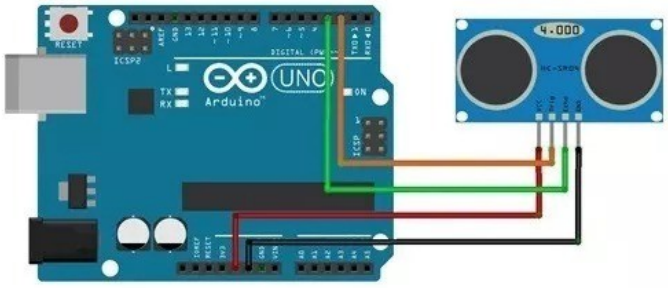
Robotics Club IITKanpur

Ultrasonic Sensor Mobile Interfacing

In case of any doubts in this tutorial, contact Ayush Sinha (9850892135) or Himanshu Rahangdale (9340607951).

- Step 1: The Circuit
  - Simulate the following HC-SR04 circuit on TinkerCAD
  - Make the HC-SR04 circuit on a breadboard. Components will be issued to groups of 4 members each.



- Step 2: The Code - Use basic echo principle to calculate distance.
  - Sound reflecting from the obstacle
  - Speed of sound

ultrasonic_sesnor_range_calculation_using_arduino

```
#include <Mouse.h>

const int trigpin= 8;
const int echopin= 7;
long duration;
int distance;
void setup(){
  pinMode(trigpin,OUTPUT);
  pinMode(echopin,INPUT);
  Serial.begin(9600);
}

void loop(){
  digitalWrite(trigpin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigpin,LOW);
  duration=pulseIn(echopin,HIGH);
  distance = duration*0.034/2;
  Serial.println(distance);
}
```

- Step 3: Use HC05 to establish communication between the microcontroller and your mobile phone via bluetooth
  - Use SoftwareSerial header in your code.
  - Download ***ardutooth*** app on your mobile.
  - Serial print sensor values

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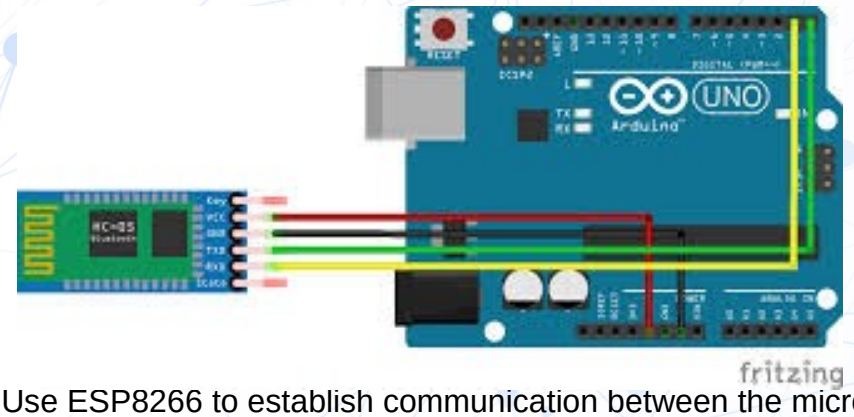
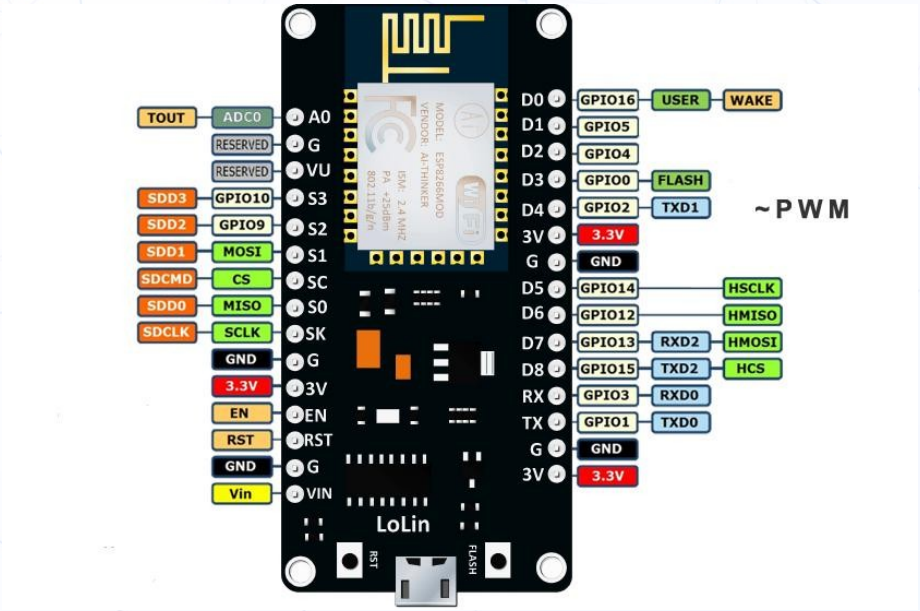


- Step 4: Use ESP8266 to establish communication between the microcontroller and your mobile phone via Wi-Fi
  - Use ESP8266Wifi and BlynkSimpleEsp8266 in code header.
  - Download Blynk app in your mobile and get authentication code.
  - Connect two GPI pins with Echo and Trigger pins of ultrasonic sensors.



REFERENCE:

- HC-SR04 working , circuit and code
- HC05 code and circuit
- ESP Module

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