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| **การสร้าง MQTT Server บน Raspberry Pi เพื่อใช้งาน Chatbot LINE ในฟาร์มอัจฉริยะ**  **Chatbot LINE from Raspberry Pi MQTT Server for Smart Farming** |
| **ขื่อ-สกุล : วราสิริ ลิ้มประเสริฐ B6214005** |

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| **6/6 – คำถามท้ายบทเพื่อทดสอบความเข้าใจ** |

**Quiz\_101 – ทดสอบ RPi4 GPIO with Python**

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

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| **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)** |
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**Python.2 - Python Switch control LED >> กดติด กดดับ**

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| **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)** |
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**POython.3 - Python Switch >> Switch Counter**

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| **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)** |
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**Quiz\_102 – ทดสอบ RPi4 GPIO with Node-RED**

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

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| **>>> 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"]]}] |
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| **>>>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;** |
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| >>>stopBlink  #Stop Blink function  msg.payload = 0;  return msg; |
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**Node-RED.2 - Node-RED เพื่อควบคุมสวิตซ์กดแบบ กดติด กดดับ 2 คู่**

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| >>> 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"]]}] |
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| >>> Start Blink  msg.payload = 1;  return; |
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| >>> Stop Blink  msg.payload = 0;  return msg; |
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**Node-RED.3 - Node-RED เพื่ออ่าน DHT-22 Sensor**

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| **ตั้งค่าที่ node rpi-dht22** | **ตั้งค่าที่ node timestamp** |
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