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LAMPIRAN

Lampiran 1 Source Code

Program pada Nodemcu

```
#include <SoftwareSerial.h>
#include <ArduinoJson.h>
#include <FirebaseArduino.h>
#include <ESP8266WiFi.h>
#include <NTPClient.h>
#include <WiFiUdp.h>
#define FIREBASE_HOST "--"
#define FIREBASE_AUTH "--"

const char* ssid = "namawifi";
const char* password = "passwordwifi";
const long utcOffsetInSeconds = 28800;

float soilpH;
float airTemperature;
float humidity;
float firstSoilMoisture;
float secondSoilMoisture;
boolean irStatus;

WiFiUDP ntpUDP;
NTPClient timeClient(ntpUDP, "pool.ntp.org", utcOffsetInSeconds);
SoftwareSerial sData(D6,D5);

void setup() {
  sData.begin(9600);
  Serial.begin(9600);
  Serial.println("Node MCu Ready");
  while (!Serial) continue;

  Serial.println();
  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");
// Print the IP address
Serial.println(WiFi.localIP());
Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);
timeClient.begin();
}

void loop() {
  Serial.println("-----xxxxx-----");
  //harus code nya disini
  StaticJsonBuffer<1000> jsonBuffer;
  JsonObject& root = jsonBuffer.parseObject(sData);

  if (root == JsonObject::invalid()){
    Serial.println("no Data");
  }
  else{
    Serial.println("JSON received and parsed");

    root.prettyPrintTo(Serial);
    timeClient.update();

    String times = timeClient.getFullFormattedTime();

    times.replace(" ", "");
    times.replace(":", "");
    times.replace("-", "");
    Serial.println(times);

    humidity = root["humidity"];
    soilpH = root["soilpH"];
    airTemperature = root["airTemperature"];
    firstSoilMoisture = root["firstSoilMoisture"];
    secondSoilMoisture = root["secondSoilMoisture"];
    irStatus = root["irStatus"];

    setFloat(("Data/" + times + "/Humidity"), humidity);
    setFloat(("Data/" + times + "/Soil_pH"), soilpH);
    setFloat(("Data/" + times + "/Air_Temperature"), airTemperature);
    setFloat(("Data/" + times + "/First_Soil_Moisture"), firstSoilMoisture);
    setFloat(("Data/" + times + "/Second_Soil_Moisture"), secondSoilMoisture);
    setBoolean(("Data/" + times + "/IR_Status"), irStatus);
  }
}

```



```

    delay(5000);
    //delay(600000);
  }
}

void setFloat(String path, float value){
  Firebase.setFloat(path, value);
  if(Firebase.failed()){
    Serial.println("Setting to " + path + " failed" );
    Serial.println(Firebase.error());
    return;
  }
}

void setBoolean(String path, boolean value){
  Firebase.setBool(path, value);
  if(Firebase.failed()){
    Serial.println("Setting to " + path + " failed" );
    Serial.println(Firebase.error());
    return;
  }
}
}

```

Program pada Arduino Uno

```

#include "DHT.h"
#include <ArduinoJson.h>
#include <SoftwareSerial.h>
#define dht_dpın 4
#define DHTTYPE DHT11
#define phPin 2

unsigned long int avgValue;
float b;
int buf[10],temp;
float soilpH;
float airTemperature;
float humidity;
float firstSoilMoisture;
float secondSoilMoisture;
boolean irStatus;

```



```

DHT dht(dht_dpin, DHTTYPE);
SoftwareSerial s (5,6);

int isObstaclePin = 2; // This is our input pin
int isObstacle = HIGH; // HIGH MEANS NO OBSTACLE

void setup() {
  s.begin(9600);
  Serial.begin(9600);
  pinMode(isObstaclePin, INPUT);
  dht.begin();
}

void loop() {
  getpHData();
  delay(3000);
  getDHTData();
  getFirstSoilMoisture();
  getSecondSoilMoisture();
  getIRValue();

  Serial.println("");
  Serial.println("- - - - - + + + - - - - -");
  Serial.print("  pH          :");
  Serial.println(soilpH,2);
  Serial.print("  Soil Moisture 1 :");
  Serial.println(firstSoilMoisture);
  Serial.print("  Soil Moisture 2 :");
  Serial.println(secondSoilMoisture);
  Serial.print("  Air Temperature :");
  Serial.println(airTemperature);
  Serial.print("  Humidity       :");
  Serial.println(humidity);

  StaticJsonBuffer<900> jsonBuffer;
  JsonObject& root = jsonBuffer.createObject();
  root["firstSoilMoisture"] = firstSoilMoisture;
  root["secondSoilMoisture"] = secondSoilMoisture;
  root["airTemperature"] = airTemperature;
  root["humidity"] = humidity;
  root["soilpH"] = soilpH;
  root["irStatus"] = irStatus;

```



```

if(s.available(>0){
  root.printTo(s);
}

firstSoilMoisture = 0;
secondSoilMoisture = 0;
airTemperature = 0;
humidity = 0;
soilpH = 0;
irStatus = false;

delay(1000);
}

void getpHData(){
  for(int i=0;i<10;i++) //Get 10 sample value from the sensor for smooth
the value
  {
    buf[i]=analogRead(phPin);
    delay(10);
  }
  for(int i=0;i<9;i++) //sort the analog from small to large
  {
    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++) //take the average value of 6 center sample
  avgValue+=buf[i];
  soilpH=(float)avgValue*5.0/1024/6; //convert the analog into millivolt
  soilpH=3.5*soilpH; //convert the millivolt into pH value
}

void getFirstSoilMoisture(){
  firstSoilMoisture = analogRead(A0);
}

```




```
void getSecondSoilMoisture(){
  secondSoilMoisture = analogRead(A1);
}

void getIRValue(){
  isObstacle = digitalRead(isObstaclePin);
  if (isObstacle == HIGH) {
    Serial.println("NO Object");
    irStatus = false;
  } else {
    Serial.println("OBSTACLE!!, OBSTACLE!!");
    irStatus = true;
  }
}

void getDHTData(){
  humidity = dht.readHumidity();
  airTemperature = dht.readTemperature();
}
```

