

崑山科技大學 109 學年度第一學期嵌入式系統期末專題報告

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壹、專題摘要

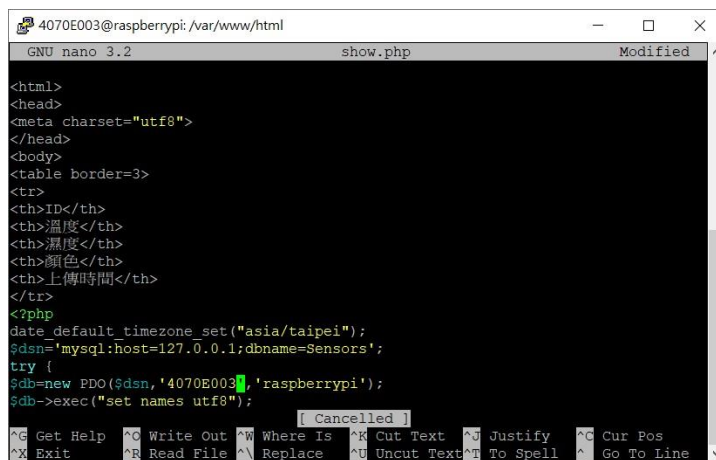
將 DH22 溫濕度上傳到 Raspberry Pi 資料庫內，NodeMCU 同時需要讀取資料庫的溫度，以此溫度值控制 LED 的顏色，28 度以下顯示藍燈，28~40 度顯示綠燈，40 度以上顯示藍燈，截圖說明實作過程。

貳、實作內容

1. 撰寫並燒錄 Arduino 程式碼進到 nodemcu，程式碼內有辨識溫度，透過 LED 變色

```
if (t<28)
{
    digitalWrite(redLED,LOW); //點亮共陽型紅燈
    digitalWrite(greenLED,LOW); //滅掉綠燈
    digitalWrite(blueLED,HIGH);
}
else if(t >= 28 & t < 40) //若 濕度未大於80%，則
{
    digitalWrite(redLED,LOW); //滅掉紅燈
    digitalWrite(greenLED,HIGH); //點亮綠燈
    digitalWrite(blueLED,LOW);
}
else{
    digitalWrite(redLED,HIGH); //滅掉紅燈
    digitalWrite(greenLED,LOW); //點亮綠燈
    digitalWrite(blueLED,LOW);
}
```

2. 撰寫 php 程式碼，內有透過溫度變數分辨溫度後，顯示顏色



```
GNU nano 3.2 show.php Modified
<html>
<head>
<meta charset="utf8">
</head>
<body>
<table border=3>
<tr>
<th>ID</th>
<th>溫度</th>
<th>濕度</th>
<th>顏色</th>
<th>上傳時間</th>
</tr>
<?php
date_default_timezone_set("asia/taipei");
$dsn='mysql:host=127.0.0.1;dbname=Sensors';
try {
$db=new PDO($dsn,'4070E003','raspberrypi');
$db->exec("set names utf8");
[ Cancelled ]
^C Get Help ^C Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^N Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

3. 查看 Raspberry Pi 資料庫內溫溼度數據

```
4070E003@raspberrypi: ~  
1051 | 21.10 | 76.40 | 2021-01-11 15:37:14 |  
1052 | 21.10 | 76.70 | 2021-01-11 15:37:17 |  
1053 | 21.10 | 76.30 | 2021-01-11 15:37:20 |  
1054 | 21.10 | 75.90 | 2021-01-11 15:37:24 |  
1055 | 21.10 | 75.10 | 2021-01-11 15:37:27 |  
1056 | 21.20 | 75.10 | 2021-01-11 15:37:31 |  
1057 | 21.10 | 74.90 | 2021-01-11 15:37:34 |  
1058 | 21.10 | 75.30 | 2021-01-11 15:37:37 |  
1059 | 21.00 | 74.80 | 2021-01-11 15:37:41 |  
1060 | 21.10 | 75.00 | 2021-01-11 15:37:44 |  
1061 | 21.10 | 75.00 | 2021-01-11 15:37:47 |  
1062 | 21.10 | 74.80 | 2021-01-11 15:37:51 |  
1063 | 21.00 | 74.80 | 2021-01-11 15:37:54 |  
1064 | 21.10 | 74.50 | 2021-01-11 15:37:58 |  
1065 | 21.10 | 74.40 | 2021-01-11 15:38:01 |  
1066 | 21.10 | 74.20 | 2021-01-11 15:38:05 |  
1067 | 21.10 | 74.30 | 2021-01-11 15:38:11 |  
1068 | 21.10 | 74.60 | 2021-01-11 15:38:14 |  
1069 | 21.10 | 75.50 | 2021-01-11 15:38:18 |  
1070 | 21.10 | 76.10 | 2021-01-11 15:38:21 |  
-----+-----+-----+-----+-----+  
167 rows in set (0.00 sec)  
MariaDB [Sensors]>
```

4. 查看網頁依照溫度大小顯示顏色

ID	溫度	濕度	顏色	上傳時間
1042	21.20	77.10	BLUE	2021-01-11 15:36:44
1041	21.20	78.80	BLUE	2021-01-11 15:36:40
1040	21.20	78.90	BLUE	2021-01-11 15:36:37
1039	21.20	78.80	BLUE	2021-01-11 15:36:34
1038	21.20	78.70	BLUE	2021-01-11 15:36:30
1037	21.40	78.40	BLUE	2021-01-11 15:36:27
1036	21.20	78.80	BLUE	2021-01-11 15:36:24
1035	21.20	78.90	BLUE	2021-01-11 15:36:20
1034	21.20	78.80	BLUE	2021-01-11 15:36:17
1033	21.20	79.40	BLUE	2021-01-11 15:36:14
1032	21.20	79.00	BLUE	2021-01-11 15:36:10
1031	21.20	79.90	BLUE	2021-01-11 15:36:07
1030	21.30	78.80	BLUE	2021-01-11 15:36:04
1029	21.30	79.30	BLUE	2021-01-11 15:36:00
1028	21.30	79.20	BLUE	2021-01-11 15:35:57
1027	21.30	79.80	BLUE	2021-01-11 15:35:54
1026	21.30	80.30	BLUE	2021-01-11 15:35:51
1025	21.30	81.30	BLUE	2021-01-11 15:35:47
1024	21.30	80.50	BLUE	2021-01-11 15:35:43
1023	21.30	80.80	BLUE	2021-01-11 15:35:39
1022	21.30	81.00	BLUE	2021-01-11 15:35:36
1021	21.30	80.90	BLUE	2021-01-11 15:35:32
1020	21.30	81.50	BLUE	2021-01-11 15:35:29
1019	21.30	81.60	BLUE	2021-01-11 15:35:25
1018	21.30	80.90	BLUE	2021-01-11 15:35:22

939	26.60	99.90	GREEN	2021-01-11 15:30:38
938	26.90	99.90	GREEN	2021-01-11 15:30:35
937	27.20	99.90	GREEN	2021-01-11 15:30:31
936	27.50	99.90	GREEN	2021-01-11 15:30:28
935	27.80	99.90	GREEN	2021-01-11 15:30:24
934	28.10	99.90	GREEN	2021-01-11 15:30:21
933	28.40	99.90	GREEN	2021-01-11 15:30:18
932	28.80	99.90	GREEN	2021-01-11 15:30:14
931	29.30	99.90	GREEN	2021-01-11 15:30:11
930	29.70	99.90	GREEN	2021-01-11 15:30:08
929	30.10	99.90	RED	2021-01-11 15:30:04
928	30.60	99.90	RED	2021-01-11 15:30:01
927	31.10	99.90	RED	2021-01-11 15:29:58
926	31.60	99.90	RED	2021-01-11 15:29:54
925	31.90	99.90	RED	2021-01-11 15:29:51
924	32.20	99.90	RED	2021-01-11 15:29:48
923	32.50	99.90	RED	2021-01-11 15:29:45
922	32.20	99.90	RED	2021-01-11 15:29:41
921	31.30	99.90	RED	2021-01-11 15:29:38

叁、成果展示

展示不同溫度，有不同顯示的變化

