

# Danger Detector

**Aim:** - The aim of this project is to make danger detector circuit using ultrasonic sensor

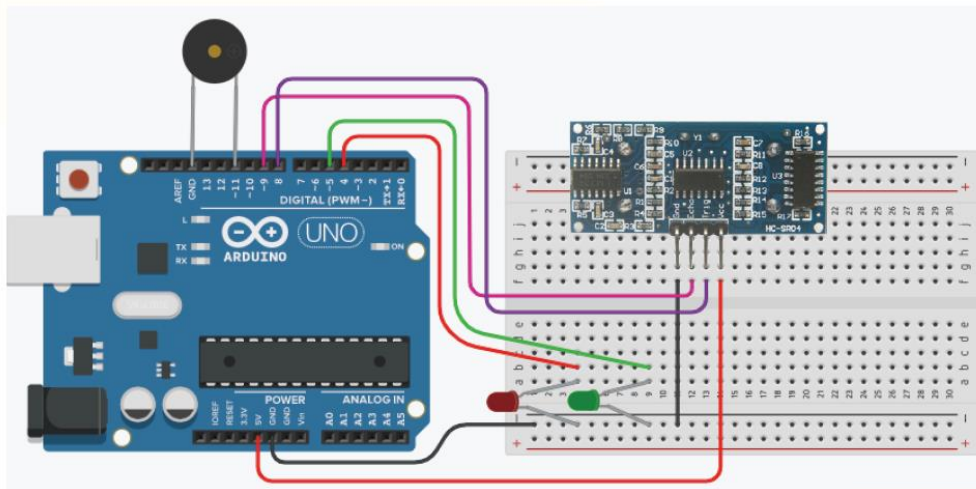


## Component Requirements

Sl. No	Items	Quantity
1	Arduino Uno	1
2	Cable	1
3	Ultrasonic Sensor	1
4	Jumper Wire M-M	7
5	Breadboard	1
6	Battery 9 Volt	1
7	Battery Cap	1
8	Led (Green, Red)	Each 1



## Circuit Diagram



## Circuit connections procedure

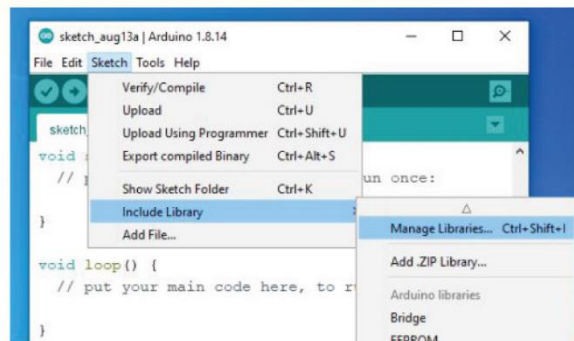
- Take 1 Arduino board, 1 breadboard and place it side by side
- Take a breadboard and connect the ultrasonic sensor to it.
- Connections are as follows-

Ultrasonic Sensor	Arduino
VCC -----	5V
TRIG -----	Pin no. 8
GND -----	GND
ECHO-----	Pin no. 9

- Connect the long lead/leg of buzzer to pin 11 of the Arduino board.
- Connect the short lead/leg of the buzzer to the GND pin of the arduino board.
- Connect the positive pin(long lead/leg) of the red LED to Pin 4 of the arduino and negative pin(short lead/leg) to the negative rail of the breadboard.
- Connect the positive pin of the green LED to Pin 5 of the arduino and negative pin to the negative rail of the breadboard.

## Procedure to upload the code

- Open arduino IDE.
- Install newping library. Go to FileSketch->Include Library->Manage Libraries.



- The library window will open, type NewPing and hit enter.
- You will find a newping library, select that library and click on the install option.

Note: You must have an internet connection to install the library.

- After installation, close the library window.
- Once you complete the circuit connections connect the arduino board to your laptop/computer system using arduino cable.
- Go to File->Open>Download>select danger Detector
- Click on the upload option.

## Program

```
#define RedLED 4
#define GreenLED 5
#define Buzzer 11
#include<NewPing.h>
#define TRIGGER_PIN 8
#define ECHO_PIN 9

#define MAX_DISTANCE 500 // Maximum distance we want to ping for
//(in centimeters). Maximum sensor distance is rated at 400-500 //Distance.
NewPing sonar(TRIGGER_PIN, ECHO_PIN, MAX_DISTANCE); // NewPing //setup of pins
and maximum distance.
void setup() {

  Serial.begin(9600);

  pinMode(RedLED, OUTPUT);
  pinMode(GreenLED, OUTPUT);
  pinMode(Buzzer, OUTPUT);
}

int Distance = 0;

void loop() {

  delay(50); // Wait 50ms between pings (about 20
pings/sec). 29ms should be the shortest delay between pings.
  Distance = sonar.ping_cm();

  Serial.print("Ping: ");

  Serial.print(Distance); // Send ping, get distance in Distance and print
result (0 = outside set distance range)

  Serial.println(" Distance");

  if(Distance < 5){

    Serial.println("Obstacle detected");

    digitalWrite(RedLED, HIGH);
    digitalWrite(Buzzer, HIGH);
    digitalWrite(GreenLED, LOW);

    delay(500);

  }

  else{
```

```
digitalWrite(GreenLED, HIGH);  
digitalWrite(RedLED, LOW);  
digitalWrite(Buzzer, LOW);  
}  
}
```

## Output

1. Red LED turns ON and the buzzer makes noise when danger (any object) is detected in front of the sensor. Green LED turns ON when there is no danger(object) in front of the sensor.

## 9V Battery connection:

1. You are powering the arduino through your laptop. You can also power the arduino through a 9v battery.
2. Disconnect the arduino cable and connect the 9v battery to the arduino board using the power jack connector. Now you can see the circuit is working.

Note: Do not connect the battery all the time to the arduino board. It will drain the battery.

## Troubleshoot

Issue	Solution
Case 1: Sensor not detecting any obstacles.	Try to check the sensor with a basic test. Just upload newping example code from arduino IDE examples and check whether you are receiving valid distance in cm on serial monitor. Eg. Open Arduino IDE->Go to File->Examples->NewPing->open NewPing Example.
Case 2: Sensor checked with basic test, but distance is showing 0 cm all time.	Try to fix your wire connections with the sensor, avoid loose connections.