#include <DHT.h>;

#include <SFE\_BMP180.h>

#include <Wire.h>

#include <math.h>

#define ALTITUDE 36

DHT dht(A2, DHT22);

SFE\_BMP180 pressure;

int rain;

int trigpin=9;

int echopin=10;

int relaypin=4;

float x;

long duration;

float height;

float realheight;

int BME280address = 0x76; //setting i2c address

byte buff[2];

int co\_value;

int limit;

int air\_quality\_Value;

float measure\_vol;

volatile byte half\_revolution;

unsigned int rpm;

unsigned long timeold;

float v;

int chk;

float hum;

float temp;

char status;

double T,P,p0,a;

int LM\_val1;

int LM\_val2;

void setup()

{

Serial.begin(9600);

pinMode(trigpin,OUTPUT);

pinMode(echopin,INPUT);

pinMode(relaypin, OUTPUT);

dht.begin();

Wire.begin();

pressure.begin();

attachInterrupt(0, rpm\_fun, RISING);

half\_revolution = 0;

rpm = 0;

timeold = 0;

}

void BME280\_Init(int address)

{

Wire.beginTransmission(address);

Wire.write(0x10);//1lx reolution 120ms

Wire.endTransmission();

}

int BME280\_Read(int address) //

{

int i=0;

Wire.beginTransmission(address);

Wire.requestFrom(address, 2);

while(Wire.available()) //

{

buff[i] = Wire.read(); // receive one byte

i++;

}

Wire.endTransmission();

return i;

}

void rpm\_fun()

{

half\_revolution++;

Serial.print("wind speed=");

Serial.print(v);

Serial.print("\n");

}

void loop()

{

{

rain=analogRead(A0);

if(rain>=1000)

{

digitalWrite(trigpin,LOW);

delayMicroseconds(2);

digitalWrite(trigpin,HIGH);

delayMicroseconds(10);

digitalWrite(trigpin,LOW);

duration=pulseIn(echopin,HIGH);

height=duration\*0.34/2;

realheight=135-height;

x=0.205\*realheight;

Serial.print(height);

Serial.print("Rainfall: ");

Serial.print(x);

Serial.print("mm");

Serial.print("\n");

if(height<=90)

digitalWrite(4,HIGH);

else

digitalWrite(4,LOW);

}

}

{

int i;

uint16\_t val=0;

BME280\_Init(BME280address);

delay(200);

if(2==BME280\_Read(BME280address))

{

val=((buff[0]<<8)|buff[1])/1.2;

Serial.print(val,DEC);

}

}

{

Serial.print("provided altitude: ");

Serial.print(ALTITUDE,0);

Serial.print(" meters, ");

status = pressure.startTemperature();

if (status != 0)

{

delay(status);

status = pressure.getTemperature(T);

if (status != 0)

{

Serial.print("temperature\_bmp180: ");

Serial.print(T,2);

Serial.print(" deg C, ");

status = pressure.startPressure(3);

if (status != 0)

{

delay(status);

status = pressure.getPressure(P,T);

if (status != 0)

{

Serial.print("absolute pressure: ");

Serial.print(P,2);

Serial.print(" mb, ");

a = pressure.altitude(P,p0);

Serial.print("computed altitude: ");

Serial.print(a,0);

Serial.print(" meters, ");

}

else Serial.println("error retrieving pressure measurement\n");

}

else Serial.println("error starting pressure measurement\n");

}

else Serial.println("error retrieving temperature measurement\n");

}

else Serial.println("error starting temperature measurement\n");

}

{

co\_value = analogRead(A0);

air\_quality\_Value=analogRead(A1);//air quality check sensor value read;

measure\_vol=(float)air\_quality\_Value/1024\*5,0;

Serial.print("HYDROCARBON QUANTITY=");//air quality check sensor value;

Serial.print(air\_quality\_Value);

Serial.print("\n");

Serial.print("CO QUANTITY=");

Serial.print(co\_value);

Serial.print("\n");

Serial.print("VOLUME=");

Serial.print(co\_value);

}

{

if (half\_revolution >= 20)

{

rpm = 30\*1000/(millis() - timeold)\*half\_revolution;

v=(0.15\*rpm\*60)/1000;

timeold = millis();

half\_revolution = 0;

}

}

{

hum = dht.readHumidity();

temp= dht.readTemperature();

Serial.print("Humidity: ");

Serial.print(hum);

Serial.print(" %, Temp\_dht: ");

Serial.print(temp);

Serial.println(" Celsius");

}

{

LM\_val1 = analogRead(A3);

LM\_val2 = analogRead(A4);

float mv1 = (LM\_val1/1024.0)\*5000;

float mv2 = (LM\_val2/1024.0)\*5000;

float cel1 = mv1/10;

float cel2 = mv2/10;

Serial.print("SOIL\_TEMPRATURE\_sample1 = ");

Serial.print(cel1);

Serial.print("\*C");

Serial.println();

Serial.print("SOIL\_TEMPRATURE\_sample2 = ");

Serial.print(cel2);

Serial.print("\*C");

Serial.println();

}

{

int sensorValue1=analogRead(A5);

int sensorValue2=analogRead(A6);

if(sensorValue1>=820)

Serial.print("Soil Sample 1 :very low moist");

else if(sensorValue1>=615 && sensorValue1<820)

Serial.print("Soil Sample 1 :low moist");

else if(sensorValue1>=410 && sensorValue1<615)

Serial.print("Soil Sample 1 :moderate moist");

else if(sensorValue1>=250 && sensorValue1<410)

Serial.print("Soil Sample 1 :highly moist");

else

Serial.print("Soil Sample 1 : very highly Moist");

Serial.print("\n");

// Serial.print("\nSensor value of sample 1=");

//Serial.println(sensorValue1);

if(sensorValue2>=820)

Serial.print("Soil Sample 2 :very low moist");

else if(sensorValue2>=615 && sensorValue2<820)

Serial.print("Soil Sample 2 :low moist");

else if(sensorValue2>=410 && sensorValue2<615)

Serial.print("Soil Sample 2 :moderate moist");

else if(sensorValue2>=250 && sensorValue2<410)

Serial.print("Soil Sample 2 :highly moist");

else

Serial.print("Soil Sample 2 :very highly Moist");

Serial.print("\n");

//Serial.print("\nSensor value of sample 2=");

//Serial.println(sensorValue2);

}

}