

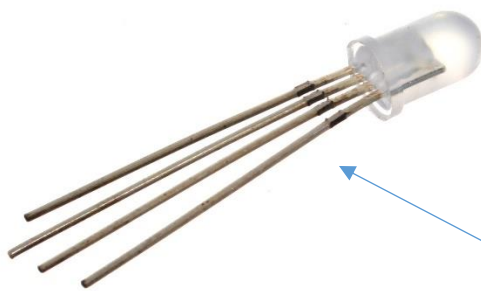
Using an HC-04 Ultrasonic Sensor with an RGB LED

Introduction:

In this short project, we will be using 4 RGB LED's along with an HC-04 Ultrasonic sensor and an Arduino to create a different colour for different distances. Since the RGB LED has three values for each colour, we can by mixing these create different colours.

RGB LED:

The RGB LED has four different pins. The first one is for red, the second one which is the longest one is for 5V, the third one is for blue and the last one is for green. We have to give the pin a value of 0 or LOW in the program for full brightness (i.e. it is inverted between 5V and GND)



From Left to Right: Pin 1 to pin 4

HC-04 Ultrasonic Sensor:

This ultrasonic sensor has four pins. One is for VCC, one is for GND and there is one pin for trig and one for echo. The trigger pin (trig) sends out ultrasonic pulses which are reflected by the object and the echo pin receives the pulses. By measuring the time taken between sending the pulse and receiving it, the distance can be calculated by $D = S \cdot T$. In our program the trig pin is connected to pin 12 of the Arduino and the echo pin is connected to pin 13 of the Arduino.



Circuit:

We will be connecting the pins as follows in the tables:

LED 1 pin	Arduino pin
1	3
2	5V
3	6
4	5

LED 2 pin	Arduino pin
1	9
2	5V
3	11
4	10

For the 3rd and 4th LED's they will be connected in the same way as the 2nd and 1st LED's respectively.

Ultrasonic Sensor Pin	Arduino Pin
VCC	5V
GND	GND
Trig	12
Echo	13

The positioning of the LED's on the breadboard is as shown below:

2nd

1st

4th

3rd

Program:

First please upload the RGB LED fade program onto your Arduino. In this program, the colors on two LED's fade from red back to red including all the colors in the spectrum. The other two LED's will go in reverse order.

The next program is the one that includes the ultrasonic sensor and this upload this one after you have viewed the first program. In this program based on the distance of the object, the color will vary. The order it will vary in is similar to the one in the previous program.