

LAMPIRAN

Listing program alat monitoring dan kontrol benih tanaman
bayam hidroponik tertutup

```
//library sensor
#include <EEPROM.h>
#include "GravityTDS.h"
GravityTDS gravityTds;
#include <DHT.h>
#include <Arduino.h>

//PIN DHT
#define DHTPIN 3
#define DHTTYPE DHT22
DHT dht(DHTPIN, DHTTYPE);
//PIN TDS
#define TdsSensorPin A0
//PIN Kipas
#define kipas 8
//pompa
#define PompaN 9
// pompa Up
#define pompaUp 10
// pompa Down
#define pompaDown 11

//ph
const int ph_pin = A1;
float po = 0;
float PH_step;
int nilai_analog_PH;
double Teganganph;
```

```

//untuk kalibrasi
float PH4 = 3.1;
float PH7 = 2.68;

//dht var
int kelembaban;
int suhu;
int tdsValue, voltage, temperature = 25;

//inisiasi millis
unsigned long pompa_N=0;
unsigned long pompa_up=0;
unsigned long pompa_down=0;

bool pompa_n1= LOW;
bool pompa_up2 = LOW;
bool pompa_down3 =LOW;
int x=0;
int y=0;
int z=0;
void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
//kipas
pinMode (kipas ,OUTPUT);
//Pompa
pinMode (PompaN ,OUTPUT);
pinMode ( pompaUp ,OUTPUT);
pinMode ( pompaDown ,OUTPUT);
pinMode (ph_pin,INPUT);
  dht.begin();
}

```

```

gravityTds.setPin(TdsSensorPin);
gravityTds.setAref(5.0); //reference voltage on ADC, default
5.0V on Arduino UNO
gravityTds.setAdcRange(1024); //1024 for 10bit ADC;4096
for 12bit ADC
gravityTds.begin(); //initialization
}

```

```

void loop() {
// put your main code here, to run repeatedly:
if(suhu > 30 )
{
digitalWrite(kipas,HIGH);
}
else if(suhu < 30)

{
digitalWrite(kipas,LOW);
}
}

```

//tds program

```

unsigned long pompa_Mati1=millis();
if((tdsValue < 900) && (pompa_Mati1-pompa_N>=1000) )
{
x++;
if (y==0)
{
digitalWrite(PompaN, HIGH);
}
else if (y>300)
{
digitalWrite(PompaN, LOW);
y=0;
}
}
}

```

```

    }
    else
    {
        digitalWrite(PompaN, LOW);
    }
    pompa_N=millis();

}
else if ((tdsValue > 900)&&(tdsValue < 1200))
{
    pompa_n1 =LOW;
    digitalWrite(PompaN ,pompa_n1);
}

// pH program
int nilai_analog_PH = analogRead (ph_pin);
Teganganph = 5 / 1024.0*nilai_analog_PH;
PH_step = (PH4-PH7)/3;
po = 7.00 + ((PH7 - Teganganph)/PH_step);
float phValue=(-po);

unsigned long pompa_Mati2=millis();

if((phValue < 5.8)&& (pompa_Mati2-pompa_up >=1000))
{
    x++;
    if (x==0)
    {
        digitalWrite(pompaUp, HIGH);
    }
    else if (x>300)
    {

```

```

    digitalWrite(pompaUp, LOW);

    x=0;
  }
  else
  {
    digitalWrite(pompaUp, LOW);
  }

  pompa_up=millis();
}
else if(( pHValue > 6 )&&(pHValue < 7))
{
  pompa_up2=LOW;
  digitalWrite(pompaUp,pompa_up2);
}

unsigned long pompa_Mati3=millis();
if(( pHValue >7)&& (pompa_Mati3-pompa_down <=1000))
{
  x++;
  if (x==1)
  {
    digitalWrite(pompaDown, HIGH);
  }
  else if (x>300)
  {
    digitalWrite(pompaDown, LOW);
    x=1;
  }
}

```

```

else
{
    digitalWrite(pompaDown, LOW);
}
pompa_down3=millis();
}
else if(( pHValue < 7)&&(pHValue >6 ))
{
    pompa_down3=LOW;
digitalWrite(pompaDown,pompa_down3);

}

```

```

// Kirimdata ke ESP8266
String minta = "";
while (Serial.available()>0){
    minta += char (Serial.read());
}
minta.trim();
if (minta == "Ya"){
    kirimdata();
}
minta ="";

delay(500);

}

```

```

void kirimdata(){
//DHT22
kelembaban = dht.readHumidity();
suhu = dht.readTemperature();

```

```

//tds
    gravityTds.setTemperature(temperature); // set the temperature
and execute temperature compensation
    gravityTds.update(); //sample and calculate
    tdsValue = gravityTds.getTdsValue();

    //ph
    int nilai_analog_PH = analogRead (ph_pin);
    Teganganph = 5 / 1024.0*nilai_analog_PH;
    PH_step = (PH4-PH7)/3;
    po = 7.00 + ((PH7 - Teganganph)/PH_step);
    float pHValue=(-po);

    String datakirim = String (suhu) + "#" + String (kelembaban) +
    "#" + String (tdsValue) + "#" + String (pHValue) ;
    Serial.println(datakirim);
    Serial.println();
    //calibration ph Sensor

    delay (1000);

}

// Kirimdata ke ESP8266
String minta = "";
while (Serial.available()>0){
    minta += char (Serial.read());
}
minta.trim();
if (minta == "Ya"){
    kirimdata();
}

```



```

}
minta = "";

delay(500);

}

void kirimdata(){
//DHT22
kelembaban = dht.readHumidity();
suhu = dht.readTemperature();

//tds
gravityTds.setTemperature(temperature);
gravityTds.update(); //sample and calculate
tdsValue = gravityTds.getTdsValue();

//ph
int nilai_analog_PH = analogRead (ph_pin);
Teganganph = 5 / 1024.0*nilai_analog_PH;
PH_step = (PH4-PH7)/3;
po = 7.00 + ((PH7 - Teganganph)/PH_step);
float phValue=(-po);

String datakirim = String (suhu) + "#" + String (kelembaban) +
"#" + String (tdsValue) + "#" + String (phValue) ;
Serial.println(datakirim);
Serial.println();
//calibration ph Sensor

delay (500);

}

```

Program NodMCU ESP8266

```
#include <SoftwareSerial.h>
SoftwareSerial DataSerial(5,4);
#include <ThingierESP8266.h>
#include <ESP8266WiFi.h>

unsigned long previousMillis = 0;
const long interval = 1000;
String arrData[4];

#define USERNAME "Rifki28"
#define DEVICE_ID "Hidroponik"
#define DEVICE_CREDENTIAL "&NAGFarFw?je#8Os"

ThingierESP8266 thing
(USERNAME,DEVICE_ID,DEVICE_CREDENTIAL);

const char* ssid = "OPPO Reno5";
const char* password = "baik1234";
//baca data
int suhu ;
int kelembaban;
int tdsValue;
float phValue;

void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  DataSerial.begin(9600);
  pinMode(0, OUTPUT);
```

```

WiFi.begin(ssid,password);
while (WiFi.status() != WL_CONNECTED){
  delay(1000);
  Serial.print(".");
  Serial.println("Tidak Ada Koneksi WiFi");
}
Serial.println("Ada Koneksi WiFi");

thing.add_wifi(ssid,password);

thing["led"] << digitalPin(0);

// Long version that allow you to add logic.
thing["led"] << [(pson& in){
  if(in.is_empty()){
    // We send back the pin value to thinger platform
    in = (bool) digitalRead(0);
  }
  else{
    // This code is called whenever the "led" resource change
    digitalWrite(0, in ? HIGH : LOW);
  }
}];

}
void loop() {
  thing["*-*"] >> [] (pson & out){
    out["suhu (°C)"] = suhu;
    out["kelembaban (%)"] = kelembaban;
    out["Nutrisi (Ppm)"] =tdsValue;
    out[" pH"] = phValue;
  };
}

```

```

// put your main code here, to run repeatedly:
unsigned long currentMillis = millis();

if (currentMillis-previousMillis >= interval){
  previousMillis = currentMillis;

  String data = "";
  while(DataSerial.available(>0)){
    data += char (DataSerial.read());
  }
  data.trim();
  if (data != ""){
    int index =0;
    for(int i=0; i<=data.length(); i++){
      char delimiter = '#';
      if (data[i]!= delimiter)
        arrData [index] += data[i];
      else
        index++;
    }
    if (index==3)
    {
      Serial.println( arrData[0]);
      Serial.print(arrData[1]);
      Serial.println();
      Serial.println(arrData[2]);
      Serial.print(arrData[3]);
      Serial.println();

    }

    suhu = arrData[0].toInt();
    kelembaban = arrData[1].toInt();

```

```
tdsValue = arrData[2].toInt();  
phValue = arrData[3].toFloat();
```

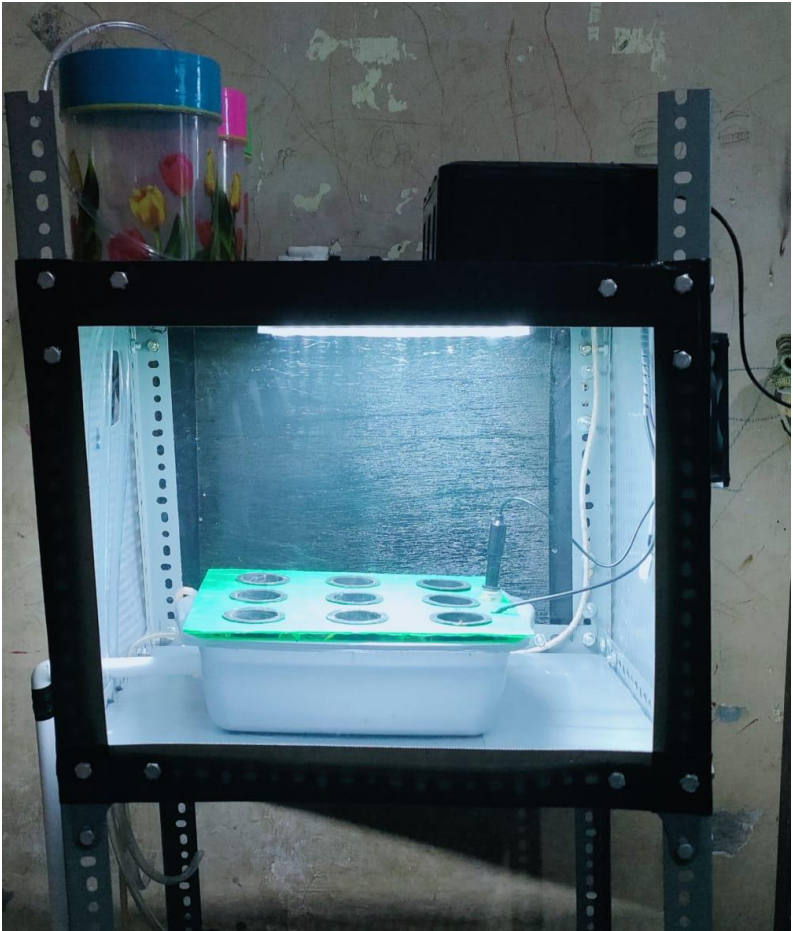
```
//picu thinger.io  
thing.handle();
```

```
arrData[0]= "";  
arrData[1]= "";  
arrData[2]= "";  
arrData[3]= "";
```

```
}  
DataSerial.println("Ya");
```

```
}  
}
```

Gambar Alat



BIODATA PENULIS



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Riwayat Pendidikan

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SMP Negeri 02 Karangpucung	:	Tahun 2013 - 2016
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