Assignment2 code

YichenGuan

ID \*\*\*\*\*\*\*

Task1:

//yichen guan \*\*\*\*\*\*\*

//task1# IOT programming

int buzzer =12; //buzzer pin

int IR\_obstacle=3; //IR Obstacle Auoidance Sensor pin

int IRobstacle=HIGH;//High means no obstacles

void setup() {

pinMode(buzzer,OUTPUT);// setting buzzer pin as output

pinMode(IR\_obstacle,INPUT);//setting IR pin as input

Serial.begin(9600);//The serial port baud rate is set to 9600

}

void loop() {

IRobstacle =digitalRead(IR\_obstacle);

if(IRobstacle == LOW)//has obstacles the buzzer will ring

{

digitalWrite(buzzer,HIGH);

Serial.println("something obstruct ");

}

else // no obstacles buzzer not ring

{

Serial.println("nothing");

digitalWrite(buzzer,LOW);

}

}

Task 2:

//yichen guan \*\*\*\*\*

//task2# IOT programming

#include <dht.h>

#define dht\_apin A0 // Analog Pin sensor is connected to

dht DHT;

void setup(){

Serial.begin(9600);

delay(500);//Delay to let system boot

}

void loop(){

DHT.read11(dht\_apin);

//Serial.print("Current humidity = ");

Serial.print(DHT.humidity);

Serial.println("% ");

// Serial.print("temperature = ");

Serial.print(DHT.temperature);

Serial.println("C ");

delay(2000);//Wait 2 seconds before accessing sensor again.

//Fastest should be once every two seconds.

}// end loop()

Task 2 python code :

import serial  
import MySQLdb  
ser = serial.Serial("/dev/ttyACM0",9600)  
n=20  
  
dbConn = MySQLdb.connect("localhost","user1","123456","TempandHumi") or die ("colud not find")  
cursor = dbConn.cursor()  
  
while n>0:  
     n-=1  
     res1=ser.readline()  
     
     print(res1)  
     '''read data'''  
     res1=res1.strip()  
     '''delete \r\nprint(res1)'''  
     res1=res1.decode()  
     '''change byte to string'''  
     print(res1)  
     '''print humidity'''  
     res2=ser.readline()  
     res2=res2.strip()  
     res2=res2.decode()  
     print(res2)  
     '''ptinr temperature'''  
     cursor.execute("INSERT INTO TemandHumi (Humidity,Temperature) VALUES ('%s','%s')"%(res1,res2))  
     '''upload to database'''  
     dbConn.commit()

Task 3:

//yichen guan \*\*\*\*\*\*\*\*\*\*

//task3# IOT programming

#include <dht.h>

#define dht\_apin A0 // Analog Pin sensor is connected to

dht DHT;

int lightred= 5;

int lightgreen= 6;

void setup(){

pinMode(lightred,OUTPUT);

pinMode(lightgreen,OUTPUT);

Serial.begin(9600);

delay(500);//Delay to let system boot

}

void loop(){

DHT.read11(dht\_apin);

//Serial.print("Current humidity = ");

Serial.print(DHT.humidity);

Serial.println("% ");

// Serial.print("temperature = ");

Serial.print(DHT.temperature);

Serial.println("C ");

checkinfor(DHT.humidity,DHT.temperature);

delay(5000);//Wait 5 seconds before accessing sensor again.

//Fastest should be once every two seconds.

}// end loop()

void checkinfor(int humi,int temp){

if(humi>55)

{

digitalWrite(lightred,HIGH);

delay(1000);

}

else{

digitalWrite(lightred,LOW);

}

if(temp>23)

{

digitalWrite(lightgreen,HIGH);

delay(1000);

}

else{

digitalWrite(lightgreen,LOW);

}

}

Task 4:python code

import serial  
#import MySQLdb  
import numpy as np  
import matplotlib.pyplot as plt  
import smtplib  
from email.mime.text import MIMEText  
from email.mime.image import MIMEImage  
from email.mime.multipart import MIMEMultipart  
  
ser = serial.Serial("/dev/ttyACM0",9600)  
n=10  
TempData=[]  
HumiData=[]  
# dbConn = MySQLdb.connect("localhost","user1","123456","TempandHumi") or die ("colud not find")  
# cursor = dbConn.cursor()  
while n>0:  
     n-=1  
     res1=ser.readline()  
     
     '''print(res1)''''''read data'''  
     res1=res1.strip()  
     '''delete \r\nprint(res1)'''  
     res1=res1.decode()  
     '''change byte to string'''  
#      print(res1)  
     HumiData.append(res1[:-1])  
# '''print humidity'''  
     res2=ser.readline()  
     res2=res2.strip()  
     res2=res2.decode()  
#      print(res2)  
     TempData.append(res2[:-1])  
#     '''ptinr temperature'''  
#     cursor.execute("INSERT INTO TemandHumi (Humidity,Temperature) VALUES ('%s','%s')"%(res1,res2))  
#     '''upload to database'''  
#     dbConn.commit()  
print(HumiData)  
#print(TempData)  
  
#Because the temperature is difficult to change in a short time, so do not record it  
#drawdiagram  
#X\_values  
  
time=[0,2,4,6,8,10,12,14,16,18]  
  
Y=HumiData  
plt.title('humidity change in 20second')  
plt.plot(time,Y,'b')  
plt.xlim((0,20))  
#plt.ylim((0,100))  
plt.xlabel('time(s)')  
plt.ylabel('humidity(%)')  
plt.figure(num=1,figsize=(8,5))  
#my\_y\_tick=np.linspace(0,100,5)  
plt.yticks(Y)  
  
plt.savefig("picture1.jpg")  
#plt.show()  
  
  
  
gmail\_user = '[\*\*\*\*\*\*\*\*@gmail.com](mailto:iotganjiuwanle@gmail.com" \t "https://mail.google.com/mail/u/0/" \l "inbox/_blank)'  
gmail\_password = '\*\*\*\*\*\*\*' # your gmail password  
  
file = open("picture1.jpg","rb")  
img\_data= file.read()  
file.close()  
img=MIMEImage(img\_data)  
  
msg = MIMEMultipart()  
text=MIMEText('humidity change')  
msg['Subject'] = 'Test'  
msg['From'] = gmail\_user  
msg['To'] = '[\*\*\*\*\*\*\*@gmail.com](mailto:iotganjiuwanle@gmail.com" \t "https://mail.google.com/mail/u/0/" \l "inbox/_blank)'  
msg.attach(text)  
msg.attach(img)  
  
server = smtplib.SMTP\_SSL('[smtp.gmail.com](http://smtp.gmail.com/" \t "https://mail.google.com/mail/u/0/" \l "inbox/_blank)', 465)  
server.ehlo()  
server.login(gmail\_user, gmail\_password)  
server.send\_message(msg)  
server.quit()  
  
print('Email sent!')