**電通四甲微處理器實驗 實驗結報**

|  |  |  |  |
| --- | --- | --- | --- |
| **實驗名稱** | **Lab 11—溫濕度感應器** | | |
| **學號** | **05052421** | **組員** | **姚同宇** |

1. **實驗目的**
2. **讓DHT-11可以一直量測溫濕度**
3. **整合Timer與DHT-11量測溫濕度**
4. **實驗步驟**
5. **修改Timer1之\_callback1，量測DHT-11之溫濕度**
6. **修改timer.start，使其1秒鐘量一次**
7. **Check Point 1程式碼**

**#include <LWiFi.h>**

**#include "MCS.h"**

**#include "DHT.h"**

**#define DHTPIN 2**

**#define DHTTYPE DHT11**

**DHT dht(DHTPIN, DHTTYPE);**

**char \_lwifi\_ssid[] = "YTY";**

**char \_lwifi\_pass[] = "12345678";**

**MCSDevice mcs("Dx8uWn6K", "GuVu84Dq7DEjK0J6");**

**MCSDisplayFloat Temperature("temp");**

**MCSDisplayFloat Humidity("humi");**

**void setup()**

**{**

**dht.begin();**

**Serial.begin(9600);**

**Serial.println("Connect to Wifi");**

**while (WiFi.begin(\_lwifi\_ssid, \_lwifi\_pass) != WL\_CONNECTED) {**

**Serial.println("Wifi Reconnecting..");**

**delay(1000);**

**}**

**Serial.println("Connect to MCS...");**

**while (!mcs.connected()) {**

**Serial.println("MCS Reconnecting..");**

**mcs.connect();**

**}**

**Serial.println("MCS Connected!");**

**Serial.println("Humidity and temperature\n\n");**

**mcs.addChannel(Temperature);**

**mcs.addChannel(Humidity);**

**}**

**void loop()**

**{**

**while (!mcs.connected()) {**

**mcs.connect();**

**if (mcs.connected()) {**

**Serial.println("MCS Reconnect");**

**}**

**}**

**mcs.process(1000);**

**float h = dht.readHumidity();**

**float t = dht.readTemperature();**

**if (isnan(h) || isnan(t)) {**

**Serial.println("Failed to read from DHT sensor!");**

**return;**

**}**

**Serial.print("Humidity: ");**

**Serial.print(h);**

**Serial.print(" %\t");**

**Serial.print("Temperature: ");**

**Serial.print(t);**

**Serial.print(" \*C ");**

**Humidity.set(h);**

**Temperature.set(t);**

**Serial.println("Add sensor value.");**

**delay(200);**

**}**

1. **Check Point 2程式碼**

**#include "DHT.h"**

**#define DHTPIN 2**

**//#define DHTTYPE DHT11 // DHT 11**

**#define DHTTYPE DHT11 // DHT 22 (AM2302), AM2321**

**//#define DHTTYPE DHT21 // DHT 21 (AM2301)**

**#include "Arduino.h"**

**#include "LTimer.h"**

**DHT dht(DHTPIN, DHTTYPE);**

**LTimer timer0(LTIMER\_0);**

**float h,t,f,hic,hif;**

**void \_callback0(void \*usr\_data)**

**{ Serial.print(F("Humidity: "));**

**Serial.print(h);**

**Serial.print(F("% Temperature: "));**

**Serial.print(t);**

**Serial.print(F("'C "));**

**Serial.print(f);**

**Serial.print(F("'F Heat index: "));**

**Serial.print(hic);**

**Serial.print(F("'C "));**

**Serial.print(hif);**

**Serial.println(F("'F"));**

**}**

**void setup() {**

**Serial.begin(9600);**

**timer0.begin();**

**Serial.println(F("DHTxx test!"));**

**dht.begin();**

**timer0.start(1000, LTIMER\_REPEAT\_MODE, \_callback0, NULL);**

**}**

**void loop() {**

**h = dht.readHumidity();**

**// Read temperature as Celsius (the default)**

**t = dht.readTemperature();**

**// Read temperature as Fahrenheit (isFahrenheit = true)**

**f = dht.readTemperature(true);**

**// Check if any reads failed and exit early (to try again).**

**if (isnan(h) || isnan(t) || isnan(f)) {**

**Serial.println(F("Failed to read from DHT sensor!"));**

**return;**

**}**

**// Compute heat index in Fahrenheit (the default)**

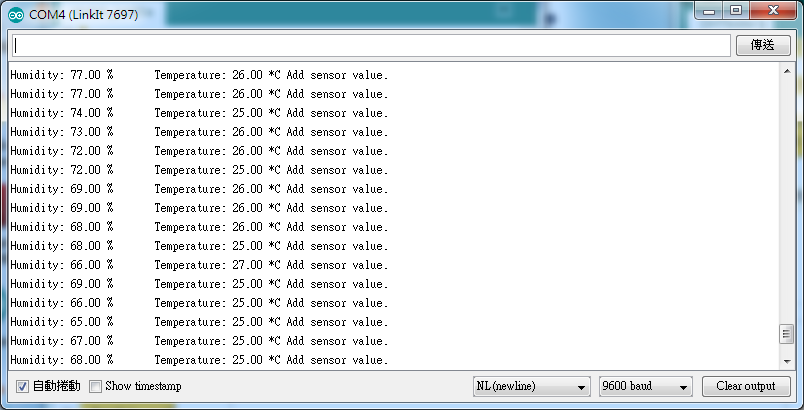
**hif = dht.computeHeatIndex(f, h);**

**// Compute heat index in Celsius (isFahreheit = false)**

**hic = dht.computeHeatIndex(t, h, false);**

**}**

1. **實驗結果及分析**

****