小程序功能实现

1：温度采样 光照采样

#include <DHT.h>//控制温湿度传感器的头文件

#define DHTPIN A5 //温湿度数据由A5传入

#define DHTTYPE DHT11

//采样函数初始化

DHT dht(DHTPIN, DHTTYPE);

float a=analogRead(A0);//获取光照

Serial.print("light=:");

Serial.println(a);//上传光照到串口

delay(2000);

float h = dht.readHumidity();//读湿度

float t = dht.readTemperature();//读温度，默认为摄氏度

Serial.print("Humidity: ");//湿度

Serial.println(h);

Serial.print("Temperature: ");//温度

Serial.print(t);

Serial.println(" ℃ ");

2:蜂鸣器控制

#include "pitches.h"//编写的音符头文件

//用于修改所播放音乐的几个函数

int melody[] = {

//以下都是音符（do,re,mi,fa,so,la,xi）

NOTE\_E4, NOTE\_E4, NOTE\_F4, NOTE\_G4,

NOTE\_G4, NOTE\_F4, NOTE\_E4, NOTE\_D4,

NOTE\_C4, NOTE\_C4, NOTE\_D4, NOTE\_E4,

NOTE\_E5, NOTE\_D4, NOTE\_D4, 0,

NOTE\_E4, NOTE\_E4, NOTE\_F4, NOTE\_G4,

NOTE\_G4, NOTE\_F4, NOTE\_E4, NOTE\_D4,

NOTE\_C4, NOTE\_C4, NOTE\_D4, NOTE\_E4,

NOTE\_D5, NOTE\_C4, NOTE\_C4, 0,

NOTE\_D4, NOTE\_D4, NOTE\_E4, NOTE\_C4,

NOTE\_D4, NOTE\_E4, NOTE\_F4, NOTE\_E4, NOTE\_C4,

NOTE\_D4, NOTE\_E4, NOTE\_F4, NOTE\_E4, NOTE\_D4,

NOTE\_C4, NOTE\_D4, NOTE\_G5, NOTE\_E4,

NOTE\_E4, NOTE\_E4, NOTE\_F4, NOTE\_G4,

NOTE\_G4, NOTE\_F4, NOTE\_E4, NOTE\_D4,

NOTE\_C4, NOTE\_C4, NOTE\_D4, NOTE\_E4,

NOTE\_D5, NOTE\_C4, NOTE\_C4, 0

};

int noteDurations[] = {

//以下是写每一个音符的长短（1/8音符=8，1/4音符=4，1/2音符=2）

4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 8, 4, 4,

4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 8, 4, 4,

4, 4, 4, 4, 4, 8, 8, 4, 4, 4, 8, 8, 4, 4, 4, 4, 4, 2,

2, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 8, 4, 4

};

//关于音符的几个函数

for (int thisNote = 0; thisNote < 66; thisNote++) {//播放音乐

int noteDuration = 1000 / noteDurations[thisNote];

tone(13, melody[thisNote], noteDuration);

int pauseBetweenNotes = noteDuration \* 1.30;

delay(pauseBetweenNotes);

noTone(13);

3：步进电机控制模块

unsigned int forward[4] = {0x03,0x06,0x0c,0x09}; // 正转

unsigned int reverse[4]= {0x03,0x09,0x0c,0x06}; // 反转

//控制步进电机转动的函数

void SetMotor(unsigned int InputData)

{

if(InputData == 0x03)

{

digitalWrite(8, HIGH);

digitalWrite(9, HIGH);

digitalWrite(10, LOW);

digitalWrite(11, LOW);

}

else if(InputData == 0x06)

{

digitalWrite(8, LOW);

digitalWrite(9, HIGH);

digitalWrite(10, HIGH);

digitalWrite(11, LOW);

}

else if(InputData == 0x09)

{

digitalWrite(8, HIGH);

digitalWrite(9, LOW);

digitalWrite(10, LOW);

digitalWrite(11, HIGH);

}

else if(InputData == 0x0c)

{

digitalWrite(8, LOW);

digitalWrite(9, LOW);

digitalWrite(10, HIGH);

digitalWrite(11, HIGH);

}

else if(InputData == 0x00)

{

digitalWrite(8, LOW);

digitalWrite(9, LOW);

digitalWrite(10, LOW);

digitalWrite(11, LOW);

}

}

/\*

功能：转1/64圈

步距角5.625 360/5.625=64 减速比1/64

故64\*64个脉冲转一圈

n 圈数

\_direction 方向 1正转 非1反转

delay\_ms delay\_ms >= 2

\*/

void motor\_circle(int n, int \_direction, int delay\_ms)//第一个参数为转n个1/64圈，由第二个参数控制正转半圈（值为1），反转半圈（值！=1）

{

int i, j;

for(i = 0; i < n \* 8; i++)

{

for(j = 0; j < 4; j++)

{

if(1 == \_direction)

{

SetMotor(0x00);

SetMotor(forward[j]);

}

else

{

SetMotor(0x00);

SetMotor(reverse[j]);

}

delay(delay\_ms > 2 ? delay\_ms : 2);

}

}

}

调用转动 motor\_circle(128, 1, 2);

Esp8266模块：

#include "ESP8266.h"

#include "dht11.h"

#include "SoftwareSerial.h"

//配置ESP8266WIFI设置

#define SSID "1" //填写2.4GHz的WIFI名称

#define PASSWORD "12345678"//填写自己的WIFI密码

#define HOST\_NAME "api.heclouds.com" //API主机名称，连接到OneNET平台，无需修改

#define DEVICE\_ID "473845" //填写自己的OneNet设备ID

#define HOST\_PORT (80) //API端口，连接到OneNET平台，无需修改

String APIKey = "=w40DjFpz61M60h4td=oUn3wq88="; //与设备绑定的APIKey

SoftwareSerial mySerial(3, 2);

ESP8266 wifi(mySerial);

Serial.begin(9600); //初始化串口

Serial.print("setup begin\r\n");

//以下为ESP8266初始化的代码

Serial.print("FW Version: ");

Serial.println(wifi.getVersion().c\_str());

if (wifi.setOprToStation()) {

Serial.print("to station ok\r\n");

} else {

Serial.print("to station err\r\n");

}

//ESP8266接入WIFI

if (wifi.joinAP(SSID, PASSWORD)) {

Serial.print("Join AP success\r\n");

Serial.print("IP: ");

Serial.println(wifi.getLocalIP().c\_str());

} else {

Serial.print("Join AP failure\r\n");

}

mySerial.println("AT+UART\_CUR=9600,8,1,0,0");

mySerial.begin(9600);

Serial.println("setup end\r\n");

//配置esp的代码

unsigned long net\_time1 = millis(); //数据上传服务器时间

void loop() {

if (net\_time1 > millis())

net\_time1 = millis();

//上传数据部分

float sensor\_hum = h;

float sensor\_tem = t;

if (wifi.createTCP(HOST\_NAME, HOST\_PORT)) { //建立TCP连接，如果失败，不能发送该数据

Serial.print("create tcp ok\r\n");

char buf[10];

//拼接发送data字段字符串

String jsonToSend = "{\"Temperature\":";

dtostrf(sensor\_tem, 1, 2, buf);

jsonToSend += "\"" + String(buf) + "\"";

jsonToSend += ",\"Humidity\":";

dtostrf(sensor\_hum, 1, 2, buf);

jsonToSend += "\"" + String(buf) + "\"";

jsonToSend += "}";

//拼接POST请求字符串

String postString = "POST /devices/";

postString += DEVICE\_ID;

postString += "/datapoints?type=3 HTTP/1.1";

postString += "\r\n";

postString += "api-key:";

postString += APIKey;

postString += "\r\n";

postString += "Host:api.heclouds.com\r\n";

postString += "Connection:close\r\n";

postString += "Content-Length:";

postString += jsonToSend.length();

postString += "\r\n";

postString += "\r\n";

postString += jsonToSend;

postString += "\r\n";

postString += "\r\n";

postString += "\r\n";

const char \*postArray = postString.c\_str(); //将str转化为char数组

Serial.println(postArray);

wifi.send((const uint8\_t \*)postArray, strlen(postArray)); //send发送命令，参数必须是这两种格式，尤其是(const uint8\_t\*)

Serial.println("send success");

if (wifi.releaseTCP()) { //释放TCP连接

Serial.print("release tcp ok\r\n");

} else {

Serial.print("release tcp err\r\n");

}

postArray = NULL; //清空数组，等待下次传输数据

} else {

Serial.print("create tcp err\r\n");

}

Serial.println("");

net\_time1 = millis();

//上传数据部分