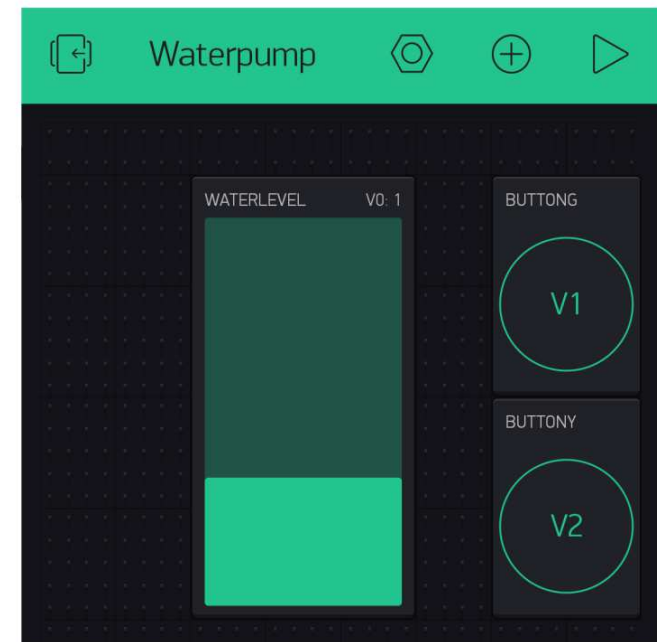
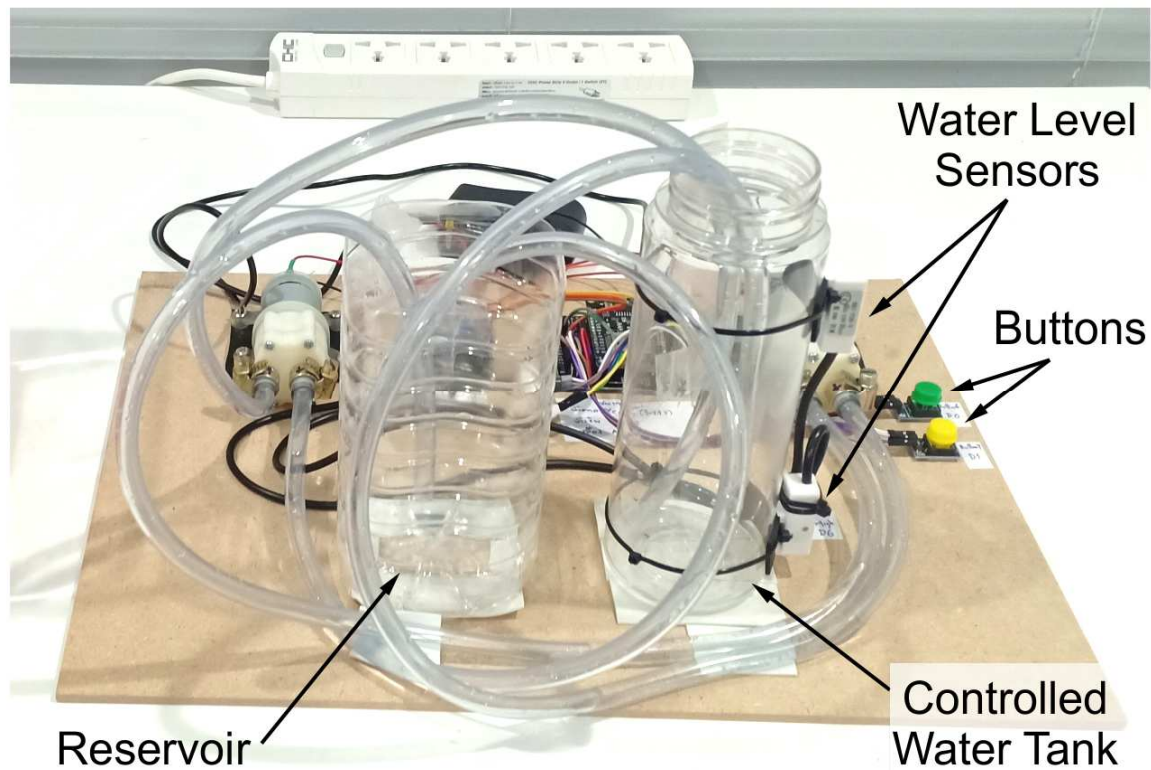


ชุดสาธิตการวัดและควบคุมระดับน้ำในถังทั้งแบบ LOCAL และ REMOTE

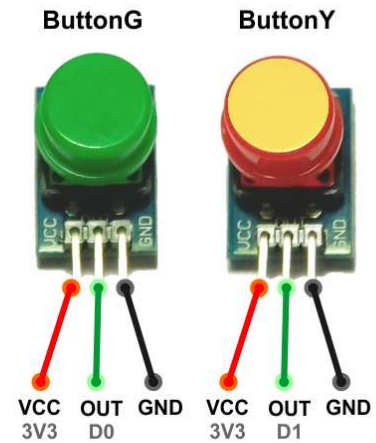
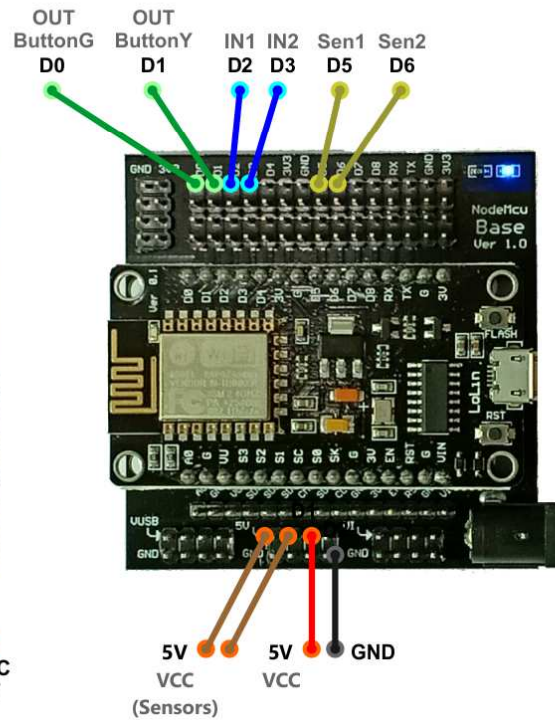
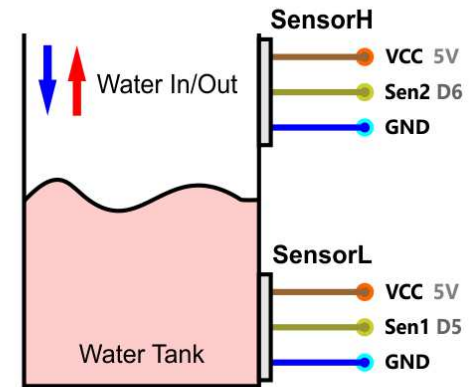
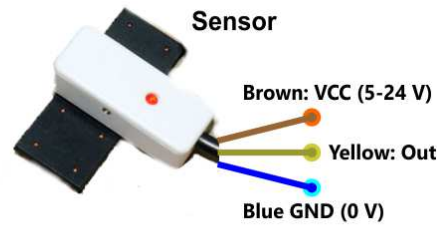
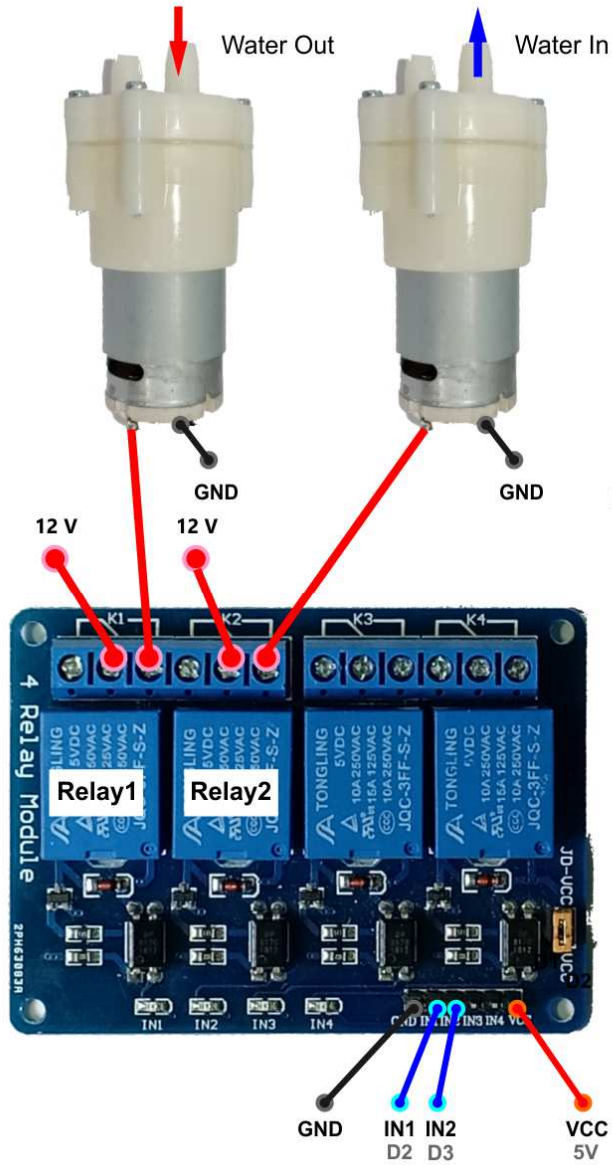
สุวิทย์ กิระวิทยา

22-23 กุมภาพันธ์ 2563



Remote Monitoring & Control via Blynk App: Waterpump

ผังการเชื่อมต่อ



โปรแกรม 1: ระบบที่ควบคุมด้วยมือ หรือ LOCAL

```
// Control Relay by NodeMCU ESP8266
```

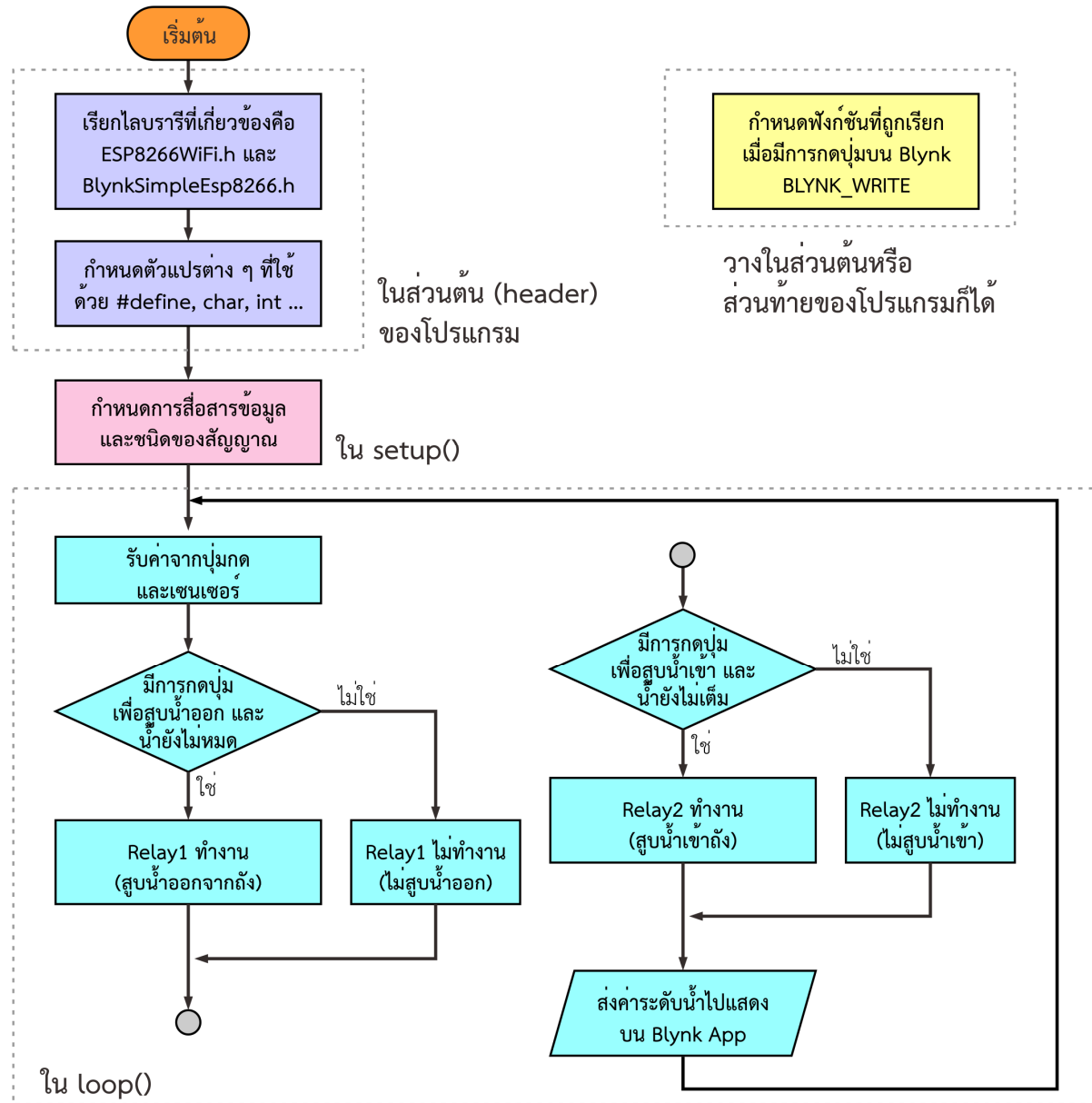
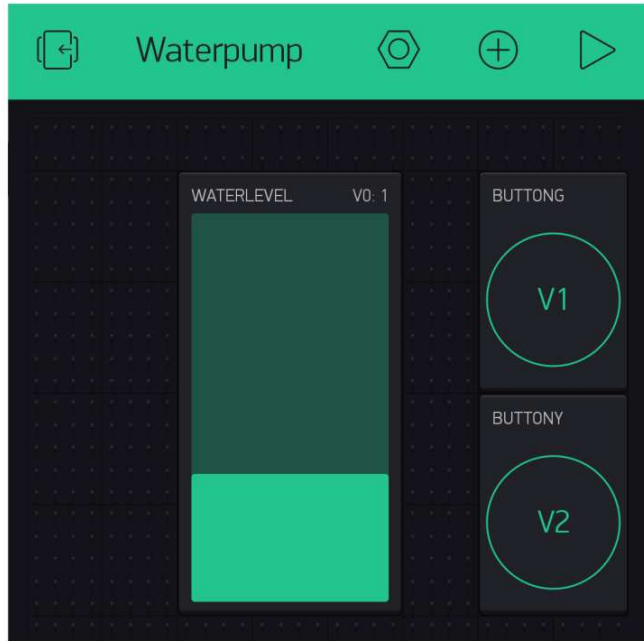
```
#define ON LOW
#define OFF HIGH
int ButtonG = D0;
int ButtonY = D1;
int Relay1 = D2;
int Relay2 = D3;
int SensorL = D5;
int SensorH = D6;
```

```
void setup() {
  Serial.begin(9600);
  pinMode(ButtonG, INPUT);
  pinMode(ButtonY, INPUT);
  pinMode(Relay1, OUTPUT);
  pinMode(Relay2, OUTPUT);
  pinMode(SensorL, INPUT);
  pinMode(SensorH, INPUT);
}
```

```
void loop() {
  int b1 = digitalRead(ButtonG);
  int b2 = digitalRead(ButtonY);
  int s1 = digitalRead(SensorL);
  int s2 = digitalRead(SensorH);
  if(b1==HIGH) {
    digitalWrite(Relay1, ON);
  } else {
    digitalWrite(Relay1, OFF);
  }
  if(b2==HIGH) {
    digitalWrite(Relay2, ON);
  } else {
    digitalWrite(Relay2, OFF);
  }
  Serial.print(s1);
  Serial.println(s2);
  delay(100);
}
```

แล้วทดสอบ ๆ ๆ

แนวการออกแบบแผนผังการทำงาน



โปรแกรม 2: ระบบควบคุมระยะไกล หรือ REMOTE

```
// Control NodeMCU ESP8266 by Blynk
// Read value from sensor and control a relay

// Comment this out to disable prints
#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>

char auth[] = "PPEstEzeSp8zabAnaXqFhKB9NMXY";
char ssid[] = "OPPO F9";
char pass[] = "sk0869309339";

#define OFF HIGH
#define ON LOW

int ButtonG = D0;
int ButtonY = D1;
int Relay1 = D2; // pump water out
int Relay2 = D3; // pump water in
int SensorL = D5;
int SensorH = D6;

int b1,b2,s1,s2,vpin1,vpin2,waterlevel;
```

Global Variables
(vpin = Virtual Pin ของ Blynk)

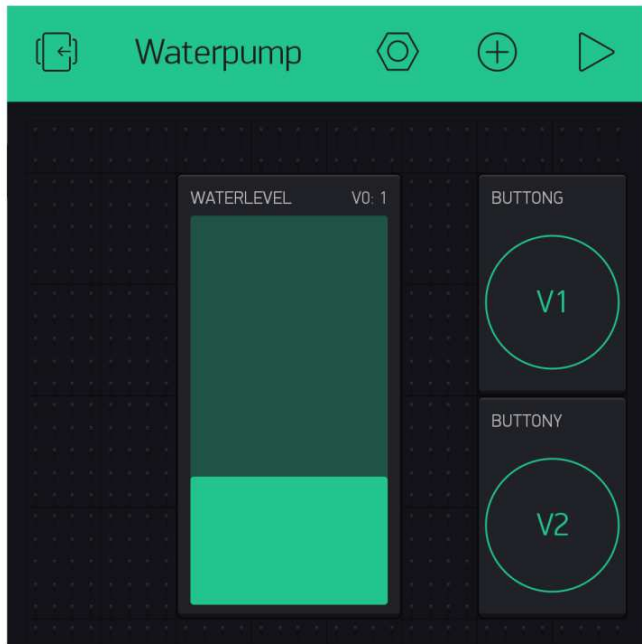
```
void setup() {
    Serial.begin(9600);
    Blynk.begin(auth, ssid, pass);
    pinMode(ButtonG, INPUT);
    pinMode(ButtonY, INPUT);
    pinMode(Relay1, OUTPUT);
    pinMode(Relay2, OUTPUT);
    pinMode(SensorL, INPUT);
    pinMode(SensorH, INPUT);
    digitalWrite(Relay1, OFF);
    digitalWrite(Relay2, OFF);
    vpin1 = 0;
    vpin2 = 0;
}

BLYNK_WRITE(V1) {
    vpin1 = param.asInt();
}

BLYNK_WRITE(V2) {
    vpin2 = param.asInt();
}
```

Blynk functions

โปรแกรม 2: ระบบควบคุมระยะไกล หรือ REMOTE (ต่อ)



```
void loop() {
  b1 = digitalRead(ButtonG);
  b2 = digitalRead(ButtonY);
  s1 = digitalRead(SensorL);
  s2 = digitalRead(SensorH);

  waterlevel = s2*2+s1;

  // for debugging
  Serial.print(b1); Serial.print(b2);
  Serial.print(s1); Serial.print(s2);
  Serial.print(vpin1); Serial.println(vpin2);

  if( (b1==HIGH) || (vpin1==HIGH) ) {
    if (waterlevel > 0) {          // Checking the water level
      digitalWrite(Relay1, ON);
    } else {
      digitalWrite(Relay1, OFF);
    }
  } else {
    digitalWrite(Relay1, OFF);
  }
  if( (b2==HIGH) || (vpin2==HIGH) ) {
    if (waterlevel < 3) {          // Checking the water level
      digitalWrite(Relay2, ON);
    } else {
      digitalWrite(Relay2, OFF);
    }
  } else {
    digitalWrite(Relay2, OFF);
  }
  Blynk.virtualWrite(V0,waterlevel);
  Blynk.run();
  delay(100);
}
```

$waterlevel = s2*2+s1$
(= 0, 1, 2 or 3)

vpin1 = ButtonG
vpin2 = ButtonY
(vpin = Virtual Pin)