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LAMPIRAN

Lampiran 1. Kode program monitoring data

```
#define BLYNK_TEMPLATE_ID "TMPL66OYAc_8j"
#define BLYNK_TEMPLATE_NAME "Sistem Deteksi Lokasi Ideal Penanaman
Rumput Laut"
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
#include <DallasTemperature.h>
#include <OneWire.h>

#define BLYNK_PRINT Serial
#define ONE_WIRE_BUS 5
#define trig 14
#define echo 12
#define buzzer 16

char auth[] = "hrgvakgSevINZpICk1YyWbvd4ZcRX5Ha";
char ssid[] = "jul";
char pass[] = "1234567890";

BlynkTimer timer;

long durasi;
int jarak;

const int flowSensorPin = 4;
volatile int flowCount = 0;
float flowRate = 0.0;
unsigned int flowMilliLitres = 0;
unsigned long totalMilliLitres = 0;
unsigned long oldTime = 0;

float calibration = 35.30;
const int analogInPin = A0;
int sensorValue = 0;
unsigned long int avgValue;
float b;
int buf[10],temp;

oneWire(ONE_WIRE_BUS);
mperature sensors(&oneWire);

up() {
```

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```
  sensors.begin();
  Serial.begin(9600);
  Blynk.begin(auth, ssid, pass, "blynk.cloud", 80);
  pinMode(flowSensorPin, INPUT_PULLUP);
  attachInterrupt(digitalPinToInterrupt(flowSensorPin),
pulseCounter, FALLING);
  pinMode(trig, OUTPUT);
  pinMode(echo, INPUT);
  pinMode(buzzer, OUTPUT);
}

void loop() {
  unsigned long currentTime = millis();

  if ((currentTime - oldTime) > 1000) {
    detachInterrupt(digitalPinToInterrupt(flowSensorPin));

    flowRate = ((1000.0 / (currentTime - oldTime)) * flowCount) /
7.5;
    flowMilliLitres = (flowCount * 0.00225);

    totalMilliLitres += flowMilliLitres;

    Blynk.virtualWrite(V4, flowRate);

    flowCount = 0;

    attachInterrupt(digitalPinToInterrupt(flowSensorPin),
pulseCounter, FALLING);
    oldTime = currentTime;
  }

  digitalWrite(trig, LOW);
  delayMicroseconds(5);
  digitalWrite(trig, HIGH);
  delayMicroseconds(10);
  digitalWrite(trig, LOW);

  durasi = pulseIn(echo, HIGH);
  jarak = durasi * 0.034 / 2;

  Blynk.virtualWrite(V2, jarak);

  rak < 30 || jarak > 200 ) {
  talWrite(buzzer, HIGH);
```

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```
    digitalWrite(buzzer, LOW);
  }

  sensors.requestTemperatures();

  Blynk.virtualWrite(V1, sensors.getTempCByIndex(0));

  if (sensors.getTempCByIndex(0) < 26 || sensors.getTempCByIndex(0)
> 31) {
    digitalWrite(buzzer, HIGH);
  }
  else {
    digitalWrite(buzzer, LOW);
  }

  for(int i=0;i<10;i++){
    buf[i]=analogRead(analogInPin);
    delay(30);
  }
  for(int i=0;i<9;i++){
  for(int j=i+1;j<10;j++){
  if(buf[i]>buf[j]){
  temp=buf[i];
  buf[i]=buf[j];
  buf[j]=temp;
  }
  }
  }
  avgValue=0;
  for(int i=2;i<8;i++)
  avgValue+=buf[i];
  float pHVol=(float)avgValue*5.0/1024/6;
  float phValue = -5.70 * pHVol + calibration;

  Blynk.virtualWrite(V3, phValue);

  if (phValue < 6 || phValue > 9) {
    digitalWrite(buzzer, HIGH);
  }
  else {
    digitalWrite(buzzer, LOW);
  }

run();
run();
```

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```
ICACHE_RAM_ATTR void pulseCounter() {
  flowCount++;
}
```

Lampiran 2. Kode program peta

```
#include <ESP8266WiFi.h>
#include <SoftwareSerial.h>
#include <TinyGPS++.h>

const int RXPin = 13, TXPin = 15;
SoftwareSerial neo8m(RXPin, TXPin);

TinyGPSPlus gps;

const char* ssid = "jul";
const char* password = "1234567890";

String GMAP_API_KEY = "AIzaSyCehp78L71xO4cobGlU_Z_1szq3XysoxPs";

WiFiServer server(80);
WiFiClient client; // Declare client as a global variable

String html;
double latitude;  // Global latitude variable
double longitude; // Global longitude variable

void setup()
{
  Serial.begin(9600);
  Serial.println();
  neo8m.begin(9600);

  Serial.print("Connecting to ");
  Serial.println(ssid);

  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED)
  {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
```

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```
  Serial.println("IP address: "); // this is the address to use for
viewing the map
  Serial.println(WiFi.localIP());
  server.begin();
}

void loop()
{
  smartdelay_gps(1000);

  if (gps.location.isValid())
  {
    // Update the global latitude and longitude
    latitude = gps.location.lat();
    longitude = gps.location.lng();

    // Send to Serial Monitor for Debugging
    Serial.print("LAT:  ");
    Serial.println(latitude, 6); // float to x decimal places
    Serial.print("LONG: ");
    Serial.println(longitude, 6);

    // Listen for incoming clients
    client = server.available();
    if (client)
    {
      Serial.println("new client");
      String currentLine = ""; // make a String to hold incoming
data from the client
      while (client.connected())
      {
        if (client.available())
        {
          char c = client.read(); // read a byte
          if (c == '\n')
          { // check for newline character,
            if (currentLine.length() == 0)
            { // if line is blank it means it's the end of the
client HTTP request

              // Generate HTML with the updated marker position
              generateHTML();

              // The HTTP response ends with another blank line:
              client.println();
              // Break out of the while loop:
              break;
```

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```
            }
            else
            {
              currentLine = "";
            }
          }
          else if (c != '\r')
          { // if you got anything else but a carriage return
character,
            currentLine += c; // add it to the end of the
currentLine
          }
        }
        // here you can check for any keypresses if your web server
page has any
      }
      // Close the connection:
      client.stop();
      Serial.println("client disconnected");
    }
  }
}

void generateHTML()
{
  html = "<!DOCTYPE html>";
  html += "<html lang='en'>";
  html += "<head>";
  html += "<meta charset='UTF-8'>";
  html += "<meta name='viewport' content='width=device-width,
initial-scale=1.0'>";
  html += "<meta http-equiv='X-UA-Compatible' content='ie=edge'>";
  html += "<title>Lokasi Ideal Penanaman Rumput Laut</title>";
  html += "<style>#map{height:700px;width:100%;}</style>";
  html += "</head>";
  html += "<body>";
  html += "<h1 ALIGN=CENTER >Lokasi Ideal Penanaman Rumput
Laut</h1>";
  html += "<div id='map'></div>";
  html += "<script>";
  // Load Google Maps API synchronously
  html += "function loadScript() {";
          = "var script = document.createElement('script');";
          = "script.type = 'text/javascript';";
          = "script.src =
          /maps.googleapis.com/maps/api/js?key=" + GMAP_API_KEY +
          ck=initMap';";
```

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```
  html += "document.head.appendChild(script);";
  html += "}";
  html += "loadScript();";
  // Google Maps API initialization
  html += "var map;"; // Declare map as a global variable
  html += "var marker;"; // Declare marker as a global variable
  html += "function initMap() {";
  html += "var options = {";
  html += "zoom: 16,";
  html += "center: {lat:" + String(latitude, 6) + ",lng:" +
String(longitude, 6) + "},";
  html += "mapTypeId: google.maps.MapTypeId.ROADMAP";
  html += "};";
  html += "map = new google.maps.Map(document.getElementById('map'),
options);";
  // Marker creation
  html += "marker = new google.maps.Marker({";
  html += "position: {lat:" + String(latitude, 6) + ",lng:" +
String(longitude, 6) + "},";
  html += "map: map";
  html += "});";
  html += "}";
  // Call initMap explicitly
  html += "initMap();";
  // Update marker position at regular intervals
  html += "window.setInterval(updateMarker, 300000);";
  html += "function updateMarker() {";
  html += "marker.setPosition({lat:" + String(latitude, 6) + ",lng:"
+ String(longitude, 6) + "});";
  html += "}";
  html += "</script>";
  html += "</body></html>";

  // Send the generated HTML to the client
  client.print(html);
}

static void smartdelay_gps(unsigned long ms)
{
  unsigned long start = millis();
  do
  {
    e (neo8m.available())
    s.encode(neo8m.read());
    e (millis() - start < ms);
```

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Lampiran 3. Lembar perbaikan skripsi

LEMBAR PERBAIKAN SKRIPSI

"SISTEM DETEKSI LOKASI IDEAL PENANAMAN RUMPUT LAUT BERBASIS IOT"

OLEH:

ZULKIFLI AL-AMIN LOTHIAN

D121171511

Skripsi ini telah dipertahankan pada Ujian Akhir Sarjana pada tanggal 6 Mei 2024. Telah dilakukan perbaikan penulisan dan isi skripsi berdasarkan usulan dari penguji dan pembimbing skripsi.

Persetujuan perbaikan oleh tim penguji:

	Nama	Tanda Tangan
I	Prof. Dr. Ir. Indrabayu, S.T., M.T., M.Bus.Sys., IPM.ASEAN. Eng.	
II	Elly Warni S.T., M.T.	

Persetujuan perbaikan oleh pembimbing:

Pembimbing	Nama	Tanda Tangan
I	Muhammad Alief Fahdal Imran Oemar, ST., M.Sc	
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