การสร้าง MQTT Server บน Raspberry Pi เพื่อใช้งาน Chatbot LINE ในฟาร์มอัจฉริยะ

Chatbot LINE from Raspberry Pi MQTT Server for Smart Farming

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6/6 – คำถามท้ายบทเพื่อทดสอบความเข้าใจ

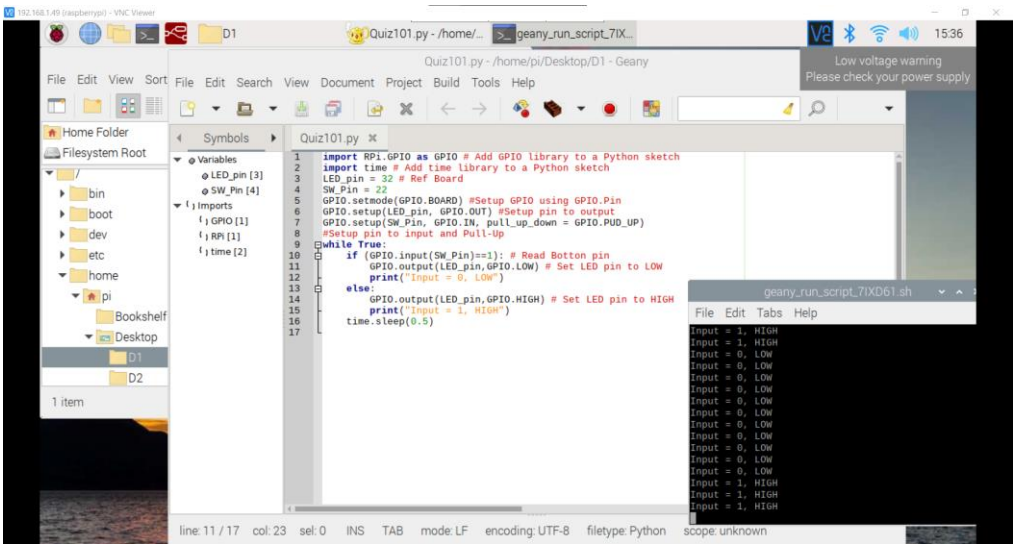
Quiz_101 – ทดสอบ RPi4 GPIO with Python

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

โปรแกรมที่ใช้ทดสอบ

```
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 = 22
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)==1): # Read Botton pin
                GPIO.output(LED_pin,GPIO.LOW) # Set LED pin to LOW
                print("Input = 0, LOW")
        else:
                GPIO.output(LED_pin,GPIO.HIGH) # Set LED pin to HIGH
                print("Input = 1, HIGH")
        time.sleep(0.5)
```

รูป Code Capture



รูปการทดสอบ 1

รูปการทดสอบ 2

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

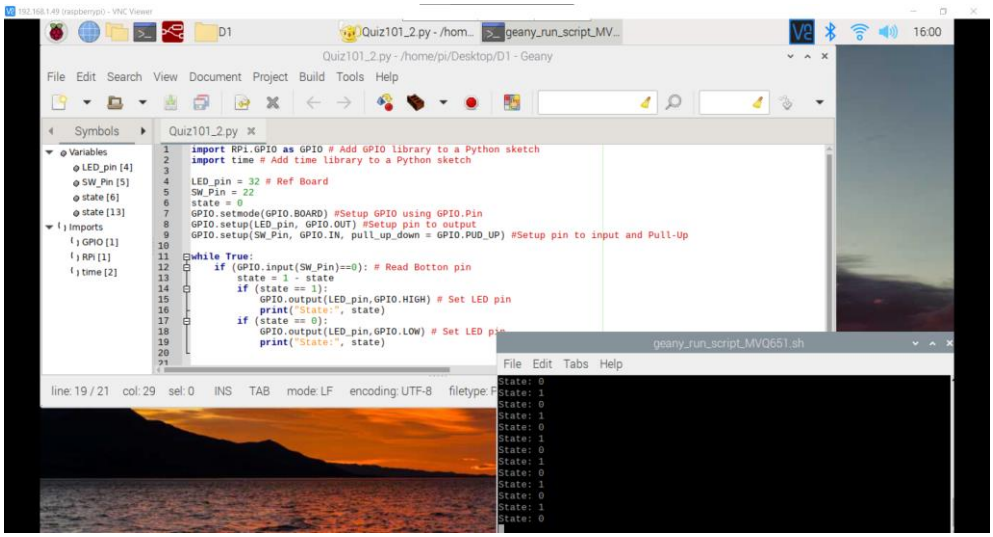
โปรแกรมที่ใช้ทดสอบ

```
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 = 22
state = 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
                state = 1 - state
                if (state == 1):
                        GPIO.output(LED_pin,GPIO.HIGH) # Set LED pin
                        print("State:", state)
                if (state == 0):
                        GPIO.output(LED_pin,GPIO.LOW) # Set LED pin
                        print("State:", state)
```

รูป Code Capture



รูปการทดสอบ 1

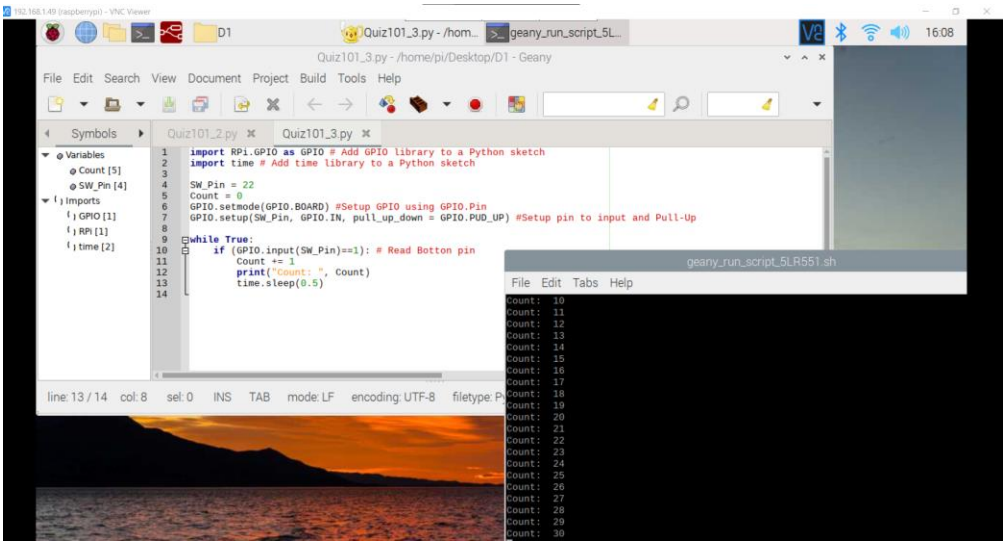
รูปการทดสอบ 2

POython.3 - Python Switch >> Switch Counter

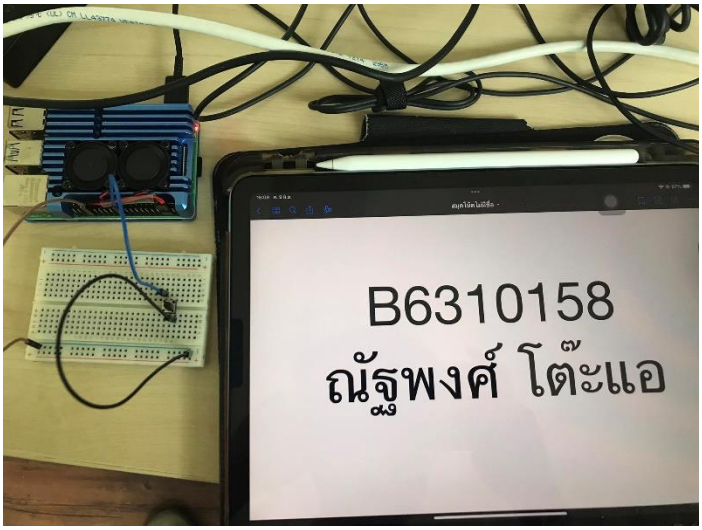
โปรแกรมที่ใช้ทดสอบ

```
import RPi.GPIO as GPIO # Add GPIO library to a Python sketch
import time # Add time library to a Python sketch
SW_Pin = 22
Count = 0
GPIO.setmode(GPIO.BOARD) #Setup GPIO using GPIO.Pin
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)==1): # Read Botton pin
                Count += 1
                print("Count: ", Count)
                time.sleep(0.5)
```

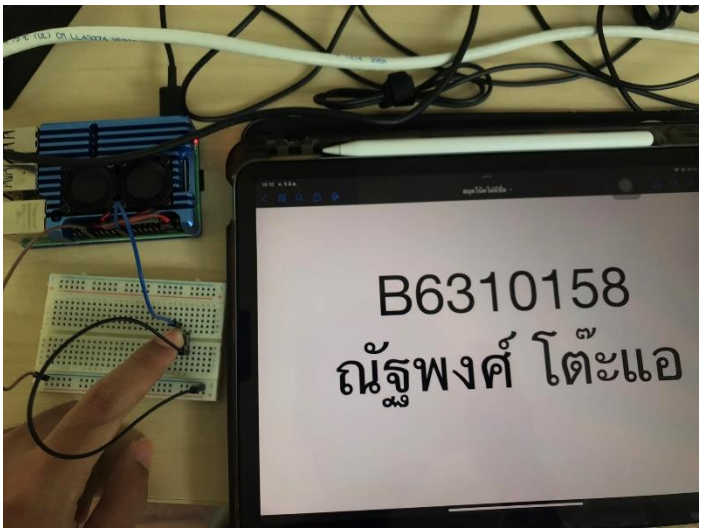
รูป Code Capture



รูปการทดสอบ 1



รูปการทดสอบ 2



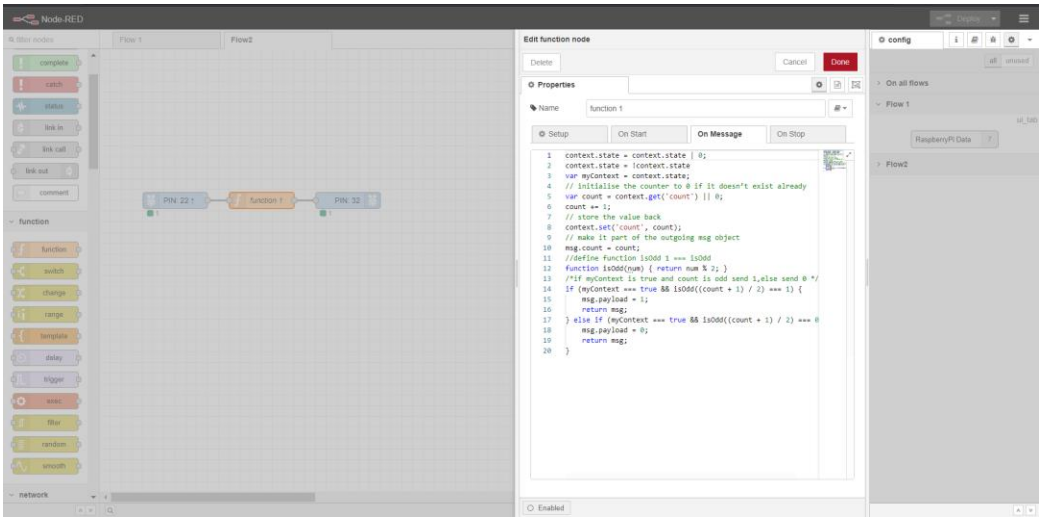
Quiz_102 – ทดสอบ RPi4 GPIO with Node-RED

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

โปรแกรมที่ใช้ทดสอบ

```
context.state = context.state | 0;
context.state = !context.state
var myContext = context.state;
// initialise the counter to 0 if it doesn't exist already
var count = context.get('count') || 0;
count += 1;
// store the value back
context.set('count', count);
// make it part of the outgoing msg object
msg.count = count;
//define function isOdd 1 === isOdd
function isOdd(num) { return num % 2; }
/*if myContext is true and count is odd send 1,else send 0 */
if (myContext === true && isOdd((count + 1) / 2) === 1) {
    msg.payload = 1;
    return msg;
} else if (myContext === true && isOdd((count + 1) / 2) === 0) {
    msg.payload = 0;
    return msg;
}
```

รูป Code Capture



รูปการทดสอบ 1

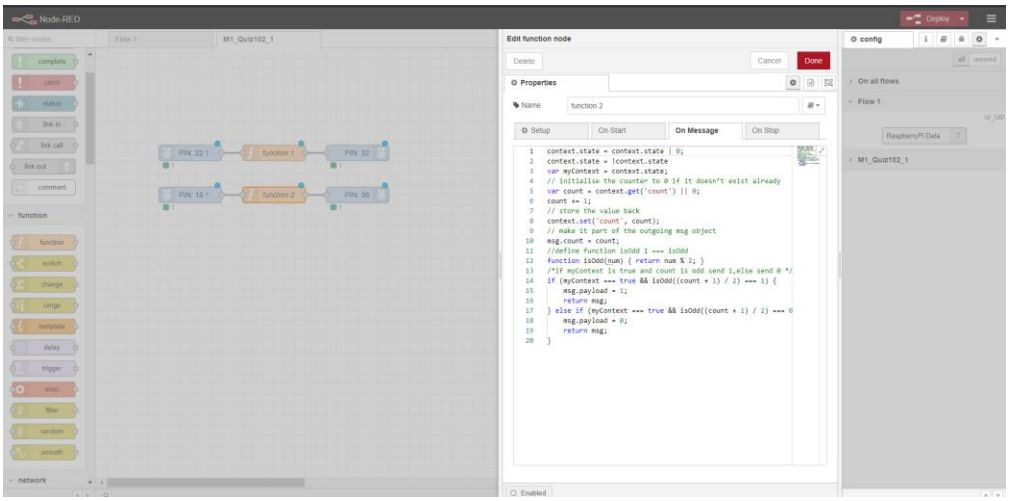
รูปการทดสอบ 2

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

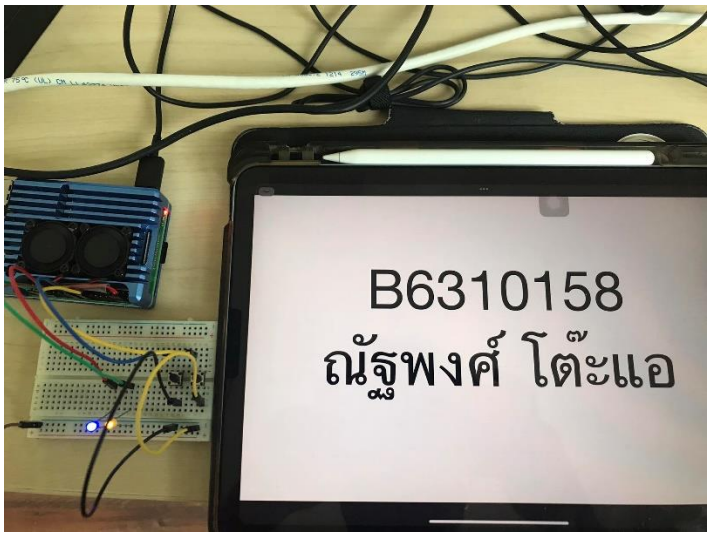
โปรแกรมที่ใช้ทดสอบ

```
context.state = context.state | 0;
context.state = !context.state
var myContext = context.state;
// initialise the counter to 0 if it doesn't exist already
var count = context.get('count') || 0;
count += 1;
// store the value back
context.set('count', count);
// make it part of the outgoing msg object
msg.count = count;
//define function isOdd 1 === isOdd
function isOdd(num) { return num % 2; }
/*if myContext is true and count is odd send 1,else send 0 */
if (myContext === true && isOdd((count + 1) / 2) === 1) {
    msg.payload = 1;
    return msg;
} else if (myContext === true && isOdd((count + 1) / 2) === 0) {
    msg.payload = 0;
    return msg;
}
```

รูป Code Capture



รูปการทดสอบ 1



รูปการทดสอบ 2

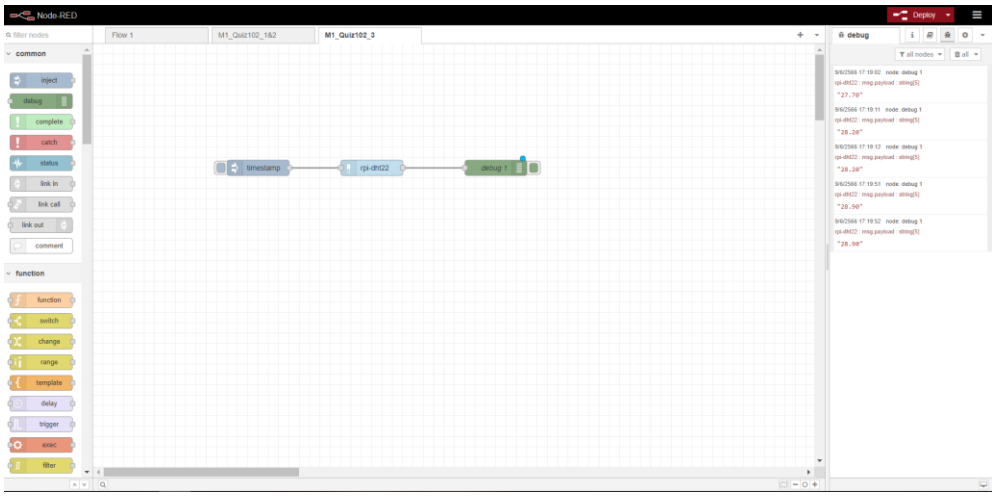
Node-RED.3 - Node-RED เพื่ออ่าน DHT-22 Sensor

โปรแกรมที่ใช้ทดสอบ


```
[
    {
        "id": "e5ce5cf25e39ee84",
        "type": "tab",
        "label": "M1_Quiz102_3",
        "disabled": false,
        "info": "",
        "env": []
    },
    {
        "id": "d5acc48f9d5beda0",
        "type": "inject",
        "z": "e5ce5cf25e39ee84",
        "name": "",
        "props": [
            {
                "p": "payload"
            },
            {
                "p": "topic",
                "vt": "str"
            }
        ],
        "repeat": "",
        "crontab": "",
        "once": false,
        "onceDelay": 0.1,
        "topic": "",
        "payload": "",
        "payloadType": "date",
        "x": 320,
        "y": 240,
        "wires": [
            [
                "b0f9ba27467da8ba"
            ]
        ]
    },
    {
        "id": "637ac72364898396",
        "type": "debug",
        "z": "e5ce5cf25e39ee84",
        "name": "debug 1",
        "active": true,
        "tosidebar": true,
        "console": false,
        "tostatus": false,
        "complete": "payload",
        "targetType": "msg",
        "statusVal": "",
        "statusType": "auto",
        "x": 780,
        "y": 240,
        "wires": []
    },
```

```
  {
    "id": "b0f9ba27467da8ba",
    "type": "rpi-dht22",
    "z": "e5ce5cf25e39ee84",
    "name": "",
    "topic": "rpi-dht22",
    "dht": 22,
    "pintype": 1,
    "pin": "32",
    "x": 540,
    "y": 240,
    "wires": [
      [
        "637ac72364898396"
      ]
    ]
  }
]
```


รูป Code Capture



รูปการทดสอบ 1

รูปการทดสอบ 2