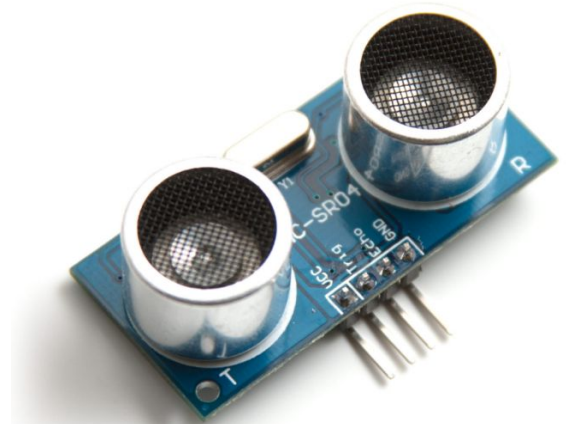
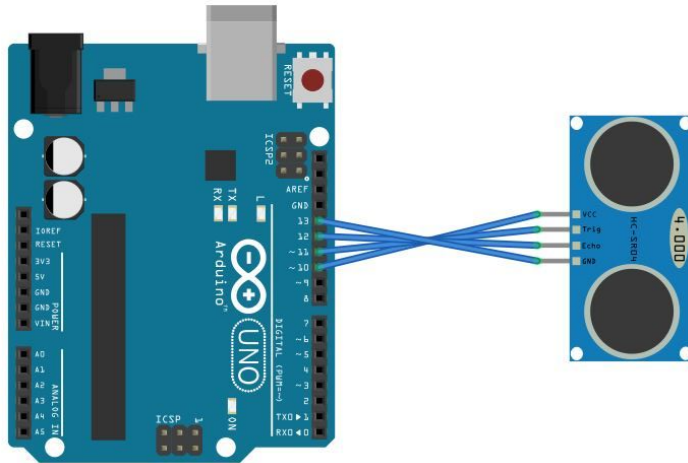


Ultrasonic Distance Measurement Module (Sonar)

- plug in directly, or use extension wires (or breadboard)
- make sure to connect pins exactly as shown
 - Arduino pin10=VCC on sonar
 - Arduino pin11=Trigger on sonar
 - Arduino pin12=Echo on sonar
 - Arduino pin13=Ground on sonar
- after uploading, use "Serial Monitor" window to see readings



```
// -----  
//BZ 2016 Sonar Directly Plugged Into Arduino. This program uses an ultrasonic distance sensor (sonar)  
//and shows its readings on the screen of an attached computer, via the Arduino Serial Monitor.  
// -----  
#define trigPin 11  
#define echoPin 12  
  
void setup()  
{  
  Serial.begin(9600); //set data transmission rate to communicate with computer  
  pinMode(10, OUTPUT); //tell pin 10 it is going to be an output  
  digitalWrite(10, HIGH); //tell pin 10 to output LOW (0V, or ground)  
  pinMode(echoPin, INPUT); //tell pin 11 it is going to be an input  
  pinMode(trigPin, OUTPUT); //tell pin 12 it is going to be an output  
  pinMode(13, OUTPUT); //tell pin 13 it is going to be an output  
  digitalWrite(13, LOW); //tell pin 13 to output HIGH (+5V)  
}  
  
void loop()  
{  
  int duration, distance; //defining variables  
  digitalWrite(trigPin, HIGH); //set pin 12 to HIGH  
  delayMicroseconds(1000); //wait 1000 microseconds  
  digitalWrite(trigPin, LOW); //set pin 12 to LOW  
  duration = pulseIn(echoPin, HIGH); //read echoPin  
  distance = (duration/2) / 29.1; //compute distance from duration  
  if (distance >= 200 || distance <= 0) //deciding if reading is in range or not  
  {  
    Serial.println("Out of range"); //printing the words "Out of range"  
  }  
  else  
  {  
    Serial.print(distance); //printing the value of the variable "distance"  
    Serial.println(" cm"); //printing " cm" after the value }  
  delay(500);  
}
```