* **“Ultrasonic Sensor HC-SR04** is a simple sensor which emits **Ultrasonic Radiations** from its transmitter and is used for measuring the distance between sensor itself and any obstacle in front of it. The sensor has a transmitter and a receiver on it.”
* This sensor consists of four pins, which are:
  1. **Vcc (+5V) :** You need to provide +5V at this Ultrasonic Sensor HC-SR04 Pin.
  2. **Trig (Trigger) :** It’s a trigger Pin where we need to provide a trigger after which this sensor emits ultrasonic waves.
  3. **Echo :** When Ultrasonic waves emitted y the transmitter, hit some object then they are bounced back and are received by the receiver and at that moment this echo Pin goes HIGH.
  4. **GND :** We need to provide ground to this PIN of HC-SR04 Ultrasonic Sensor.
* Trigger pin is an output pin while the Echo pin is an input pin, we will discuss them in Working section in detail.
* Moreover, it requires +5V to start operating.
* It is normally used to detect objects in front of it or to measure the distance between different objects.

2. WORKING OF ULTRASONIC SENSOR

* Its working is quite simple, as discussed above, it has a trigger and an echo pin.
* A signal of +5V is sent over to Trigger pin for around 10 microseconds in order to trigger the sensor.
* When ultrasonic sensor gets a trigger signal on its trigger pin then it emits an ultrasonic signal from the transmitter.
* This ultrasonic senor, then goes out and reflected back after hitting some object in front.
* This reflected ultrasonic signal is then captured by the receiver of ultrasonic sensor.
* As the sensor gets this reflected signal, it automatically make the Echo pin high.
* The time for which the Echo pin will remain HIGH, depends on the reflected signal.
* What we need to do is, we need to read this time for which the echo pin is high, which we are gonna do in our next section.

3. INTERFACING OF ULTRASONIC SENSOR WITH ARDUINO

* Now we have seen the working of Ultrasonic sensor, so we have some idea what we need to do in order to get the values from it. Let’s now have a look at **Ultrasonic Sensor Arduino Interfacing.**
* First of all, we need to generate a signal of 10 microsecond and then send it over to trigger pin.
* After sending the trigger pin we then need to read the echo pin and wait for it to get HIGH.
* Once it got HIGH then we need to count the time for how long it remained HIGH.
* On the basis of this time, we are gonna calculate the distance of the object from the ultrasonic sensor.
* Now if you check in the **SonarSensor()** function, we are generating a pulse of 10 microsecond and sending it to trigPin, which is the trigger pin of our ultrasonic sensor.
* After sending this pulse weare using a funcion **pulseIn()**, its a builtin arduinofunction and is used to check for how long the **echoPin** remains HIGH.
* This value is further saved in the duration value and after that we have divided this duration by 2 because the pulse is first sent and then received so in actual it covers double distance, so we need to divide it by 2 in order to get distance between object and the sensor.
* Furthermore, it is again divided by 29.1, which is basically the speed of ultrasonic sound and finally we saved it in a variable named distance which is now in centimeters.
* After uploading the sketch in Arduino, you need to open the Serial Terminal and you will start receiving the values of distance.