

## Tutorial NodeMCU V2: The Ultrasonic Sensor

### 1. Distance Measurement Using Ultrasonic Sensor – Reading from Digital Input

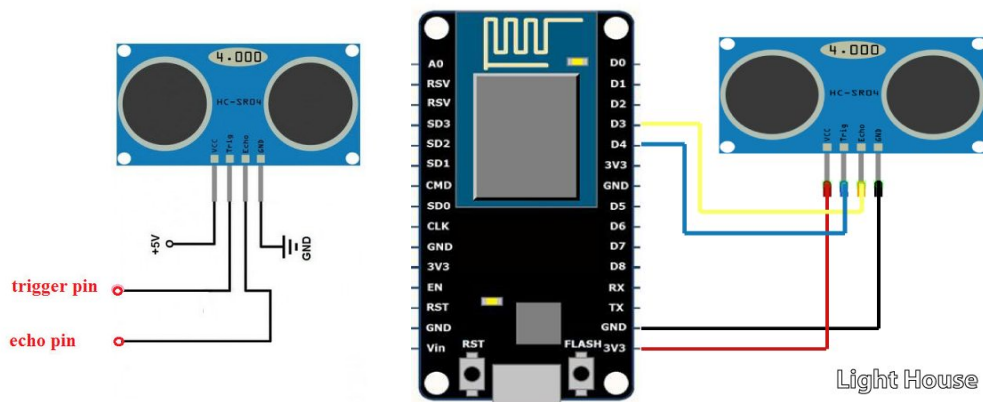


Figure 1.5: HC-SR04 – Ultrasonic Sensor

#### a. SPECIFICATION of HC-SR04

1. Power supply : 5v DC
2. Ranging distance : 2cm – 500 cm
3. Ultrasonic Frequency : 40k Hz

#### b. The circuit connections are made as follows:

The HC-SR04 sensor attach to the Breadboard

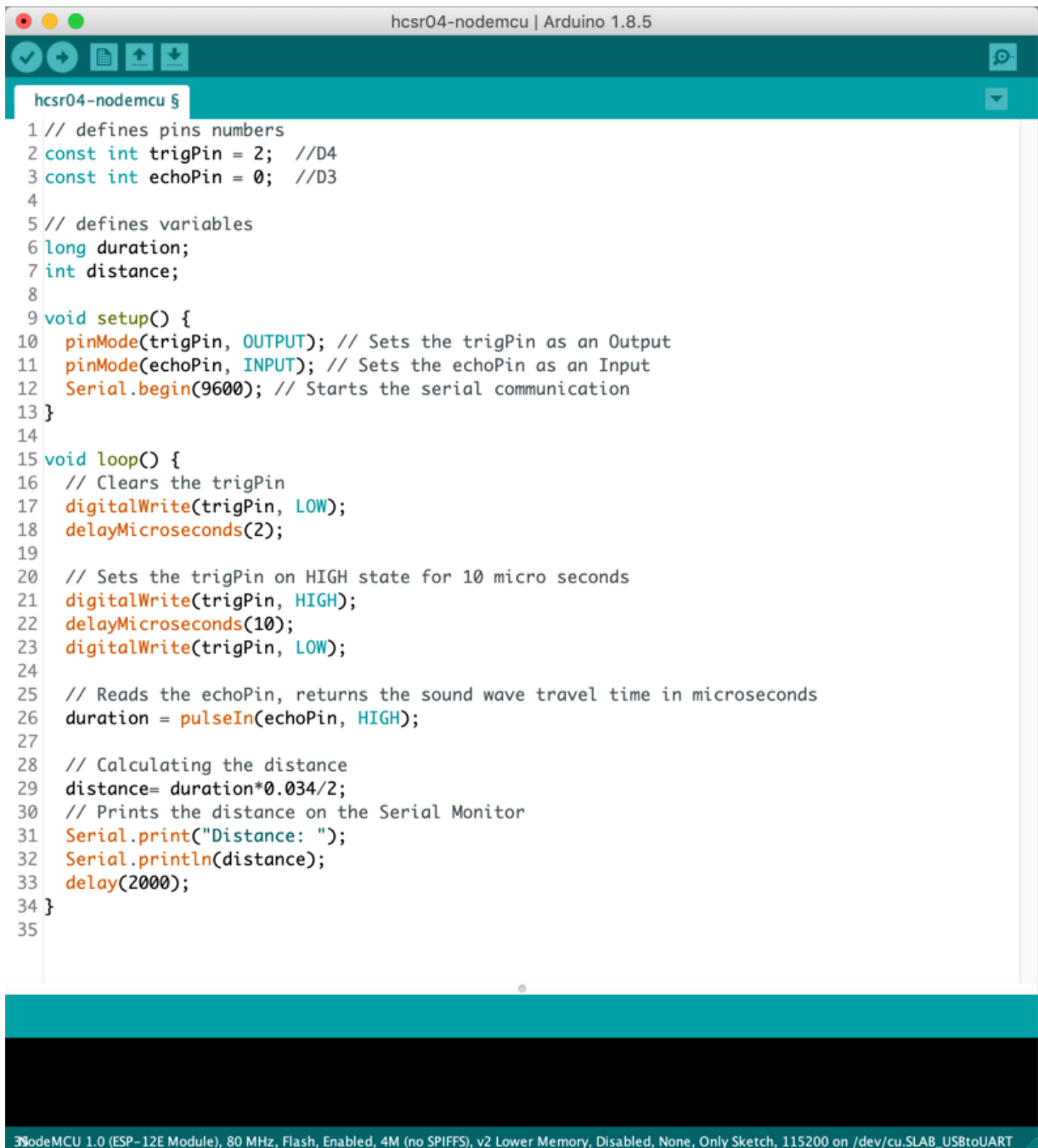
The sensor Vcc is connected to the NodeMCU +3.3v

The sensor GND is connected to the NodeMCU GND

The sensor Trigger Pin is connected to the NodeMCU Digital I/O **D4**

The sensor Echo Pin is connected to the NodeMCU Digital I/O **D3**

### 2. The sketch of Ultrasonic Sensor and NodeMCU.



```
hcsr04-nodemcu | Arduino 1.8.5
hcsr04-nodemcu §
1 // defines pins numbers
2 const int trigPin = 2; //D4
3 const int echoPin = 0; //D3
4
5 // defines variables
6 long duration;
7 int distance;
8
9 void setup() {
10   pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
11   pinMode(echoPin, INPUT); // Sets the echoPin as an Input
12   Serial.begin(9600); // Starts the serial communication
13 }
14
15 void loop() {
16   // Clears the trigPin
17   digitalWrite(trigPin, LOW);
18   delayMicroseconds(2);
19
20   // Sets the trigPin on HIGH state for 10 micro seconds
21   digitalWrite(trigPin, HIGH);
22   delayMicroseconds(10);
23   digitalWrite(trigPin, LOW);
24
25   // Reads the echoPin, returns the sound wave travel time in microseconds
26   duration = pulseIn(echoPin, HIGH);
27
28   // Calculating the distance
29   distance= duration*0.034/2;
30   // Prints the distance on the Serial Monitor
31   Serial.print("Distance: ");
32   Serial.println(distance);
33   delay(2000);
34 }
35
```

NodeMCU 1.0 (ESP-12E Module), 80 MHz, Flash, Enabled, 4M (no SPIFFS), v2 Lower Memory, Disabled, None, Only Sketch, 115200 on /dev/cu.SLAB\_USBtoUART