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LAMPIRAN

Lampiran A

Program Sistem

```
#include <SoftwareSerial.h>                    //komunikasi serial

SoftwareSerial serial_slave(2, 3); //(RX=2 ,TX=3);

#include <Wire.h>

//pHtanah

float SensorValue ;

double reg_avg;

// kelembaban

float kelembaban;

float kelembaban_value;


const intpH= A0;

const int Kelembapan_pin = A1;


void setup() {

  // put your setup code here, to run once:

  Serial.begin(9600);

  serial_slave.begin(115200);
```

```
}

void loop() {
  //pH
  SensorValue = analogRead(pH);
  double reg = regress(SensorValue);
  if (isnan(reg)) {
    reg = 0;
  }

  if (reg < 0) {
    reg = 0;
  }

  for (int x = 0; x < 25; x++) {
    reg_avg = reg_avg + reg;
    delay(10);
  }
  //kelembaban tanah
  kelembaban_value = analogRead(Kelembapan_pin );
  kelembaban = ((kelembaban_value / 1023.00) * 100);
```

```
 // Serial.print("persentase kelembaban tanah = ");
 //Serial.println(KelembabanTanah);
 //Serial.println("%");
 delay(1000);
// Serial.println(kelembaban_value);
 Serial.print("{");
 // Serial.print(PH);
 Serial.print(",");
 Serial.print(kelembaban);
 Serial.println("}");

 serial_slave.print("{");
 serial_slave.print(reg);
 serial_slave.print(",");
 serial_slave.print(kelembaban);
 serial_slave.println("}");
 reg_avg = reg_avg / 25;
 Serial.print("adc = ");
 Serial.println(reg, 1);
 Serial.println("adc: " + String(SensorValue));
```

```
  Serial.println();
  delay(200 );
}

double regress(double x) {
  double terms[] = {
    4.0008285444955174e+000,
    7.7211695487912646e-001,
    -5.7869927848163250e-002,
    2.9881956186685599e-003,
    -1.4667040783596081e-004,
    5.2152859072964087e-006,
    -1.1435211271074310e-007,
    1.4876387404950703e-009,
    -1.0514989984406078e-011,
    2.1220652976569108e-014,
    2.5635294963862482e-016,
    -2.2655699086273600e-018,
    7.5144880882033643e-021,
    -9.4750200823622185e-024
  };
```

```
  double t = 1;
  double r = 0;
  for (double c : terms) {
    r += c * t;
    t *= x;
  }
  return r;
}
#include <Wire.h>
#include "RTClib.h"
#define THINGER_SERIAL_DEBUG
#include <ThingerESP32.h>
#define USERNAME "anggiridho1"
#define DEVICE_ID "RTC"
#define DEVICE_CREDENTIAL "tb9oUmeXMKjU1npH"

#define rellay1 25
#define rellay2 26
#define buzzer 27
```

```
#define SSID "Wifi T.Elektronika"

#define SSID_PASSWORD "wifipnc2020"

ThingerESP32 thing(USERNAME, DEVICE_ID, DEVICE_CREDENTIAL);

RTC_DS3231 rtc;

char dataHari[7][12] = {"Minggu", "Senin", "Selasa", "Rabu",
"Kamis", "Jumat", "Sabtu"};

String hari;

int tanggal, bulan, tahun, jam, menit, detik, a , k;


unsigned long interval = 1000;

unsigned long previousMillis = 0;

//unsigned long currentMillis ;

//delay pompa

const long interval2 = 60000;

unsigned long previousMillis2 = 0;

//unsigned long currentMillis2 ;

//serial

#define RXD2 16

#define TXD2 17

//sensor

float SensorValue ;
```

```
float reg  = 0.0;
int kelembaban;

//int jumlah; // pakan

void setup () {
  //rellay
  pinMode( rellay1, OUTPUT);
  pinMode( rellay2, OUTPUT);
  // open serial for monitor
  Serial.begin(115200);
  Serial2.begin(115200, SERIAL_8N1, RXD2, TXD2);

  //RTC
  rtc.begin();
  if (! rtc.begin()) {
    Serial.println("RTC Tidak Ditemukan");
    Serial.flush();
    abort();
  }
```

```
  // rtc.adjust(DateTime(F(__DATE__), F(__TIME__)));
  // WIFI
  Serial.println("loading...");
  Serial.println(SSID);
  WiFi.begin(SSID, SSID_PASSWORD);
  while (WiFi.status() != WL_CONNECTED) {
    delay(1000);
    Serial.print("NO CINNECT");
  }
  if ((WiFi.status() == WL_CONNECTED)) {
    Serial.println("");
    Serial.println("WiFi connected");
  }

  //Thinger
  // add WiFi credentials
  thing.add_wifi(SSID, SSID_PASSWORD);

  // digital pin control example (i.e. turning on/off a light, a relay,
configuring a parameter, etc)
  // thing["led"] << digitalPin(LED_BUILTIN);
```

```
  // resource output example (i.e. reading a sensor value)
  thing["timer"] >> [] (pson & out)
  {
    //    out ["hari"] =dataHari[now.dayOfTheWeek()];
    out ["tanggal"] = tanggal;
    out ["bulan"]   = bulan;
    out[" tahun"]   = tahun;
    out[" jam"]     = jam;
    out[" menit"]   = menit;
    out [" detik"]   = detik;
    out ["pH_tanah"] = reg ;
    out ["kelembaban tanah"] = kelembaban;
  };
}

void loop () {
  serial_terima();

  thing.handle();
```

```
DateTime now = rtc.now();
hari    = dataHari[now.dayOfTheWeek()];
tanggal = now.day(), DEC;
bulan   = now.month(), DEC;
tahun   = now.year(), DEC;
jam     = now.hour(), DEC;
menit   = now.minute(), DEC;
detik   = now.second(), DEC;

a = detik;
if (detik == 10) {
  digitalWrite(rellay1 , HIGH);

}
else if (detik == 35) {
  digitalWrite(rellay1 , HIGH);
}
if (kelembaban <= 50) {
  digitalWrite(rellay1 , LOW);
}
unsigned long currentMillis = millis();
```

```
  if ((currentMillis - previousMillis) >= interval) {
    a ++;
    previousMillis = millis();
    Serial.println(a);
    Serial.println(k);
    if (a == 60 ) {
      a = 0 ;
      k ++;
      if (k == 2) {
        digitalWrite(rellay2 , HIGH);
        delay(60000);
          digitalWrite(rellay2 , LOW);
        }
//       unsigned long currentMillis2 = millis();
//       if ((currentMillis2 - previousMillis2) >= interval2) {
//         previousMillis2 = millis();
//
//
//
//       }
```

```
      if (k > 2) {
        k = 0;
      }
    }
  }
  Serial.println(String() + hari + ", " + tanggal + "-" + bulan + "-" +
tahun);
  Serial.println(String() + jam + ":" + menit + ":" + detik);
  Serial.println();
  Serial.print("kel : ");
  Serial.println(kelembaban);
  Serial.print("pH : ");
  Serial.println(reg );
  delay(1000);

 }
String dataMasuk = "";

void serial_terima() {

 if (Serial2.available() > 0) {
```

```
  dataMasuk = Serial2.readStringUntil('\n'  );
  dataMasuk.trim();

  byte buka = dataMasuk.indexOf('{');
  byte koma1 = dataMasuk.indexOf(',');
  byte tutup = dataMasuk.indexOf('}');

  String firstVal = dataMasuk.substring(buka + 1, koma1);
  String secondVal = dataMasuk.substring(koma1 + 1, tutup);

  reg = firstVal.toFloat();
  kelembaban = secondVal.toInt();



 }
}
```

Lampiran B

HASIL TANAMAN CABAI

BIODATA PENULIS

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Riwayat Pendidikan :

SD N 4 Gumilir	Tahun 2007 – 2013
SMP N 4 Cilacap	Tahun 2013 – 2016
SMK N 2 Cilacap	Tahun 2016 – 2019
Politeknik Negeri Cilacap	Tahun 2019 – 2022

Penulis telah mengikuti seminar Tugas Akhir pada tanggal 08 Agustus 2022, sebagai salah satu persyaratan untuk memperoleh gelar Ahli Madya (A. Md).