

การสร้าง MQTT Server บน Raspberry Pi เพื่อใช้งาน Chatbot LINE ในฟาร์มอัจฉริยะ	
Chatbot LINE from Raspberry Pi MQTT Server for Smart Farming	
ชื่อ-สกุล : อนุรักษ์ โตะแะ	รหัสนักศึกษา : B6310158
6/6 - คำถามท้ายบทเพื่อทดสอบความเข้าใจ	

Quiz_301 – Blynk with Node-RED

- ทดสอบควบคุม 4 LED ด้วย Raspberry Pi ผ่าน Node-RED
- เพิ่มเติมให้ส่งข้อมูล Temperature ไปแสดงที่ Gauge บน Blynk

Node-RED Code

```
[
  {
    "id": "9a105b4d0fde208f",
    "type": "tab",
    "label": "M3_Quiz301",
    "disabled": false,
    "info": "",
    "env": []
  },
  {
    "id": "32079b6e2c4553e7",
    "type": "rpi-gpio out",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "12",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 600,
    "y": 160,
    "wires": []
  },
  {
    "id": "c291383849304504",
    "type": "rpi-gpio out",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "16",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 600,
    "y": 220,
    "wires": []
  },
  {
    "id": "0a70d5a961fb5398",
    "type": "rpi-gpio out",
```

```

    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "20",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 600,
    "y": 280,
    "wires": []
  },
  {
    "id": "6e09787c25210d9d",
    "type": "rpi-gpio out",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "18",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 600,
    "y": 340,
    "wires": []
  },
  {
    "id": "f77fffb19e32589",
    "type": "debug",
    "z": "9a105b4d0fde208f",
    "name": "",
    "active": true,
    "tosidebar": true,
    "console": false,
    "tostatus": false,
    "complete": "payload",
    "targetType": "msg",
    "statusVal": "",
    "statusType": "auto",
    "x": 710,
    "y": 520,
    "wires": []
  },
  {
    "id": "4802468751ae1a7e",
    "type": "function",
    "z": "9a105b4d0fde208f",
    "name": "Tempp",
    "func": "msg.payload = Math.round( Math.random() *100)\nreturn msg;",
    "outputs": 1,
    "noerr": 0,
    "initialize": "",
    "finalize": "",
    "libs": [],
    "x": 540,
    "y": 460,
    "wires": [
      [

```

```

        "f77fffb19e32589",
        "d31b7e8ad3cebd6f"
    ]
}
{
    "id": "3209e043d969f9a6",
    "type": "inject",
    "z": "9a105b4d0fde208f",
    "name": "",
    "props": [
        {
            "p": "payload"
        },
        {
            "p": "topic",
            "vt": "str"
        }
    ],
    "repeat": "",
    "crontab": "",
    "once": false,
    "onceDelay": 0.1,
    "topic": "",
    "payload": "",
    "payloadType": "date",
    "x": 380,
    "y": 460,
    "wires": [
        [
            "4802468751ae1a7e"
        ]
    ]
},
{
    "id": "ae82c081035c8604",
    "type": "blynk-iot-in-write",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "0",
    "pin_all": 0,
    "client": "3934d3c631586a54",
    "x": 410,
    "y": 160,
    "wires": [
        [
            "32079b6e2c4553e7"
        ]
    ]
},
{
    "id": "b1a7041a338d60ce",
    "type": "blynk-iot-in-write",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "1",
    "pin_all": 0,
    "client": "3934d3c631586a54",
    "x": 410,

```

```

    "y": 220,
    "wires": [
      [
        "c291383849304504"
      ]
    ]
  },
  {
    "id": "4db9c467fd35de2b",
    "type": "blynk-iot-in-write",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "2",
    "pin_all": 0,
    "client": "3934d3c631586a54",
    "x": 410,
    "y": 280,
    "wires": [
      [
        "0a70d5a961fb5398"
      ]
    ]
  },
  {
    "id": "3b84d356900208e5",
    "type": "blynk-iot-in-write",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "3",
    "pin_all": 0,
    "client": "3934d3c631586a54",
    "x": 410,
    "y": 340,
    "wires": [
      [
        "6e09787c25210d9d"
      ]
    ]
  },
  {
    "id": "d31b7e8ad3cebd6f",
    "type": "blynk-iot-out-write",
    "z": "9a105b4d0fde208f",
    "name": "",
    "pin": "4",
    "pinmode": 0,
    "client": "3934d3c631586a54",
    "x": 760,
    "y": 460,
    "wires": []
  },
  {
    "id": "3934d3c631586a54",
    "type": "blynk-iot-client",
    "name": "",
    "path": "blynk.cloud",
    "key": "yDrawsxNdYhA0-pwck3r4XjQ2vRR78Va",
    "tpl": "TMPL6lkxgVqHf",
    "dbg_all": false,

```

```

"dbg_log": false,
"dbg_prop": false,
"dbg_sync": false,
"dbg_low": false,
"dbg_pins": "",
"multi_cmd": false,
"enabled": true
}

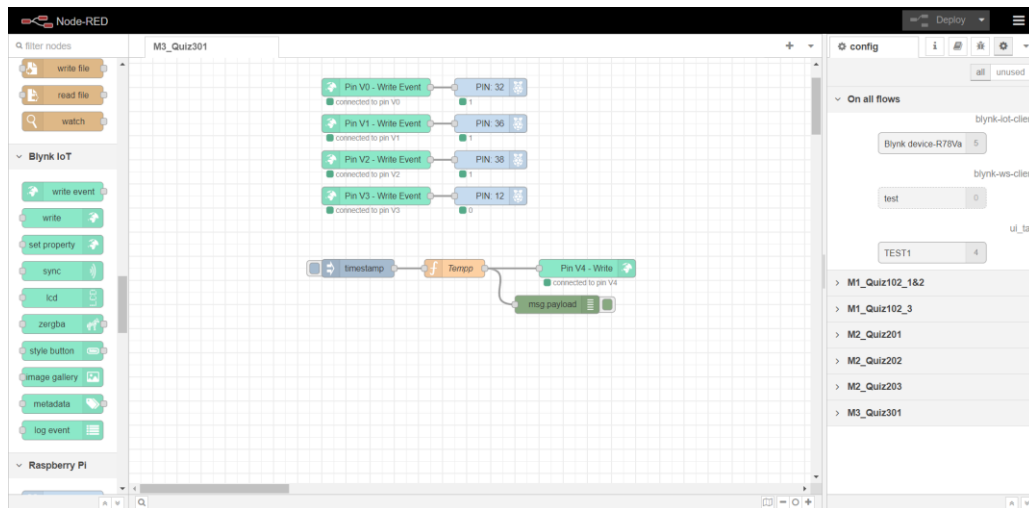
```

```

]

```

Node-RED Flow



หน้าจอ Blynk



รูปการทดสอบ 1



รูปการทดสอบ 2



Quiz_302 – MQTT Client with Node-RED

- ทดสอบควบคุม 4 LED ด้วย Raspberry Pi ผ่าน Node-RED
- เพิ่มเติมให้ส่งข้อมูล Temperature ไปแสดงที่ บน Server

Node-RED Code

```
[
  {
    "id": "944d911ccc3a8047",
    "type": "tab",
    "label": "M3_Q302",
    "disabled": false,
    "info": "",
    "env": []
  },
  {
    "id": "e01a2b685288a34c",
    "type": "mqtt in",
    "z": "944d911ccc3a8047",
    "name": "",
    "topic": "M3Quiz302",
    "qos": "2",
    "datatype": "auto",
    "broker": "9d20387091f630b9",
    "nl": false,
    "rap": true,
    "rh": 0,
    "inputs": 0,
    "x": 230,
    "y": 180,
    "wires": [
      [
        "be8219696a6e0893",
        "b0ca68f6060e7522",
        "0f7c27b34f43efc5",
        "6ecb9ec872745efa"
      ]
    ]
  },
  {
    "id": "be8219696a6e0893",
    "type": "change",
    "z": "944d911ccc3a8047",
    "name": "LED1",
    "rules": [
      {
        "t": "change",
        "p": "payload",
        "pt": "msg",
        "from": "1OFF",
        "fromt": "str",
        "to": "false",
        "tot": "bool"
      }
    ],
    "x": 230,
    "y": 180,
    "wires": [
      [
        "t": "change",

```

```

        "p": "payload",
        "pt": "msg",
        "from": "1ON",
        "fromt": "str",
        "to": "true",
        "tot": "bool"
    }
],
    "action": "",
    "property": "",
    "from": "",
    "to": "",
    "reg": false,
    "x": 410,
    "y": 180,
    "wires": [
        [
            "4188c4eeb002787d"
        ]
    ]
},
{
    "id": "4188c4eeb002787d",
    "type": "rpi-gpio out",
    "z": "944d911ccc3a8047",
    "name": "",
    "pin": "21",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 640,
    "y": 180,
    "wires": []
},
{
    "id": "b0ca68f6060e7522",
    "type": "change",
    "z": "944d911ccc3a8047",
    "name": "LED2",
    "rules": [
        {
            "t": "change",
            "p": "payload",
            "pt": "msg",
            "from": "2OFF",
            "fromt": "str",
            "to": "false",
            "tot": "bool"
        }
    ],
    {
        "t": "change",
        "p": "payload",
        "pt": "msg",
        "from": "2ON",
        "fromt": "str",
        "to": "true",
        "tot": "bool"
    }
}

```



```

    }
  ],
  "action": "",
  "property": "",
  "from": "",
  "to": "",
  "reg": false,
  "x": 410,
  "y": 240,
  "wires": [
    [
      "280475180b97d702"
    ]
  ]
},
{
  "id": "0f7c27b34f43efc5",
  "type": "change",
  "z": "944d911ccc3a8047",
  "name": "LED3",
  "rules": [
    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "3OFF",
      "fromt": "str",
      "to": "false",
      "tot": "bool"
    },
    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "3ON",
      "fromt": "str",
      "to": "true",
      "tot": "bool"
    }
  ],
  "action": "",
  "property": "",
  "from": "",
  "to": "",
  "reg": false,
  "x": 410,
  "y": 300,
  "wires": [
    [
      "529130510fcb64d4"
    ]
  ]
},
{
  "id": "6ecb9ec872745efa",
  "type": "change",
  "z": "944d911ccc3a8047",
  "name": "LED4",
  "rules": [

```

```

    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "4OFF",
      "fromt": "str",
      "to": "false",
      "tot": "bool"
    },
    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "4ON",
      "fromt": "str",
      "to": "true",
      "tot": "bool"
    }
  ],
  "action": "",
  "property": "",
  "from": "",
  "to": "",
  "reg": false,
  "x": 410,
  "y": 360,
  "wires": [
    [
      "600326651a3fa1e5"
    ]
  ]
},
{
  "id": "280475180b97d702",
  "type": "rpi-gpio out",
  "z": "944d911ccc3a8047",
  "name": "",
  "pin": "16",
  "set": "",
  "level": "0",
  "freq": "",
  "out": "out",
  "bcm": true,
  "x": 640,
  "y": 240,
  "wires": []
},
{
  "id": "529130510fcb64d4",
  "type": "rpi-gpio out",
  "z": "944d911ccc3a8047",
  "name": "",
  "pin": "12",
  "set": "",
  "level": "0",
  "freq": "",
  "out": "out",
  "bcm": true,
  "x": 640,

```

```

    "y": 300,
    "wires": []
  },
  {
    "id": "600326651a3fa1e5",
    "type": "rpi-gpio out",
    "z": "944d911ccc3a8047",
    "name": "",
    "pin": "18",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 640,
    "y": 360,
    "wires": []
  },
  {
    "id": "885e3b79412692e4",
    "type": "inject",
    "z": "944d911ccc3a8047",
    "name": "",
    "props": [
      {
        "p": "payload"
      },
      {
        "p": "topic",
        "vt": "str"
      }
    ],
    "repeat": "",
    "crontab": "",
    "once": false,
    "onceDelay": 0.1,
    "topic": "",
    "payload": "",
    "payloadType": "date",
    "x": 250,
    "y": 500,
    "wires": [
      [
        "d7885f16122ee0de"
      ]
    ]
  },
  {
    "id": "d7885f16122ee0de",
    "type": "function",
    "z": "944d911ccc3a8047",
    "name": "Tempp",
    "func": "msg.payload = \"Random Temperature = \" + Math.round( Math.random()
*100) \nreturn msg;",
    "outputs": 1,
    "noerr": 0,
    "initialize": "",
    "finalize": "",
    "libs": [],

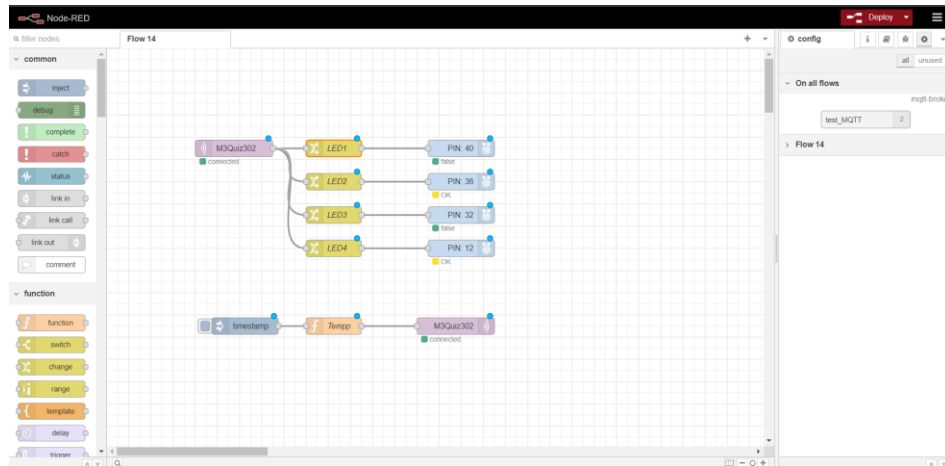
```

```

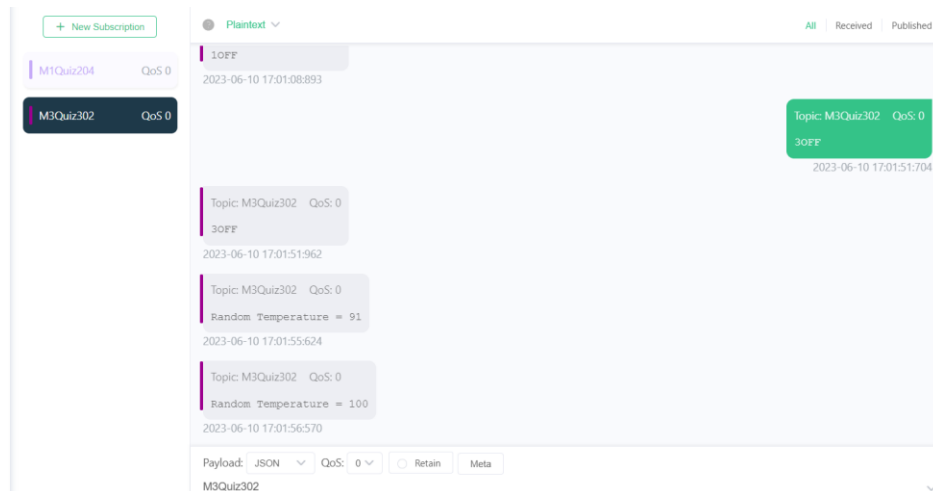
    "x": 410,
    "y": 500,
    "wires": [
      [
        "d9c9eb37707da3bc"
      ]
    ]
  },
  {
    "id": "d9c9eb37707da3bc",
    "type": "mqtt out",
    "z": "944d911ccc3a8047",
    "name": "",
    "topic": "M3Quiz302",
    "qos": "",
    "retain": "",
    "respTopic": "",
    "contentType": "",
    "userProps": "",
    "correl": "",
    "expiry": "",
    "broker": "9d20387091f630b9",
    "x": 630,
    "y": 500,
    "wires": []
  },
  {
    "id": "9d20387091f630b9",
    "type": "mqtt-broker",
    "name": "test_MQTT",
    "broker": "test.mosquitto.org",
    "port": "1883",
    "clientid": "",
    "autoConnect": true,
    "usetls": false,
    "protocolVersion": "4",
    "keepalive": "60",
    "cleansession": true,
    "birthTopic": "",
    "birthQos": "0",
    "birthPayload": "",
    "birthMsg": {},
    "closeTopic": "",
    "closeQos": "0",
    "closePayload": "",
    "closeMsg": {},
    "willTopic": "",
    "willQos": "0",
    "willPayload": "",
    "willMsg": {},
    "userProps": "",
    "sessionExpiry": ""
  }
]

```

Node-RED Flow



หน้าจอ MQTT Lens



รูปการทดสอบ 1



รูปการทดสอบ 2



Quiz_303 – MQTT Server on Raspberry Pi

- ทดสอบควบคุม 4 LED ด้วย Raspberry Pi ผ่าน Node-RED ไปยัง private server
- เพิ่มเติมให้ส่งข้อมูล Temperature ไปแสดงที่ บน private Server

โปรแกรมที่ใช้ทดสอบ

```
[
  {
    "id": "eb1644bf36f5f6bf",
    "type": "tab",
    "label": "M3_Q303",
    "disabled": false,
    "info": "",
    "env": []
  },
  {
    "id": "8de837c350c43338",
    "type": "mqtt in",
    "z": "eb1644bf36f5f6bf",
    "name": "",
    "topic": "M3Quiz303",
    "qos": "2",
    "datatype": "auto",
    "broker": "6114350ddb4a5e40",
    "nl": false,
    "rap": true,
    "rh": 0,
    "inputs": 0,
    "x": 290,
    "y": 160,
    "wires": [
      [
        "04258f57f3d73e56",
        "8fc2433de8fa69a6",
        "a12d7bd22410c810",
        "9e251efd77761acc"
      ]
    ]
  }
],
{
  "id": "04258f57f3d73e56",
  "type": "change",
  "z": "eb1644bf36f5f6bf",
  "name": "LED1",
  "rules": [
    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "1OFF",
      "fromt": "str",
      "to": "false",
      "tot": "bool"
    }
  ],
  {
    "t": "change",
```

```

        "p": "payload",
        "pt": "msg",
        "from": "1ON",
        "fromt": "str",
        "to": "true",
        "tot": "bool"
    }
],
"action": "",
"property": "",
"from": "",
"to": "",
"reg": false,
"x": 470,
"y": 160,
"wires": [
    [
        "181860f174b51f4a"
    ]
]
},
{
    "id": "181860f174b51f4a",
    "type": "rpi-gpio out",
    "z": "eb1644bf36f5f6bf",
    "name": "",
    "pin": "21",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 700,
    "y": 160,
    "wires": []
},
{
    "id": "8fc2433de8fa69a6",
    "type": "change",
    "z": "eb1644bf36f5f6bf",
    "name": "LED2",
    "rules": [
        {
            "t": "change",
            "p": "payload",
            "pt": "msg",
            "from": "2OFF",
            "fromt": "str",
            "to": "false",
            "tot": "bool"
        }
    ],
    {
        "t": "change",
        "p": "payload",
        "pt": "msg",
        "from": "2ON",
        "fromt": "str",
        "to": "true",
        "tot": "bool"
    }
}

```



```

    }
  ],
  "action": "",
  "property": "",
  "from": "",
  "to": "",
  "reg": false,
  "x": 470,
  "y": 220,
  "wires": [
    [
      "dbf287e82cad9047"
    ]
  ]
},
{
  "id": "a12d7bd22410c810",
  "type": "change",
  "z": "eb1644bf36f5f6bf",
  "name": "LED3",
  "rules": [
    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "3OFF",
      "fromt": "str",
      "to": "false",
      "tot": "bool"
    },
    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "3ON",
      "fromt": "str",
      "to": "true",
      "tot": "bool"
    }
  ],
  "action": "",
  "property": "",
  "from": "",
  "to": "",
  "reg": false,
  "x": 470,
  "y": 280,
  "wires": [
    [
      "8237ec2f36305f2a"
    ]
  ]
},
{
  "id": "9e251efd77761acc",
  "type": "change",
  "z": "eb1644bf36f5f6bf",
  "name": "LED4",
  "rules": [

```

```

    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "4OFF",
      "fromt": "str",
      "to": "false",
      "tot": "bool"
    },
    {
      "t": "change",
      "p": "payload",
      "pt": "msg",
      "from": "4ON",
      "fromt": "str",
      "to": "true",
      "tot": "bool"
    }
  ],
  "action": "",
  "property": "",
  "from": "",
  "to": "",
  "reg": false,
  "x": 470,
  "y": 340,
  "wires": [
    [
      "56f2b4fa03d129e8"
    ]
  ]
},
{
  "id": "dbf287e82cad9047",
  "type": "rpi-gpio out",
  "z": "eb1644bf36f5f6bf",
  "name": "",
  "pin": "16",
  "set": "",
  "level": "0",
  "freq": "",
  "out": "out",
  "bcm": true,
  "x": 700,
  "y": 220,
  "wires": []
},
{
  "id": "8237ec2f36305f2a",
  "type": "rpi-gpio out",
  "z": "eb1644bf36f5f6bf",
  "name": "",
  "pin": "12",
  "set": "",
  "level": "0",
  "freq": "",
  "out": "out",
  "bcm": true,
  "x": 700,

```

```

    "y": 280,
    "wires": []
  },
  {
    "id": "56f2b4fa03d129e8",
    "type": "rpi-gpio out",
    "z": "eb1644bf36f5f6bf",
    "name": "",
    "pin": "18",
    "set": "",
    "level": "0",
    "freq": "",
    "out": "out",
    "bcm": true,
    "x": 700,
    "y": 340,
    "wires": []
  },
  {
    "id": "b14a658d6f14464f",
    "type": "inject",
    "z": "eb1644bf36f5f6bf",
    "name": "",
    "props": [
      {
        "p": "payload"
      },
      {
        "p": "topic",
        "vt": "str"
      }
    ],
    "repeat": "",
    "crontab": "",
    "once": false,
    "onceDelay": 0.1,
    "topic": "",
    "payload": "",
    "payloadType": "date",
    "x": 310,
    "y": 480,
    "wires": [
      [
        "137137e50e6a2f2e"
      ]
    ]
  },
  {
    "id": "137137e50e6a2f2e",
    "type": "function",
    "z": "eb1644bf36f5f6bf",
    "name": "Tempp",
    "func": "msg.payload = \"Random Temperature = \" + Math.round( Math.random()
*100) \nreturn msg;",
    "outputs": 1,
    "noerr": 0,
    "initialize": "",
    "finalize": "",
    "libs": [],

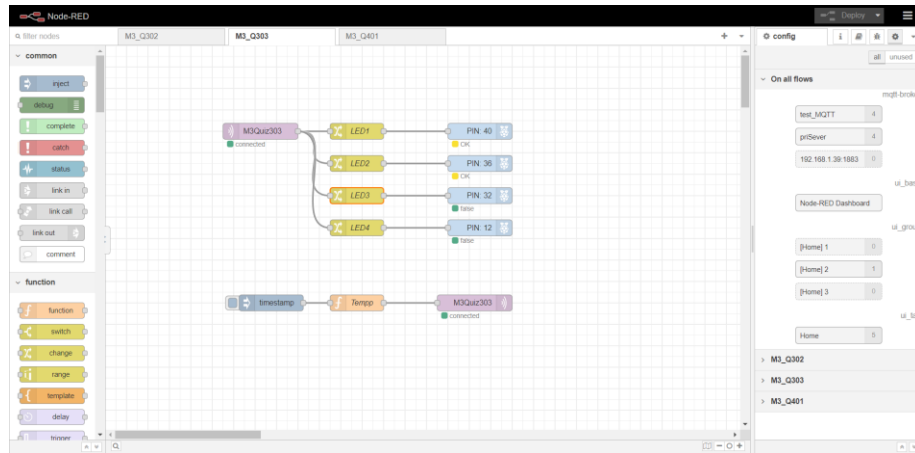
```

```

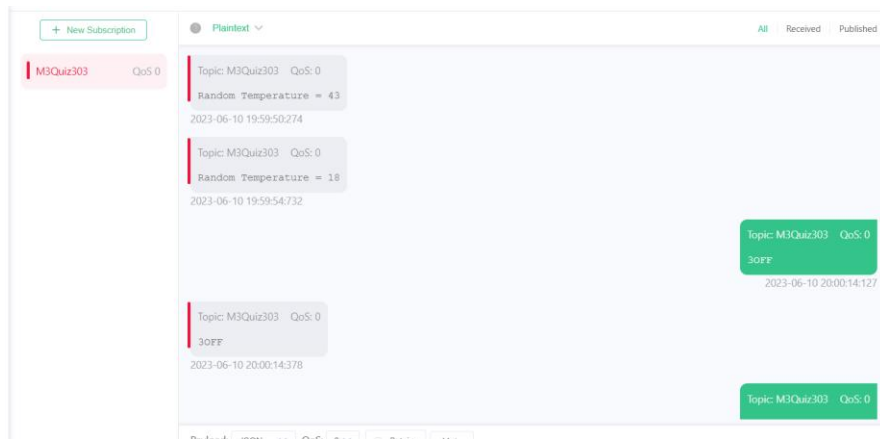
    "x": 470,
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        "065c141522a98729"
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  {
    "id": "065c141522a98729",
    "type": "mqtt out",
    "z": "eb1644bf36f5f6bf",
    "name": "",
    "topic": "M3Quiz303",
    "qos": "",
    "retain": "",
    "respTopic": "",
    "contentType": "",
    "userProps": "",
    "correl": "",
    "expiry": "",
    "broker": "6114350ddb4a5e40",
    "x": 690,
    "y": 480,
    "wires": []
  },
  {
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    "type": "mqtt-broker",
    "name": "priSever",
    "broker": "192.168.1.47",
    "port": "1883",
    "clientid": "",
    "autoConnect": true,
    "usetls": false,
    "protocolVersion": "4",
    "keepalive": "60",
    "cleansession": true,
    "birthTopic": "",
    "birthQos": "0",
    "birthPayload": "",
    "birthMsg": {},
    "closeTopic": "",
    "closeQos": "0",
    "closePayload": "",
    "closeMsg": {},
    "willTopic": "",
    "willQos": "0",
    "willPayload": "",
    "willMsg": {},
    "userProps": "",
    "sessionExpiry": ""
  }
]

```

รูปถ่ายหน้า Web Browser



รูปการทดสอบ 1



รูปการทดสอบ 2

