to input and Pull-Up
while True:
    if (GPIO.input(SW_Pin)==0): # Read Botton pin
        num += 1
        print("Count = ",num)
    time.sleep(0.5)
```

```
1  import RPi.GPIO as GPIO # Add GPIO library to a Python sketch
2  import time # Add time library to a Python sketch
3  LED_pin = 32 # Ref Board
4  SW_Pin = 36
5  num = 0
6  GPIO.setmode(GPIO.BOARD) #Setup GPIO using GPIO.Pin
7  GPIO.setup(LED_pin, GPIO.OUT) #Setup pin to output
8  GPIO.setup(SW_Pin, GPIO.IN, pull_up_down = GPIO.PUD_UP)
9
10 #Setup pin to input and Pull-Up
11 while True:
12     if (GPIO.input(SW_Pin)==0): # Read Botton pin
13         num += 1
14         print("Count = ",num)
15     time.sleep(0.5)
16
```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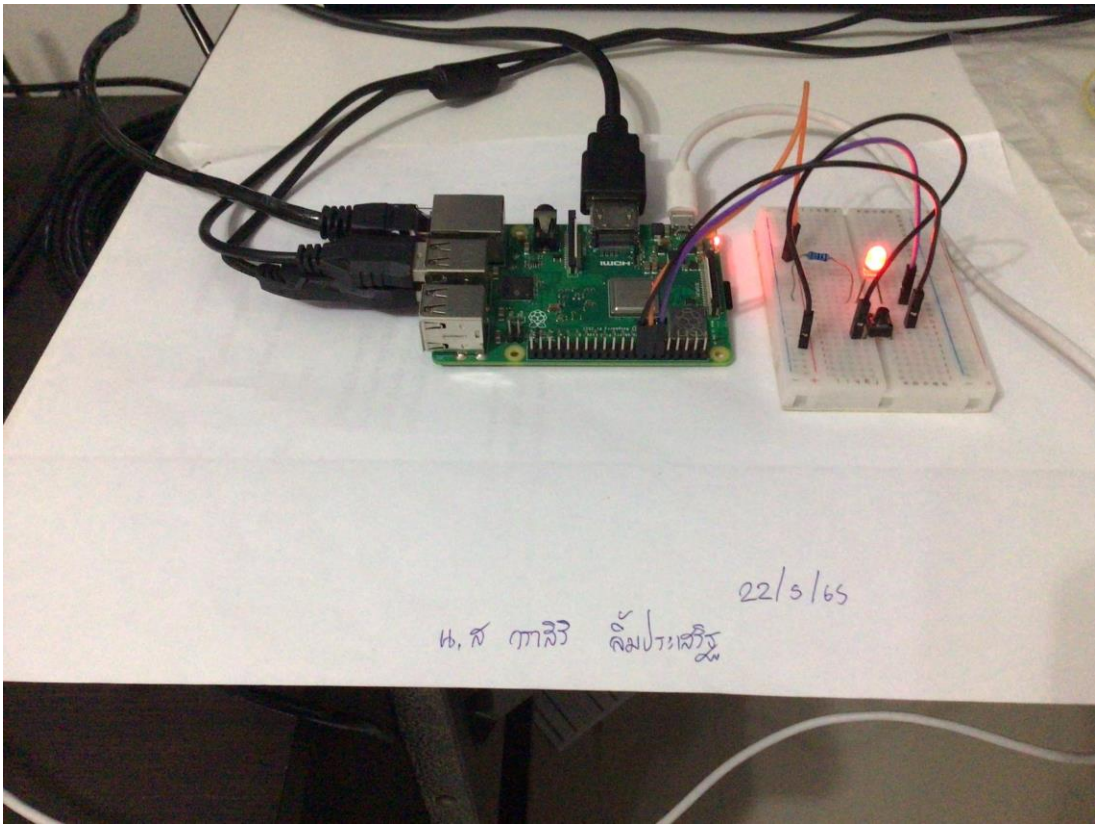
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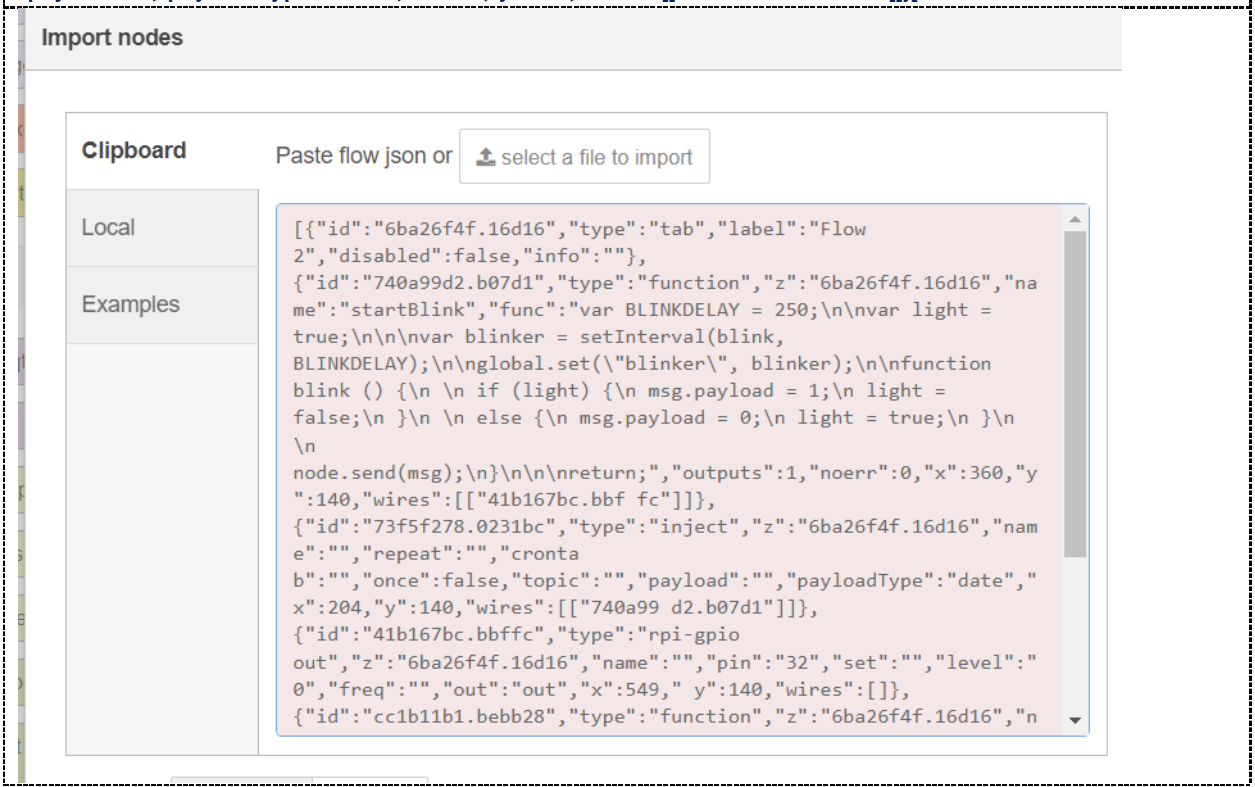
Quiz_102 – ทดสอบ RPi4 GPIO with Node-RED

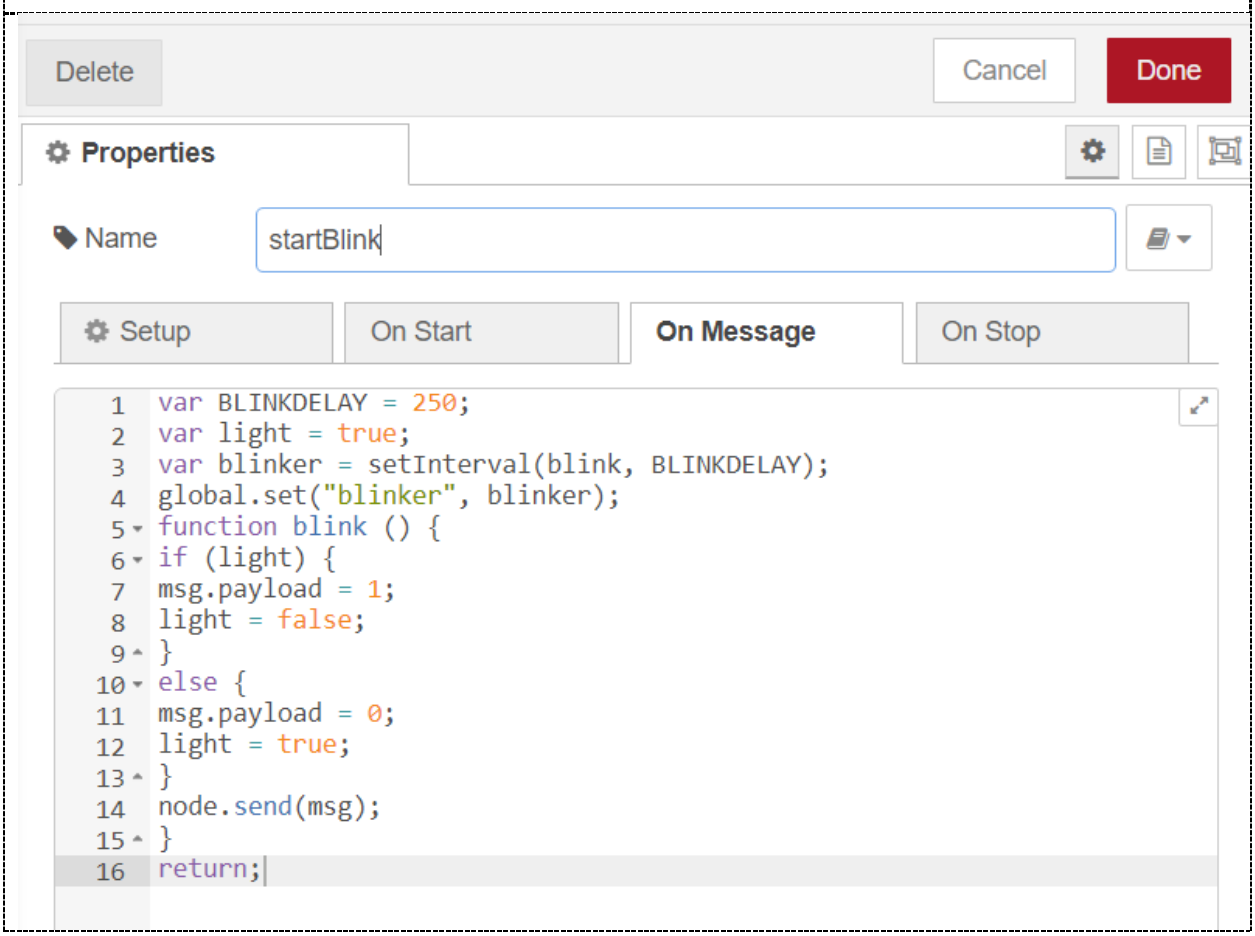
Node-RED.1 – Node-RED เพื่อควบคุมสวิตซ์กดแบบ กดติด กดดับ {Switch-LED 1 คู่}

>>> Import

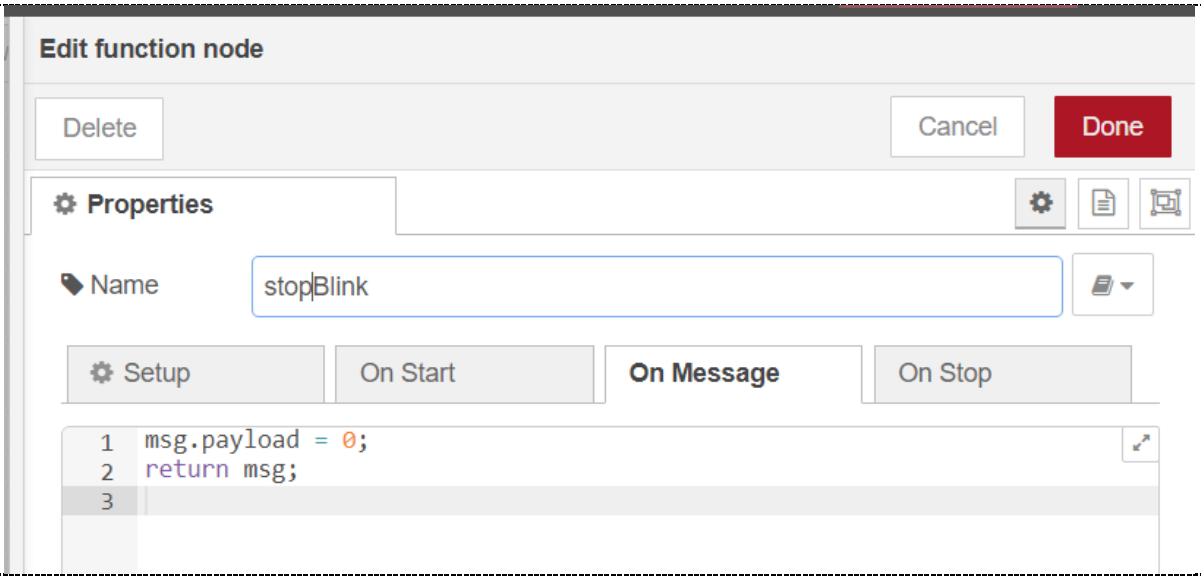

```
[{"id":"6ba26f4f.16d16","type":"tab","label":"Flow
2","disabled":false,"info":""},{"id":"740a99d2.b07d1","type":"function","z":"6ba26f4f.16d16","na
me":"startBlink","func":"var BLINKDELAY = 250;\n\nvar light = true;\n\n\nvar blinker = setInterval(blink,
BLINKDELAY);\n\nglobal.set(\"blinker\", blinker);\n\nfunction blink () {\n \n if (light) {\n msg.payload = 1;\n
light = false;\n }\n \n else {\n msg.payload = 0;\n light = true;\n }\n \n
node.send(msg);\n}\n\n\nreturn;","outputs":1,"noerr":0,"x":360,"y":140,"wires":[["41b167bc.bbf
fc"]]},{"id":"73f5f278.0231bc","type":"inject","z":"6ba26f4f.16d16","name":"","repeat":"","cronta
b":"","once":false,"topic":"","payload":"","payloadType":"date","x":204,"y":140,"wires":[["740a99
d2.b07d1"]]},{"id":"41b167bc.bbffc","type":"rpi-gpio
out","z":"6ba26f4f.16d16","name":"","pin":"32","set":"","level":"0","freq":"","out":"out","x":549,"
y":140,"wires":[]},{"id":"cc1b11b1.bebb28","type":"function","z":"6ba26f4f.16d16","name":"stop
Blink","func":"clearInterval(global.get(\"blinker\"));\n\nmsg.payload = 0;\n\nreturn
msg;","outputs":1,"noerr":0,"x":366,"y":212,"wires":[["41b167bc.bbffc"]]},{"id":"5db82a6c.1b547
c","type":"inject","z":"6ba26f4f.16d16","name":"","repeat":"","crontab":"","once":false,"topic":"",
"payload":"","payloadType":"date","x":201,"y":213,"wires":[["cc1b11b1.bebb28"]]}]
```

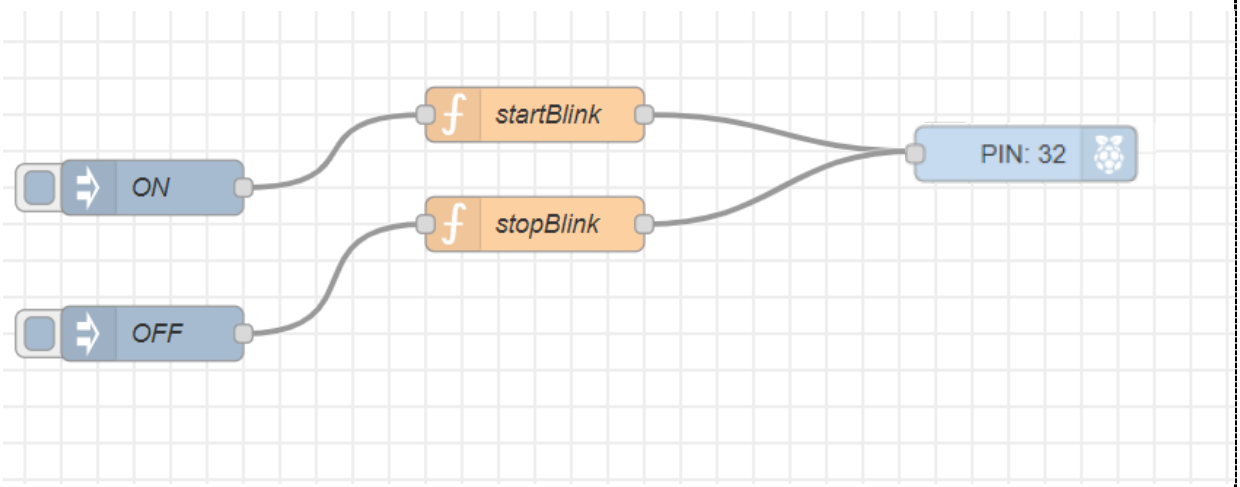



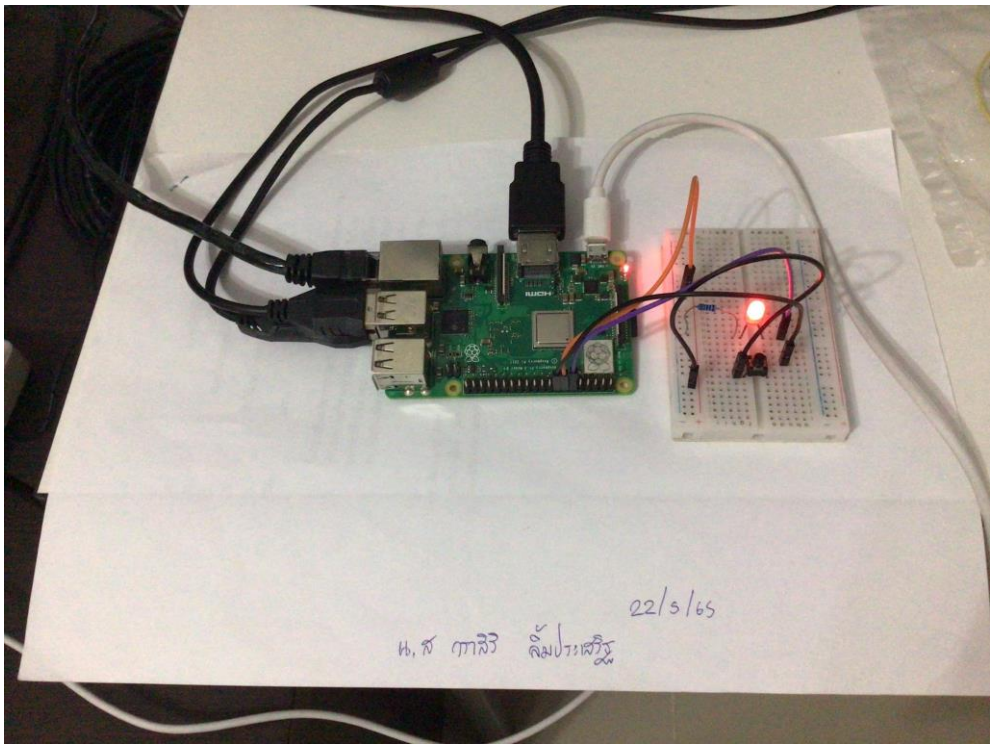
```
>>>startBlink

var BLINKDELAY = 250;
var light = true;
var blinker = setInterval(blink, BLINKDELAY);
global.set("blinker", blinker);
function blink () {
if (light) {
msg.payload = 1;
light = false;
}
else {
msg.payload = 0;
light = true;
}
node.send(msg);
}
return;
```



```
>>>stopBlink

#Stop Blink function
msg.payload = 0;
return msg;
```



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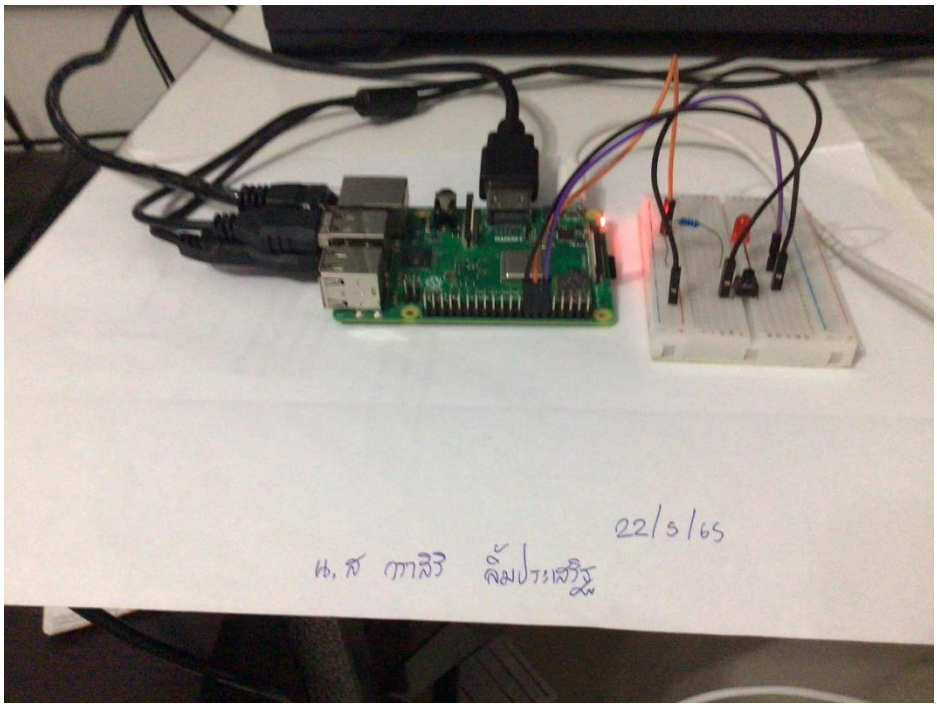
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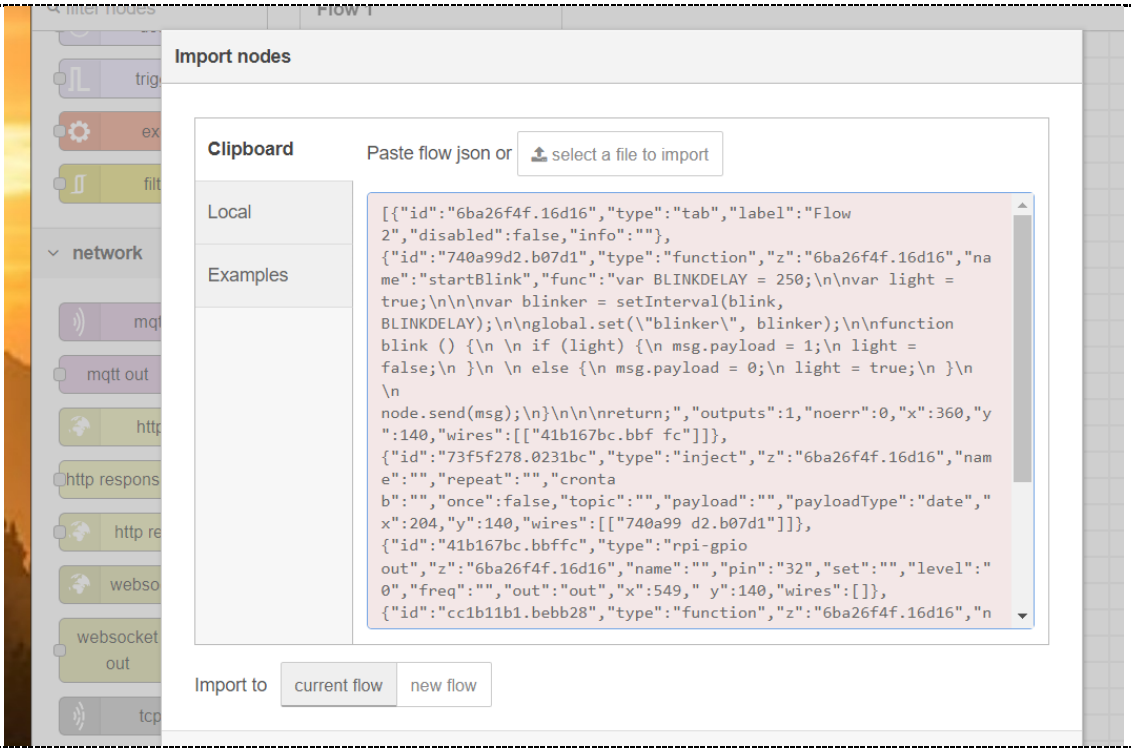
Node-RED.2 - Node-RED เพื่อควบคุมสวิตซ์กดแบบ กดติด กดดับ 2 คู่

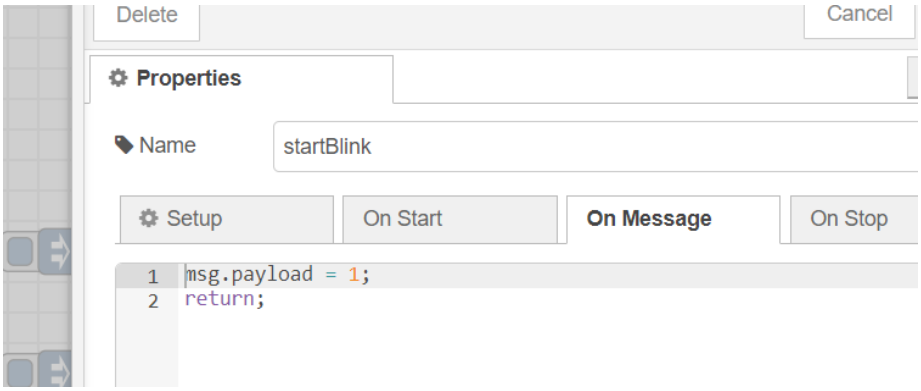
>>> Import

[{"id":"6ba26f4f.16d16","type":"tab","label":"Flow 2","disabled":false,"info":""},{"id":"740a99d2.b07d1","type":"function","z":"6ba26f4f.16d16","name":"startBlink","func":"var BLINKDELAY = 250;\n\nvar light = true;\n\n\nvar blinker = setInterval(blink, BLINKDELAY);\n\nglobal.set(\"blinker\", blinker);\n\nfunction blink () {\n \n if (light) {\n msg.payload = 1;\n light = false;\n }\n \n else {\n msg.payload = 0;\n light = true;\n }\n \n node.send(msg);\n}\n\n\nreturn;","outputs":1,"noerr":0,"x":360,"y":140,"wires":[["41b167bc.bbffc"]]},{"id":"73f5f278.0231bc","type":"inject","z":"6ba26f4f.16d16","name":"","repeat":"","crontab":"","once":false,"topic":"","payload":"","payloadType":"date","x":204,"y":140,"wires":[["740a99d2.b07d1"]]},{"id":"41b167bc.bbffc","type":"rpi-gpio out","z":"6ba26f4f.16d16","name":"","pin":"32","set":"","level":"0","freq":"","out":"out","x":549,"y":140,"wires":[]},{"id":"cc1b11b1.bebb28","type":"function","z":"6ba26f4f.16d16","name":"stop Blink","func":"clearInterval(global.get(\"blinker\"));\n\nmsg.payload = 0;\n\nreturn msg;","outputs":1,"noerr":0,"x":366,"y":212,"wires":[["41b167bc.bbffc"]]},{"id":"5db82a6c.1b547c","type":"inject","z":"6ba26f4f.16d16","name":"","repeat":"","crontab":"","once":false,"topic":"","payload":"","payloadType":"date","x":201,"y":213,"wires":[["cc1b11b1.bebb28"]]}]



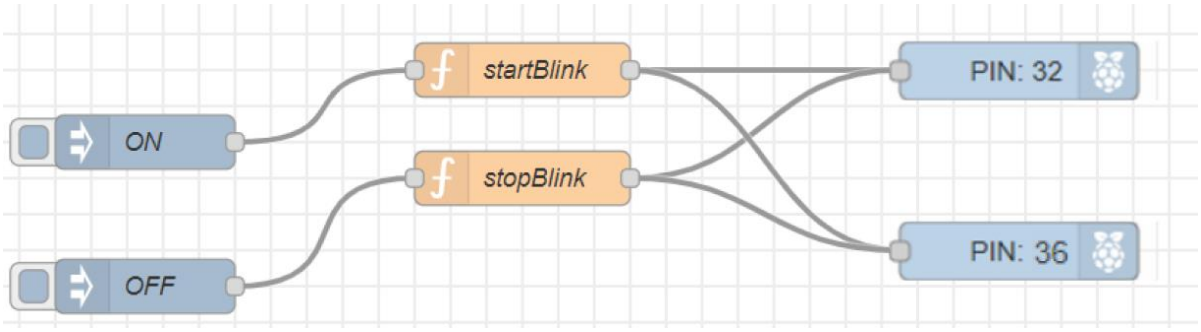
>>> Start Blink

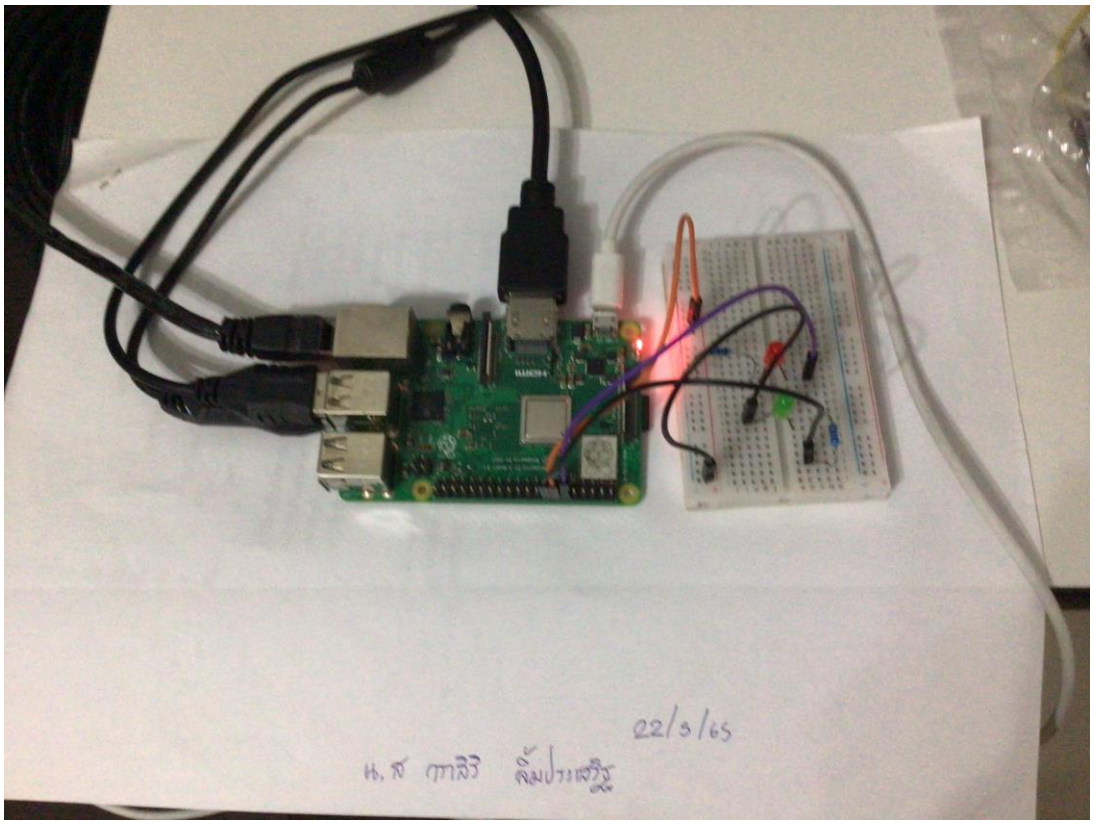
```
msg.payload = 1;
return;
```



>>> Stop Blink

```
msg.payload = 0;
return msg;
```

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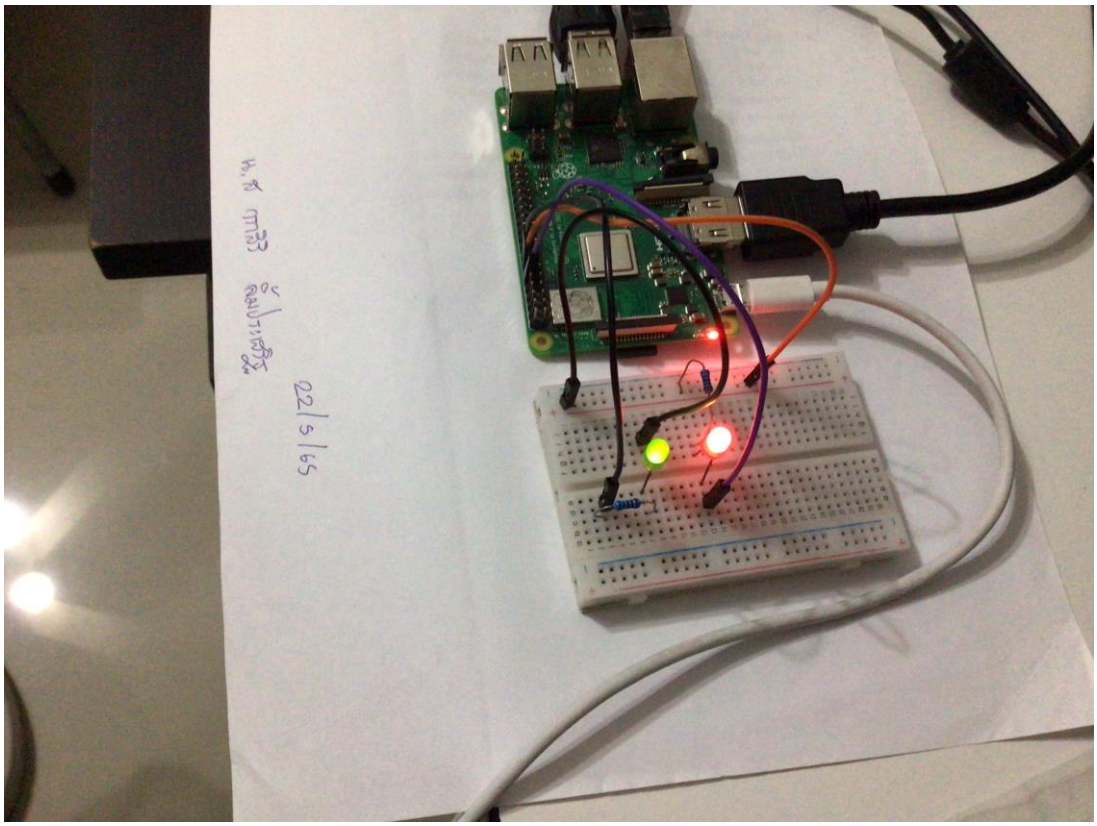
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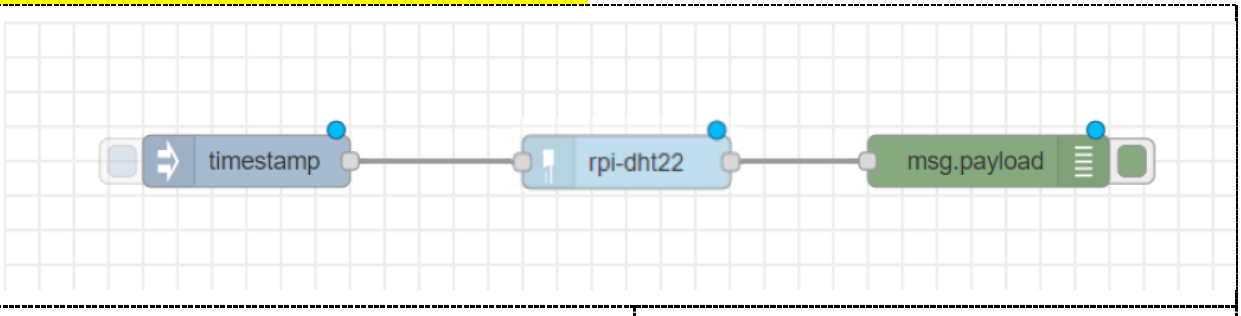
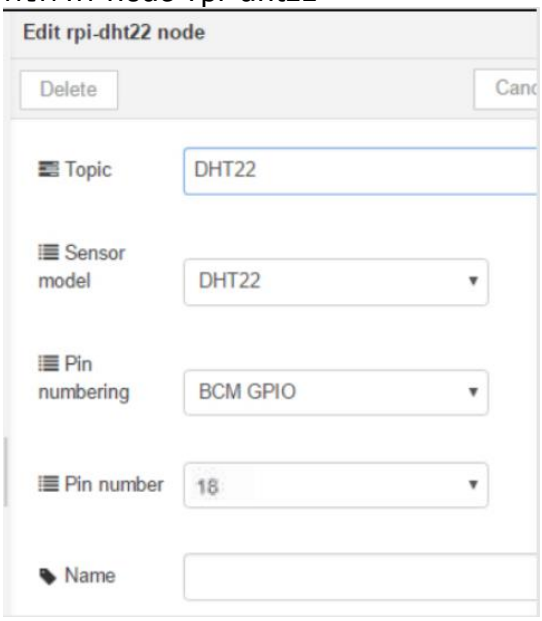
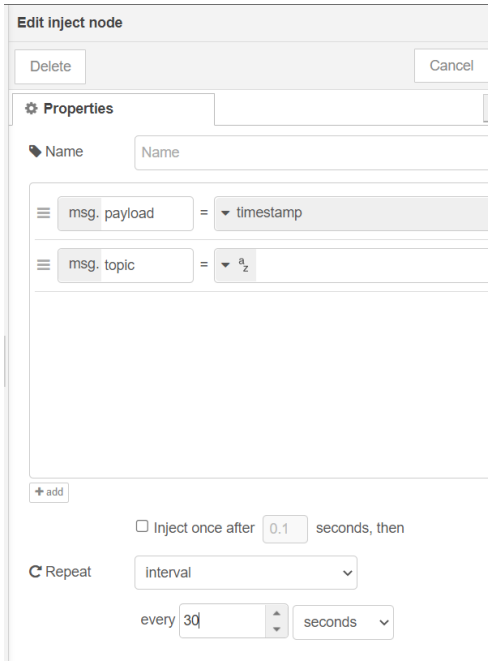
Node-RED.3 - Node-RED เพื่ออ่าน DHT-22 Sensor

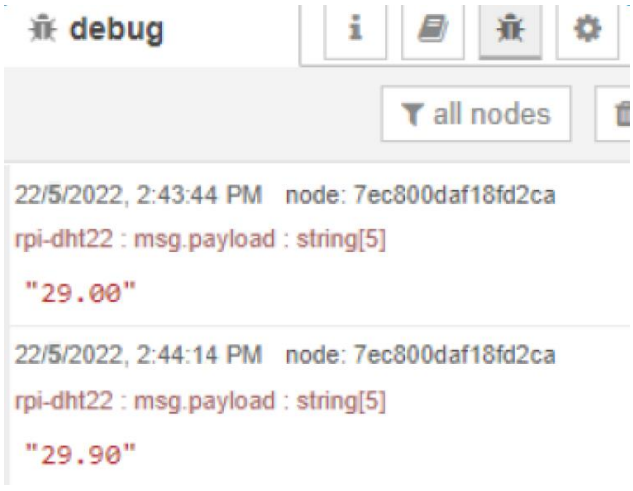


ตั้งค่าที่ node rpi-dht22



ตั้งค่าที่ node timestamp



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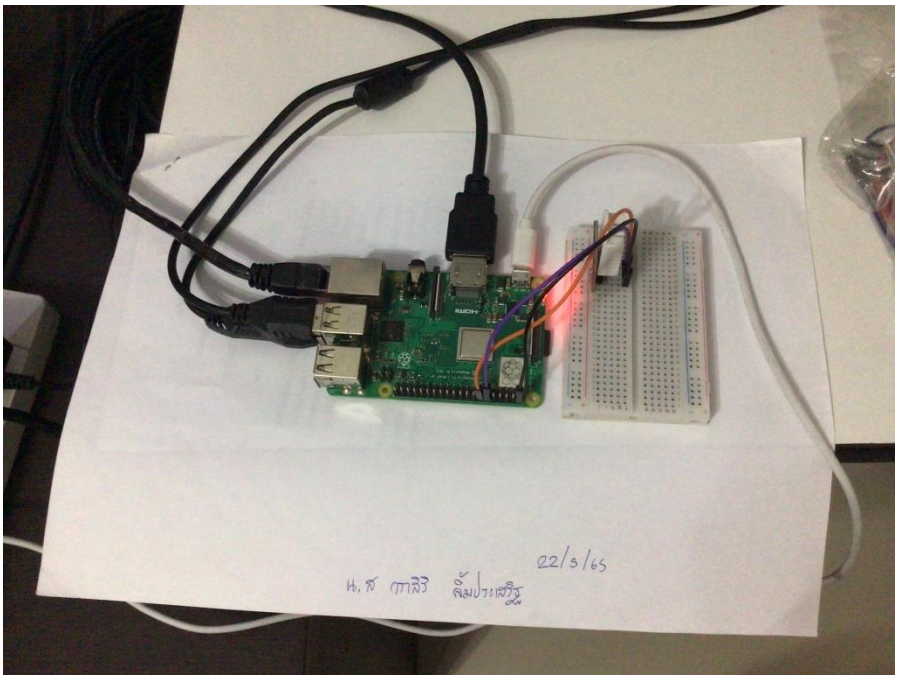
22/5/65