

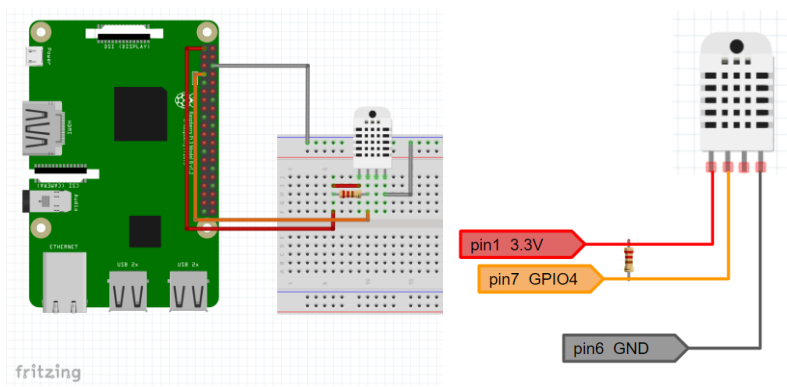
## 實驗五：DHT22 & Web

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一、電路圖



二、程式

| 需求   |
|--|
| 完成 DHT22 溫溼度量測，並上傳華氏溫度，攝氏溫度，濕度，量測時間到 MySQL(MariaDB)資料庫，並能夠顯示這些資料在瀏覽器上。   |
| 程式說明   |
| 完整程式碼: <a href="https://github.com/jessie900309/NTUE_RaspberryPiPractice/tree/master/20220519">https://github.com/jessie900309/NTUE_RaspberryPiPractice/tree/master/20220519</a> |

| LogRecord_GET.php  |
|--|
| <pre>&lt;?php \$host = "localhost"; \$dbuser = "root"; \$dbpasswd = "123456"; \$DBNAME = "dht22 log";  if(isset(\$_GET['TEMP C'])){     \$conn = mysqli_connect(\$host, \$dbuser, \$dbpasswd, \$DBNAME);     if(!\$conn) {         echo "Error: Unable to connect to MySQL." . PHP_EOL;         echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;         echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;         die ("無法連接資料庫");     }     // 設定連線編碼     mysqli_query(\$conn, "SET NAMES 'utf8'");      \$sql = sprintf("INSERT INTO log (`TEMP C`,`TEMP F`,`HUMD`,`logtime`) VALUES ('%s','%s','%s',NOW())",     \$_GET['TEMP C'],\$_GET['TEMP F'],\$_GET['HUMD'] );     \$ret = mysqli_query(\$conn, \$sql);      if(!\$ret){         echo "Error: Unable to connect to MySQL." . PHP_EOL;         echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;         echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;         die("insert error");     }else{         echo "Records created successfully\n";     }     mysqli_close(\$conn); }else{     die("Error"); } ?&gt;</pre> |

## setup.php

```
<?php
// 這個檔案拿來建立資料庫環境
$host = "localhost";
$dbuser = "root";
$dbpasswd = "123456";

$create_db_sql = "CREATE DATABASE IF NOT EXISTS `dht22 log`";
$create_table_sql = "CREATE TABLE IF NOT EXISTS `dht22 log`.`log` ( `index id` INT NOT NULL
AUTO INCREMENT , `TEMP C` VARCHAR(20) NOT NULL , `TEMP F` VARCHAR(20) NOT NULL , `HUMD` VARCHAR(20) NOT
NULL , `logtime` TIMESTAMP NOT NULL , PRIMARY KEY (`index id`)) ENGINE = InnoDB";

$conn = mysqli_connect($host, $dbuser, $dbpasswd);

if(!$conn){
    echo "Error: Unable to connect to MySQL." . PHP_EOL;
    echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;
    echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;
    die("無法連線至資料庫");
}

$ret = mysqli_query($conn, $create_db_sql);
if(!$ret){
    echo "Error: Unable to connect to MySQL." . PHP_EOL;
    echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;
    echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;
    die("建立 db 失敗");
}

// 設定連線編碼
mysqli_query($conn, "SET NAMES 'utf8'");

// 建立新的 table
$ret = mysqli_query($conn, $create_table_sql);

if(!$ret){
    echo "Error: Unable to connect to MySQL." . PHP_EOL;
    echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;
    echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;
    die("建立 table 失敗");
}

echo "All OK";
mysqli_close($conn);
?>
```

## index.php

```
<?php
$host = "localhost";
$dbuser = "root";
$dbpasswd = "123456";
$dbname = "dht22 log";

$conn = mysqli_connect($host, $dbuser, $dbpasswd, $dbname);

if(!$conn) {
    echo "Error: Unable to connect to MySQL." . PHP_EOL;
    echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;
    echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;
    die ("無法連線至資料庫");
}

// 設定連線編碼
mysqli_query($conn, "SET NAMES 'utf8'");

$sql = "SELECT * FROM dht22 log.log ORDER BY `time` DESC";

$ret = mysqli_query($conn, $sql);

if(!$ret){
    echo "Error: Unable to connect to MySQL." . PHP_EOL;
    echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;
    echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;
    die("error");
}

mysqli_close($conn);
?>
```

```

<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/css/bootstrap.min.css" integrity="sha384-
9ait2nRpC12Uk9gS9baDl411NQApFmC26EwAOH8WgZl5MYXxPfc+NcPb1dKGj7Sk" crossorigin="anonymous">
    <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-
DfxXdz2htPH01sSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj" crossorigin="anonymous"></script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js"
integrity="sha384-Q6E9RHvbIyZFJoft+2mJbHaEWldlvI9IOYy5n3zV9zzTtmI3UksdQRVvoxMfooAo"
crossorigin="anonymous"></script>
    <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/js/bootstrap.min.js"
integrity="sha384-OgVRvuATPlz7JjHLkuOU7Xw704+h835Lr+6QL9UvYjZE3Ipu6Tp75j7Bh/kR0JKI"
crossorigin="anonymous"></script>
    <title>溫溼度紀錄</title>
  </head>
  <style>
    .table td {
      text-align: center;
    }
  </style>
  <body>
    <!-- 上面的導航條 -->
    <nav class="navbar navbar-expand-sm bg-dark navbar-dark">
      <!-- Brand -->
      <a class="navbar-brand" href="/index.php">溫溼度紀錄系統</a>

      <!-- Links -->
      <ul class="navbar-nav">
        <!-- <li class="nav-item">
          <a class="nav-link" href="/adduser.html">新增</a>
        </li>
        <li class="nav-item">
          <a class="nav-link" href="/log.php">紀錄</a>
        </li> -->
      </ul>
    </nav>
    <!-- 網頁本體 -->
    <div class="container">
      <h1 style="text-align: center; margin-top: 1rem;">溫溼度紀錄 (DHT22)</h1>
      <div class="row">
        <div class="col">
          <div class="table-responsive">
            <table class="table table-bordered">
              <thead>
                <tr>
                  <th>溫度 (°C)</th>
                  <th>溫度 (°F)</th>
                  <th>濕度</th>
                  <th>時間</th>
                </tr>
              </thead>
              <!-- -->
              <tbody>
                <?php
                while($row = mysqli_fetch_array($ret, MYSQLI_NUM)){
                  echo "<tr>";
                  echo "<td>".$row[1]. "</td>\n";
                  echo "<td>".$row[2]. "</td>\n";
                  echo "<td>".$row[3]. "</td>\n";
                  echo "<td>".$row[4]. "</td>\n";
                  echo "</tr>";
                }
                ?>
              </tbody>
            </table>
          </div>
        </div>
      </div>
    </div>
  </body>
</html>

```

## homework0519\_repo5.py

```
import time
import board
import adafruit_dht
import requests
import RPi.GPIO as GPIO

TARGET_URL = 'localhost'

# Initial the dht device, with data pin connected to GPIO4:
dhtDevice = adafruit_dht.DHT22(board.D4)

while True:
    try:
        # Print the values to the serial port
        temperature_c = dhtDevice.temperature
        temperature_f = temperature_c * (9 / 5) + 32
        humidity = dhtDevice.humidity
        print(
            "Temp: {:.2f} F / {:.2f} C   Humidity: {:.2f}% \n".format(
                temperature_f, temperature_c, humidity
            )
        )
        r = requests.get('http://{0}/LogRecord GET.php?TEMP C={1}&TEMP F={2}&HUMD={3}'.format(TARGET_URL,
            temperature_c, temperature_f, humidity))
        print("Server Return Code :", r.status code)
        print(r.text)
        time.sleep(2.0)

    except RuntimeError as error:
        print(error.args[0])
        time.sleep(2.0)
        continue
    except Exception as error:
        dhtDevice.exit()
        GPIO.cleanup()
        raise error
```

## 三、影片連結

setup.php



index.php

| 溫溼度紀錄(DHT22) |        |      |                     |
|--------------|--------|------|---------------------|
| 溫度(°C)       | 溫度(°F) | 濕度   | 時間                  |
| 23.0         | 73.4   | 74.3 | 2022-05-25 15:24:29 |
| 22.9         | 73.22  | 75.4 | 2022-05-25 15:24:32 |
| 22.9         | 73.22  | 75.4 | 2022-05-25 15:24:34 |
| 22.9         | 73.22  | 75.4 | 2022-05-25 15:24:36 |
| 22.9         | 73.22  | 75.4 | 2022-05-25 15:24:38 |
| 22.9         | 73.22  | 75.3 | 2022-05-25 15:24:41 |
| 22.9         | 73.22  | 75.3 | 2022-05-25 15:24:43 |

YouTube 影片連結：<https://youtu.be/1Z0jWWobunE>