#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;

}

}