#include <OneWire.h>

#include <Wire.h>

#include <Time.h>

#include <DS3232RTC.h>

#include "DHT.h"

int val =0;

OneWire ds(10);

OneWire dr(9);

const int dnlamps = 4;

const int fogger = 5;

const int hlamp = 6;

const int hrock1 = 2;

const int hrock2 = 3;

const int fan = 7;

const int foggerrlay = 13;//color white

const int led = 12;

const int foggerwater =11;//closed circute means water can flow so should be normally open color white

// humidity sensor dht22 is on pin 8 color red

// ds3231rtc SCL is on analog pin A5

// ds3231rtc SDA is on analog pin A4

// hrock1 temp sensor is on pin 9 color blue

//hrock 2 temp sensor is on pin 10 color green

#define DHTPIN 8

#define DHTTYPE DHT22

DHT dht(DHTPIN, DHTTYPE);

void setup(){

pinMode(dnlamps,OUTPUT);

pinMode(fogger,OUTPUT);

pinMode(hlamp,OUTPUT);

pinMode(hrock1,OUTPUT);

pinMode(hrock2,OUTPUT);

pinMode(fan,OUTPUT);

pinMode(foggerrlay,OUTPUT);

pinMode(foggerwater,INPUT);

pinMode(led,OUTPUT);

setSyncProvider(RTC.get);

dht.begin();

Serial.begin(9600);

}

void inc();

int time = 0;

boolean night = true;

int tempmax=0;

int tempmin=0;

int hr1tempmax=90;

int hr1tempmin=88;

int count = 0;

void loop(){

time = ((100\*hour())+minute());

if (time > 627){

if (time < 1836){

night = false;

}else{

night = true;

}}else{

night = true;

}

if (night==true){

digitalWrite(dnlamps,HIGH);

tempmax= 75;

tempmin=69;

}

if (night==false){

digitalWrite(dnlamps,LOW);

tempmax=85;

tempmin=77;

}

val=digitalRead(foggerwater);

if (val== LOW){

digitalWrite(foggerrlay,LOW);

digitalWrite(led,HIGH);

}

if (val == HIGH){

digitalWrite(foggerrlay,HIGH);

digitalWrite(led,LOW);

}

float t1 = dht.readTemperature(true);

float h = dht.readHumidity();

if (h < 50){

digitalWrite(fogger,HIGH);

}

if (h>60){

digitalWrite(fogger,LOW);

}

if (t1 < tempmin){

digitalWrite(hlamp,HIGH);

}

if (t1 > tempmax){

digitalWrite(hlamp,LOW);

}

if (t1 > (tempmax+2)){

digitalWrite(fan,HIGH);

}else{

digitalWrite(fan,LOW);

}

byte i;

byte present = 0;

byte type\_s;

byte data[12];

byte addr[8];

float celsius, fahrenheit;

if ( !ds.search(addr)) {

ds.reset\_search();

return;

}

switch (addr[0]) {

case 0x10:

type\_s = 1;

break;

case 0x28:

type\_s = 0;

break;

case 0x22:

type\_s = 0;

break;

}

ds.reset();

ds.select(addr);

ds.write(0x44, 1); // start conversion, with parasite power on at the end

present = ds.reset();

ds.select(addr);

ds.write(0xBE); // Read Scratchpad

for ( i = 0; i < 9; i++) { // we need 9 bytes

data[i] = ds.read();

}

int16\_t raw = (data[1] << 8) | data[0];

if (type\_s) {

raw = raw << 3; // 9 bit resolution default

if (data[7] == 0x10) {

raw = (raw & 0xFFF0) + 12 - data[6];

}

} else {

byte cfg = (data[4] & 0x60);

if (cfg == 0x00) raw = raw & ~7; // 9 bit resolution, 93.75 ms

else if (cfg == 0x20) raw = raw & ~3; // 10 bit res, 187.5 ms

else if (cfg == 0x40) raw = raw & ~1; // 11 bit res, 375 ms

}

celsius = (float)raw / 16.0;

fahrenheit = celsius \* 1.8 + 32.0;

if (fahrenheit < tempmin){

digitalWrite(hrock2,HIGH); }

if (fahrenheit > tempmax){

digitalWrite(hrock2,LOW); }

byte j;

byte present1 = 0;

byte type\_s1;

byte data1[12];

byte addr1[8];

float celsius1, fahrenheit1;

if ( !dr.search(addr1)) {

dr.reset\_search();

return;}

switch (addr1[0]) {

case 0x10:

type\_s1 = 1;

break;

case 0x28:

type\_s1 = 0;

break;

case 0x22:

type\_s1 = 0;

break;}

dr.reset();

dr.select(addr1);

dr.write(0x44, 1); // start conversion, with parasite power on at the end

present1 = dr.reset();

dr.select(addr1);

dr.write(0xBE); // Read Scratchpad

for ( j = 0; j < 9; j++) { // we need 9 bytes

data1[j] = dr.read();}

int16\_t raw1 = (data1[1] << 8) | data1[0];

if (type\_s1) {

raw1 = raw1 << 3; // 9 bit resolution default

if (data1[7] == 0x10) {

raw1 = (raw1 & 0xFFF0) + 12 - data1[6];}} else {

byte cfg1 = (data1[4] & 0x60);

if (cfg1 == 0x00) raw1 = raw1 & ~7; // 9 bit resolution, 93.75 ms

else if (cfg1 == 0x20) raw1 = raw1 & ~3; // 10 bit res, 187.5 ms

else if (cfg1 == 0x40) raw1 = raw1 & ~1; // 11 bit res, 375 ms

}

celsius1 = (float)raw1 / 16.0;

fahrenheit1 = celsius1 \* 1.8 + 32.0;

if (fahrenheit1 < hr1tempmin){

digitalWrite(hrock1,HIGH);}

if (fahrenheit1 > hr1tempmax){

digitalWrite(hrock1,LOW);}

if(count== 40){

if (hour()< 10){

Serial.print("0");

}

Serial.print(hour());

Serial.print(":");

if (minute()< 10){

Serial.print("0");

}

Serial.print(minute());

Serial.print(":");

if (second()< 10){

Serial.print("0");

}

Serial.print(second());

Serial.print(" ");

if (month()< 10){

Serial.print("0");

}

Serial.print(month());

Serial.print("/");

Serial.print(day());

Serial.print("/");

Serial.println(year());

Serial.println(h);

Serial.println(t1);

Serial.println(fahrenheit1);

Serial.println(fahrenheit);

if (night==true){

Serial.println("Night");

}else{

Serial.println("Day");

}

if (digitalRead(foggerwater)==HIGH){

Serial.println("Full");

}else{

Serial.println("Empty");

}

count = 0;

}else{

count = count+1;

}

}