LAMPIRAN

Lampiran 1 Tempat penelitian

Lampiran 2 Hasil Turnitin

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UPT PERPUSTAKAAN
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SURAT KETERANGAN
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Judul : MONITORING INTERNET OF THINGS (IoT) UNTUK PENGATURAN OTOMATIS PENGISIAN DAN PENDETEKSI KERUHNYA AIR PADA TOREN

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NIM : 2019230098

Tgl pemeriksaan : 25 Juli 2024

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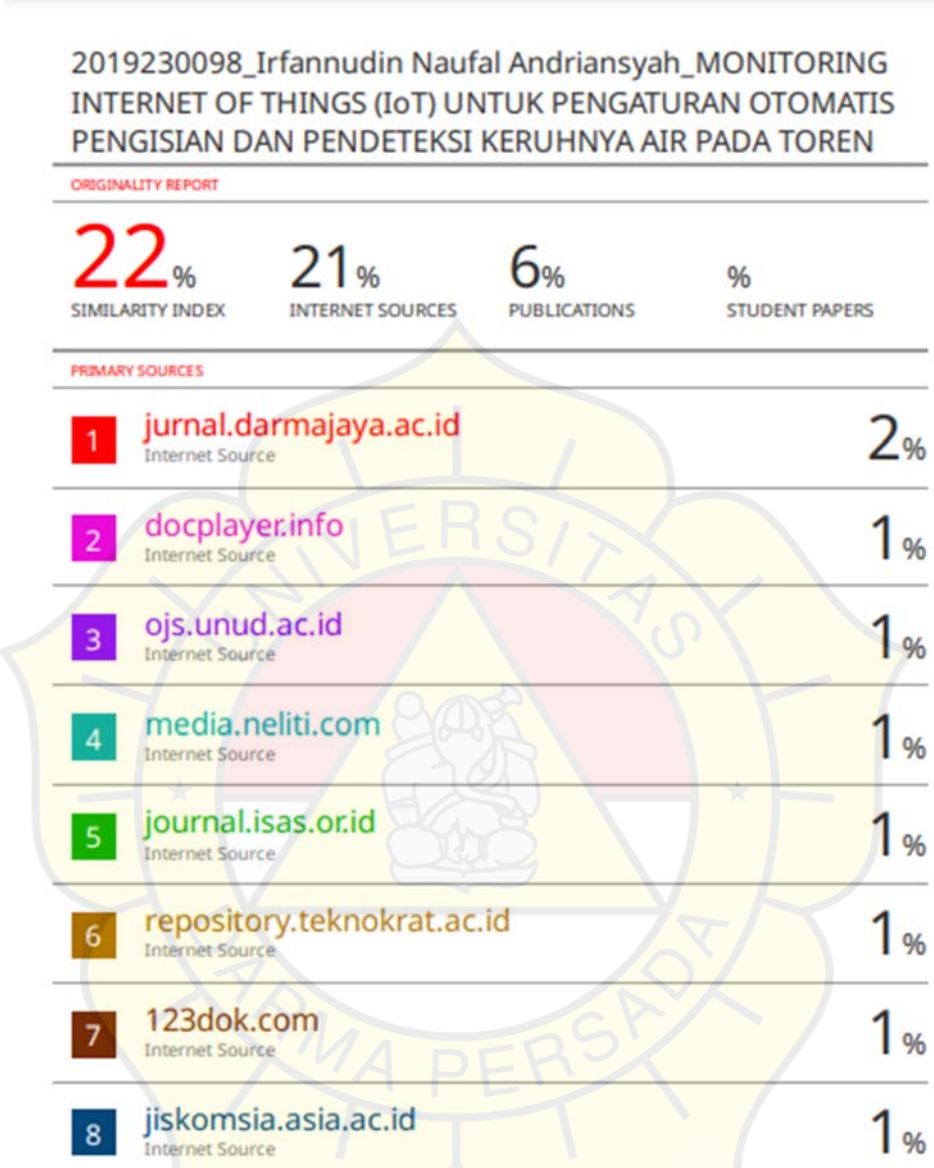

2019230098_Irfannudin Naufal Andriansyah_MONITORING INTERNET OF THINGS (IoT) UNTUK PENGATURAN OTOMATIS PENGISIAN DAN PENDETEKSI KERUHNYA AIR PADA TOREN

ORIGINALITY REPORT

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Lampiran 4 Kode Program Arduino IDE (Tandon Air)

```
//notif telegram dan thingspeak

#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 20, 4);
#include "DS3231_Simple.h"
DS3231_Simple Clock;

#include "DTH_Turbidity.h"

#define TURBIDITY_SENSOR_PIN A1

DTH_Turbidity turbSensor(TURBIDITY_SENSOR_PIN);
float ntu_val = 0;
float volt = 0;
const int PIN_PH = A0;

float  ph;
String st = "Aman";

#include <Ultrasonic.h>
Ultrasonic ultrasonic1(29);
Ultrasonic ultrasonic2(31);
Ultrasonic ultrasonic3(33);
Ultrasonic ultrasonic4(35);

int jarak1, jarak2, jarak3, jarak4;

const int valve1 = 12;
const int valve2 = 11;
const int valve3 = 10;
const int pompa_kuras = 9;
const int valve5 = 8;
const int valve6 = 7;
const int valve7 = 6;
const int valve8 = 5;
```

```
const int buzzer = 48;
int stkondisi = 0, sthit = 0;

int jam, menit;


void setup()
{
  Serial.begin(115200);
  Serial2.begin(9600);
  Clock.begin();
  lcd.begin();
  lcd.setCursor(0, 0);
  lcd.print("Welcome ");
  pinMode(valve1, OUTPUT);
  pinMode(valve2, OUTPUT);
  pinMode(valve3, OUTPUT);
  pinMode(pompa_kuras, OUTPUT);
  pinMode(valve5, OUTPUT);
  pinMode(valve6, OUTPUT);
  pinMode(valve7, OUTPUT);
  pinMode(valve8, OUTPUT);
  pinMode(buzzer, OUTPUT);

}

void loop()
{
  DateTime waktu;
  waktu = Clock.read();
  jam = waktu.Hour;
  menit = waktu.Minute;
  jarak1 = 20 - ultrasonic1.read();
  jarak2 = 20 - ultrasonic2.read();
  jarak3 = 20 - ultrasonic3.read();
  jarak4 = 20 - ultrasonic4.read();
  ntu_val = turbSensor.readTurbidity();
  Serial.println(volt);
  ph = analogRead(PIN_PH);
```

```
float tegangan = 5 / 1023.0 * ph;
float ph = 7 - ((3.5 - tegangan) / 0.18);

if (jarak1 <= 0) {
  jarak1 = 0;
}
if (jarak2 <= 0) {
  jarak2 = 0;
}
if (jarak3 <= 0) {
  jarak3 = 0;
}
if (jarak4 <= 0) {
  jarak4 = 0;
}

if (ph <= 5 && stkondisi == 0 || ph >= 12 && stkondisi == 0) {
  st = "ph Jelek";
  digitalWrite(buzzer, HIGH);
  sthit++;
  if (sthit >= 5) {
    stkondisi = 1;
    digitalWrite(pompa_kuras, HIGH);
    sthit = 0;
  }
  Serial.println("hit ph = " + String(sthit));
}
else if (ntu_val >= 4000 && stkondisi == 0) {
  st = "Ntu Jelek";
  sthit++;
  if (sthit >= 5) {
    stkondisi = 1;
    digitalWrite(pompa_kuras, HIGH);
    sthit = 0;
  }
  Serial.println("hit ntu = " + String(sthit));
  digitalWrite(buzzer, HIGH);
}
```

```
  else if (stkondisi == 0) {
    st = "Layak";
    stkondisi = 0;
    digitalWrite(buzzer, LOW);
  }

  if (jarak1 >= 15 &&  stkondisi == 1) {
    sthit++;
    if (sthit > 12) {
      sthit = 0;
      stkondisi = 0;
    }
      Serial.println("hit jarak1 = " + String(sthit));
  }
  else if (jarak1 <= 5 &&  stkondisi == 1) {
    digitalWrite(pompa_kuras, LOW);
  }


  if (jam >= 9) {
    if (jarak2 >= 15 &&  stkondisi == 0) {
      digitalWrite(valve1, LOW);
    }
    else  if (jarak2 <= 5 &&  stkondisi == 0) {
      digitalWrite(valve1, HIGH);
    }
    else {
      digitalWrite(valve1, LOW);
    }

    if (jarak3 >= 15 &&  stkondisi == 0) {
      digitalWrite(valve2, LOW);
    }
    else  if (jarak3 <= 5 &&  stkondisi == 0) {
      digitalWrite(valve2, HIGH);
    }
    else {
      digitalWrite(valve2, LOW);
    }
```

```
  if (jarak4 >= 15 &&  stkondisi == 0) {
    digitalWrite(valve3, LOW);
  }
  else  if (jarak4 <= 5 &&  stkondisi == 0) {
    digitalWrite(valve3, HIGH);
  }
  else {
    digitalWrite(valve3, LOW);
  }
  Serial.println("ON");
} else if(jam>=6) {
  digitalWrite(valve1, LOW);
  digitalWrite(valve2, LOW);
  digitalWrite(valve3, LOW);
  Serial.println("OFF");
}

lcd.setCursor(0, 0);
lcd.print("Ph:");
lcd.print(ph, 2);
lcd.print("  ");
lcd.setCursor(9, 0);
lcd.print("T:");
lcd.print(ntu_val);
lcd.print("  ");
lcd.setCursor(0, 1);
lcd.print("st:");
lcd.print(st);
lcd.print("   ");
lcd.setCursor(0, 2);
lcd.print("T1:");
lcd.print(jarak1);
lcd.print("   T2:");
lcd.print(jarak2);
lcd.print("   ");
lcd.setCursor(0, 3);
lcd.print("T3:");
lcd.print(jarak3);
```

```
  lcd.print("   T4:");
  lcd.print(jarak4);
  lcd.print("   ");
  String kirim = String() + ph + "#" + ntu_val + "#" + jarak1 +
"#" + jarak2 + "#" + jarak3 + "#" + jarak4 + "#" + st ;
  Serial2.println(kirim);
  Serial.println("Kirim = " + String(kirim));
  Serial.print("\tTegangan: ");
  Serial.print(tegangan, 4);
  Serial.print("\tPH: ");
  Serial.println(ph, 4);
  Serial.print(ntu_val);
  Serial.println("ppm");
  Serial.println("jarak1 = " + String(jarak1));
  Serial.println("jarak2 = " + String(jarak2));
  Serial.println("jarak3 = " + String(jarak3));
  Serial.println("jarak4 = " + String(jarak4));
  Serial.println("stkondisi = " + String(stkondisi));
  Serial.print(waktu.Day);
  Serial.print("/");
  Serial.print(waktu.Month);
  Serial.print("/");
  Serial.print(waktu.Year);
  Serial.print(" ");
  Serial.print(waktu.Hour);
  Serial.print(":");
  Serial.print(waktu.Minute);
  Serial.print(":");
  Serial.println(waktu.Second);

  delay(1000);
}
```