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Discussion1:

1. Explain Ultrasonic sensor, what is trigger and echo?

Trigger 送出超音波，echo 接收超音波

2. Why do we use 1/58.2 in the TUT. 1?

因為音速約 1cm/29.1us，然後聲音需要來回，所以要除以 58.2 來算出距離

3. What is the difference between delayMicroseconds(us) and delay(ms)?

delayMicroseconds(us)的單位是 us，delay(ms)的單位是 ms

4. Do some experiments. What is the max distance that your ultrasonic sensor can detect?

1206cm

Discussion2:

1. How does Arduino distinguish bit value which is represented as 0 and 1 in DHT11?

利用濕度感測器的 Data 角位會回傳很多個 bit，每個 bit 之前會有 50us 的 low-voltage-level，然後才是要的資料。而要的資料如果是 0，就會有較短時間的 high-voltage-level，如果是 1，則會有較長時間的 high-voltage-level。

2. Please write down the temperature and humidity of the classroom?

濕度 66.0RH，攝氏溫度 24.6

3. Blow the DHT-11, then write down the temperature and humidity and check if there is difference

濕度 77.6RH，溫度 27.3

Discussion3

以教室的濕度溫度為例， $T_{dp} = 24.6 - (100 - 66.0) / 5 = 17.8$ (攝氏溫度)

Discussion4

以教室的濕度溫度為例，

$$\begin{aligned}\text{體感溫度} &= 1.04 * 24.6 + 0.2 * (66.0 / 100 * 6.105 * \exp(17.27 * 24.6 / (237.7 + 24.6))) - 0.65 * 2.7 - 2.7 \\ &= 25.2 \text{ 攝氏溫度}\end{aligned}$$