Lampiran 4 Kode Program Arduino IDE (Pakan Ikan Otomatis)

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#define BLYNK_TEMPLATE_ID "TMPL6wwykXnF3"
#define BLYNK_TEMPLATE_NAME "Smart Aquarium"
#define BLYNK_AUTH_TOKEN "Ev5MS1fsW8Y6PWdLPFBY-
BQcN2vNS8VF"
#define BLYNK_PRINT Serial
#include  <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>
char ssid[] = "Imam";
char pass[] = "123456789";
BlynkTimer timer;

#include<KRrtc.h>
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 16, 2);
#include  "DTH_Turbidity.h"
#include <OneWire.h>
#include <DallasTemperature.h>
#include <ESP32Servo.h>
#include <Ultrasonic.h>


#define TURBIDITY_SENSOR_PIN 35
const int PIN_DS18 = 33;
const int servoPin = 13;
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const int pompa_isi = 25;
const int pompa_kuras = 26;
const int pemanas = 27;
const int fan = 14;
const int buzzer = 15;

#include  <HardwareSerial.h>
HardwareSerial SerialPort(1); // use UART2

Ultrasonic ultrasonic1(4, 2);

OneWire ds(PIN_DS18);
DallasTemperature sensor(&ds);
float suhu_air;
Servo myservo;

int jarak;

DTH_Turbidity turbSensor(TURBIDITY_SENSOR_PIN);
float ntu_val = 0;
float volt = 0;
float ph;
String sph;

int stwarning = 0, stkuras = 0;
int setdet = 10;
int pos = 0;
int stpp = 0;
String stsuhu = "Normal", stair = "PH Normal & Air
Jernih", stpakan = "-";

void sendSensor()
{

  analogReadResolution(10);
  rtcGet();
  jarak = 25 - ultrasonic1.read();
  // jarak = ultrasonic1.read();
  ntu_val = turbSensor.readTurbidity();
  sensor.requestTemperatures();
  suhu_air = sensor.getTempCByIndex(0);
  ph = sph.toFloat();

  if (ph >= 9 && stkuras == 0) {
    stwarning = 1;
    stair = "PH Asam";
  } else  if (ph <= 5 && stkuras == 0) {
    stwarning = 1;
    stair = "PH basah";
  } if (ntu_val >= 3000 && stkuras == 0) {
    stwarning = 1;
```

```
    stair = "Keruh";
  } else if (stkuras == 0) {
    stwarning = 0;
    stair = "PH Normal & Air Jernih";
  }

  if (stwarning == 1) {
    //pompa kuras on
    Serial.println("POMPA KURAS ON:");
    stkuras = 1;
    digitalWrite(pompa_kuras, LOW);
  }
  if (jarak >= 20 && stkuras == 0) {//offer air
    digitalWrite(buzzer, HIGH);
    digitalWrite(pompa_kuras, LOW);
  } else if (jarak <= 25 && stkuras == 0) {
    digitalWrite(buzzer, LOW);
    digitalWrite(pompa_kuras, HIGH);
  }
  else {
    digitalWrite(buzzer, LOW);
  }
if (jarak >= 15 && stkuras == 2) { //pompa mati semua
    stkuras = 0;
    stwarning = 0;
    digitalWrite(pompa_isi, HIGH);
    Serial.println("POMPA OFF Semua:");
    delay(2000);
  } else if (jarak <= 5 && stkuras == 1) {//pompa isi on
pompa kuras off
    stkuras = 2;
    stwarning = 0;
    Serial.println("POMPA ISI ON:");
    digitalWrite(pompa_isi, LOW);
    digitalWrite(pompa_kuras, HIGH);
  }

  if (suhu_air >= 34) {
    digitalWrite(fan, LOW);
    digitalWrite(pemanas, HIGH);
    stsuhu = "Panas";
  } else   if (suhu_air <= 25) {
    digitalWrite(fan, HIGH);
    digitalWrite(pemanas, LOW);
    stsuhu = "Dingin";
  }  else  {
    digitalWrite(fan, HIGH);
    digitalWrite(pemanas, HIGH);
    stsuhu = "Normal";
  }
```

```
  if (jam == 9 && menit <= 1 && detik <= setdet) {
    stpakan = "Makan Pagi";
    stpp = 1;
  } else if (jam == 14 && menit <= 1 && detik <= setdet )
{
    stpakan = "Makan Siang";
    stpp = 1;
  } else if (jam == 19 && menit <= 20 && detik <= setdet)
{
    stpakan = "Makan Malam";
    stpp = 1;
  }  else  {
    stpakan = "-";
    stpp = 0;
  }
Serial.println("Jarak " + String(jarak));
  Serial.println("NTU " + String(ntu_val));
  Serial.println("Suhu air " + String(suhu_air));
  Serial.println("ph: = " + String(ph, 4));
  Serial.println("St Air: = " + String(stair));
  Serial.println("St Suhu: = " + String(stsuhu));
  Serial.println("St Pakan: = " + String(stpakan));
  Serial.println("St Kuras: = " + String(stkuras));
  Serial.print(String() + hari + ", " + tanggal + "-" +
bulan + "-" + tahun);
  Serial.print("  ");
  Serial.println(String() + jam + ":" + menit + ":" +
detik);

  Blynk.virtualWrite(V0, ph);
  Blynk.virtualWrite(V1, ntu_val);
  Blynk.virtualWrite(V2, suhu_air);
  Blynk.virtualWrite(V3, stair);
  Blynk.virtualWrite(V4, stpakan);

  lcd.setCursor(0, 0);
  lcd.print("S:");
  lcd.print(suhu_air);
  lcd.print("C T:");
  lcd.print(ntu_val);
  lcd.print(" ");
  lcd.setCursor(0, 1);
  lcd.print("pH:");
  lcd.print(ph, 3);

  //  Blynk.virtualWrite(V4, stpakan);

}
void serpak() {
  for (pos = 0; pos <= 360; pos += 20) {
    myservo.write(pos);
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```
    delay(15);
  }
  for (pos = 360; pos >= 0; pos -= 20) {
    myservo.write(pos);
    delay(15);
  }
}

void setup()
{
  Serial.begin(115200);
  SerialPort.begin(9600, SERIAL_8N1, 16, 17);
  lcd.begin();
  lcd.backlight();
  lcd.setCursor(0, 0);
  lcd.print("Hello...");
  pinMode(pompa_isi, OUTPUT);
  pinMode(pompa_kuras, OUTPUT);
  pinMode(pemanas, OUTPUT);
  pinMode(fan, OUTPUT);
  pinMode(buzzer, OUTPUT);
  digitalWrite(pompa_isi, HIGH);
  digitalWrite(pompa_kuras, HIGH);
  digitalWrite(pemanas, HIGH);
  digitalWrite(fan, HIGH);
  sensor.begin();
  rtcBegin();
  setComputer();
  //  setManual(2020, 4, 8, 16, 1, 0);

  myservo.attach(servoPin);

  Blynk.begin(BLYNK_AUTH_TOKEN, ssid, pass);
  timer.setInterval(1000L, sendSensor);
}

void loop()
{
  Blynk.run();
  timer.run();
  if (stpp == 1) {
    serpak();
  }

  if (SerialPort.available())
  {
    sph = SerialPort.readString();
  }
}
```