**電通二乙微處理器實驗 實驗結報**

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| **實驗名稱** | Lab12 | | |
| **組別** |  | **組員** | 張益傑 |

1. **實驗目的**

使用linkit 7697，並用溫溼度感測器來量測並結合timer，做溫溼度感測

後上傳到MCS Cloud。

1. **實驗步驟**

1.

安裝DHT-11 Library，使用範例檔，並修改腳位，和DHTTYPE，來測量溫溼度，讓DH-T11一直量測溫溼度。

2.

修改timer1之\_callback1，來量測溫溼度，並修改timer1.start使其1秒量一次，達到整合timer與DHT-11量測溫濕度。

3.

在MCS Cloud創建新的測試產品，在裡面添加兩個浮點數顯示器單位分別為攝氏(溫度)和百分比(濕度)，使用linkit 7697 取得溫溼度感測器的溫溼度並使用timer每隔10秒將溫溼度上傳到MCS Cloud。

1. **程式碼**

1.

#include "DHT.h"

#define DHTPIN 7

#define DHTTYPE DHT11 // DHT 11

// Connect pin 1 (on the left) of the sensor to +5V

// NOTE: If using a board with 3.3V logic like an Arduino Due connect pin 1

// to 3.3V instead of 5V!

// Connect pin 2 of the sensor to whatever your DHTPIN is

// Connect pin 4 (on the right) of the sensor to GROUND

// Connect a 10K resistor from pin 2 (data) to pin 1 (power) of the sensor

// Initialize DHT sensor.

// Note that older versions of this library took an optional third parameter to

// tweak the timings for faster processors. This parameter is no longer needed

// as the current DHT reading algorithm adjusts itself to work on faster procs.

DHT dht(DHTPIN, DHTTYPE);

void setup() {

Serial.begin(9600);

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

dht.begin();

}

void loop() {

// Wait a few seconds between measurements.

delay(2000);

// Reading temperature or humidity takes about 250 milliseconds!

// Sensor readings may also be up to 2 seconds 'old' (its a very slow sensor)

float h = dht.readHumidity();

// Read temperature as Celsius (the default)

float t = dht.readTemperature();

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

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

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

return;

}

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

Serial.print(h);

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

Serial.print(t);

Serial.println(" \*C");

}

2.

#include "Arduino.h"

#include "LTimer.h"

#include "DHT.h"

#define DHTPIN 7

#define DHTTYPE DHT11 // DHT 11

DHT dht(DHTPIN, DHTTYPE);

float h,t;

// instantiation

LTimer timer1(LTIMER\_1);

void setup()

{

Serial.begin(9600);

// initialization

timer1.begin();

dht.begin();

timer1.start(1000, LTIMER\_REPEAT\_MODE, \_callback1, NULL);

}

void loop() {

h = dht.readHumidity();

t = dht.readTemperature();

}

void \_callback1(void \*usr\_data)

{

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

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

return;

}

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

Serial.print(h);

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

Serial.print(t);

Serial.println(" \*C");

}

3.

#include "Arduino.h"

#include "LTimer.h"

#include "DHT.h"

#include <LWiFi.h>

#include <WiFiClient.h>

#include "MCS.h"

#define DHTPIN 7

#define DHTTYPE DHT11 // DHT 11

#define \_SSID "test1"

#define \_KEY "pigpigpig"

MCSDevice mcs("DdzhSxQU", "zaMTvKPwx6gjT7a1");

MCSDisplayFloat Temperature("Temperature");

MCSDisplayFloat Humidity("Humidity");

DHT dht(DHTPIN, DHTTYPE);

float h, t;

// instantiation

LTimer timer1(LTIMER\_1);

void setup()

{

Serial.begin(9600);

// initialization

timer1.begin();

dht.begin();

timer1.start(10000, LTIMER\_REPEAT\_MODE, \_callback1, NULL);

while (WL\_CONNECTED != WiFi.status())

{

Serial.print("WiFi.begin(");

Serial.print(\_SSID);

Serial.print(",");

Serial.print(\_KEY);

Serial.println(")...");

WiFi.begin(\_SSID, \_KEY);

}

Serial.println("WiFi connected !!");

mcs.addChannel(Temperature);

mcs.addChannel(Humidity);

while (!mcs.connected())

{

Serial.println("MCS.connect()...");

mcs.connect();

}

Serial.println("MCS connected !!");

}

void loop() {

h = dht.readHumidity();

t = dht.readTemperature();

mcs.process(100);

Temperature.set(t);

Humidity.set(h);

while (!mcs.connected())

{

Serial.println("re-connect to MCS...");

mcs.connect();

if (mcs.connected())

Serial.println("MCS connected !!");

}

}

void \_callback1(void \*usr\_data)

{

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

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

return;

}

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

Serial.print(h);

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

Serial.print(t);

Serial.println(" \*C");

}

1. **實驗結果及分析**

先打好MCS Datachannel相對應函式，將Timer1計時改為10秒鐘，在Timer1之callback1量測DHT-11之溫溼度，再將溫溼度上傳至MCS。

1. **心得討論**

這次的實驗相當的不好做，很多人第一題很快就做完，第二題開始卡住了，希望期末考不會抽到這題。

**修正電路圖**

1. **修正程式碼**