



SRM
UNIVERSITY
DELHI-NCR, SONEPAT



**MHRD'S
INNOVATION CELL**
(GOVERNMENT OF INDIA)



**INSTITUTION'S
INNOVATION
COUNCIL**
(Ministry of HRD Initiative)



CENTER FOR INNOVATION INCUBATION & ENTREPRENEURSHIP
(C I I E)



TO NE

```
// Pin connected to buzzer  
int buzzer = 5;
```

```
void setup()  
{  
    // Defines the Buzzer pin as output  
    pinMode(buzzer,OUTPUT);  
}
```

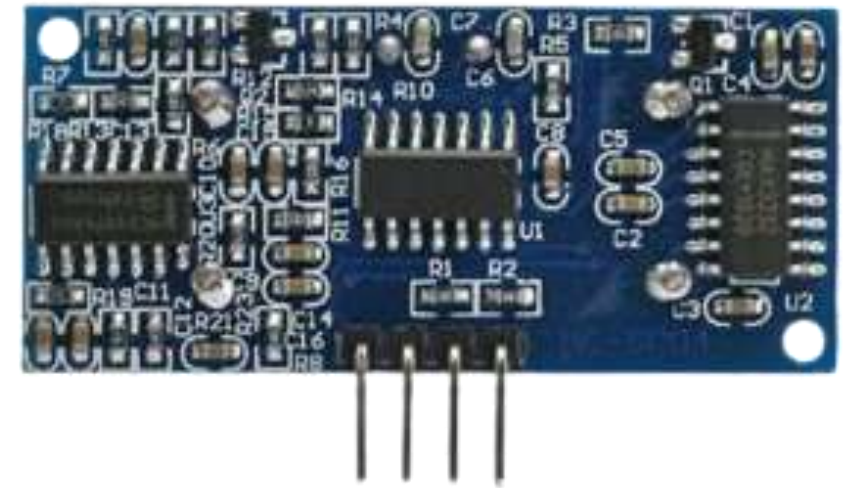
```
void loop()  
{  
    // Sounds the buzzer at the frequency relative to the note C in Hz  
    tone(buzzer,1000);  
    // Waits some time to turn off  
    delay(2000);  
    //Turns the buzzer off  
    noTone(buzzer);  
    // Sounds the buzzer at the frequency relative to the note D in Hz  
    tone(buzzer,2455);  
    delay(200);  
}
```

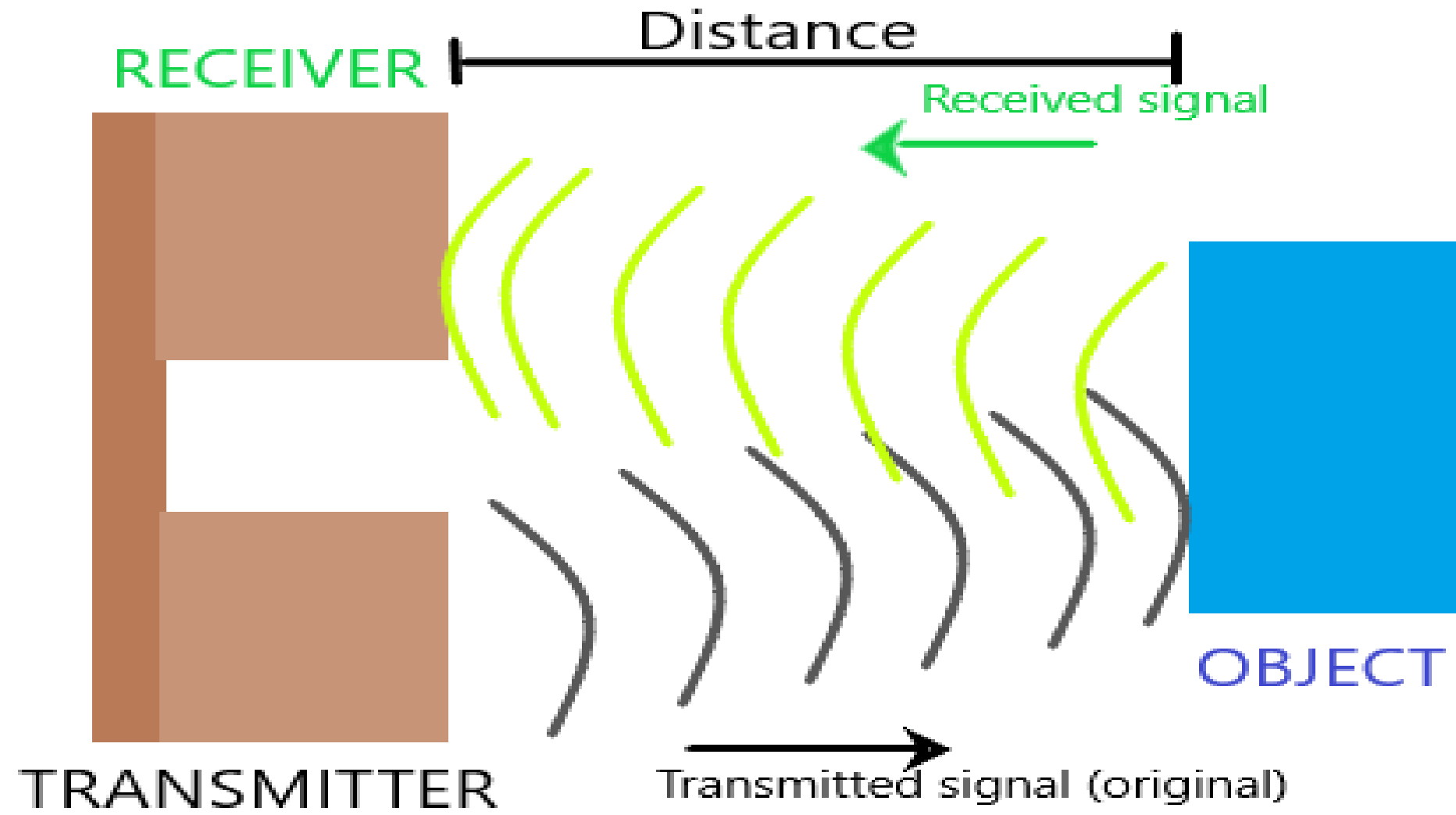
```
noTone(buzzer);  
  // Sounds the buzzer at the frequency relative to the note E in Hz  
  tone(buzzer,1329);  
  delay(2002);  
  noTone(buzzer);  
  // Sounds the buzzer at the frequency relative to the note F in Hz  
  tone(buzzer,3249);  
  delay(2002);  
  noTone(buzzer);  
  // Sounds the buzzer at the frequency relative to the note G in Hz  
  tone(buzzer,3922);  
  delay(200);  
  noTone(buzzer);  
}
```

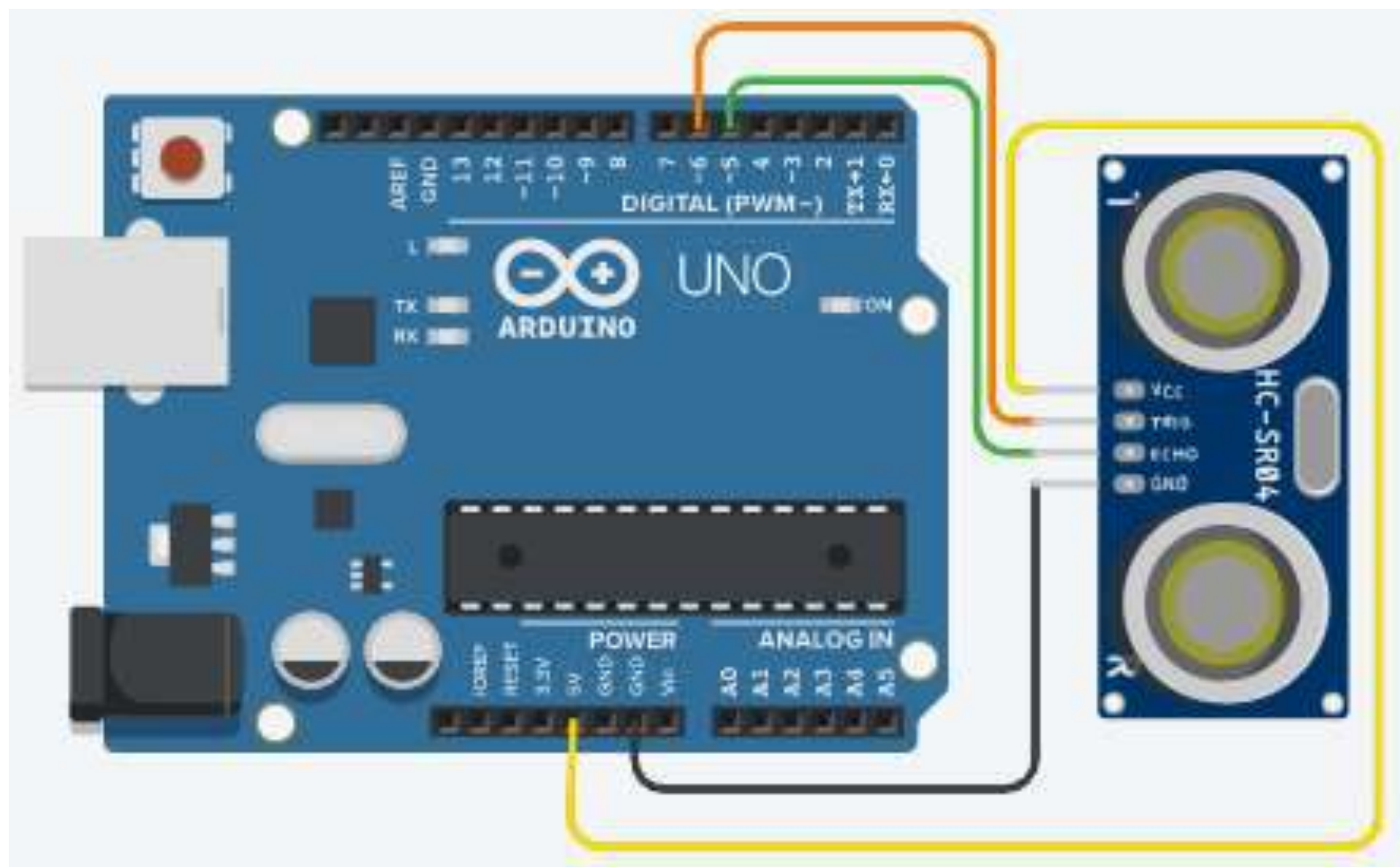
ULTRASONIC SENSOR

Ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal.

Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear). Ultrasonic sensors have two main components: the transmitter (which emits the sound using piezoelectric crystals) and the receiver (which encounters the sound after it has travelled to and from the target).







```
const int trigPin=7;
const int echoPin=6;
const int DISTANCE_THRESHOLD = 50; // centimeters
void setup() {
  // put your setup code here, to run once:
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  Serial.begin(9600);
}

void loop() {
  // put your main code here, to run repeatedly:
  long distance, duration;
  // generate 10-microsecond pulse to TRIG pin
  digitalWrite(trigPin, HIGH);
```



```
delayMicroseconds(10);  
digitalWrite(trigPin, LOW);  
// measure duration of pulse from ECHO pin  
duration = pulseIn(echoPin, HIGH);  
// calculate the distance  
distance = 0.017 * duration;  
// print the value to Serial Monitor  
Serial.print("distance: ");  
Serial.print(distance);  
Serial.print(" cm");  
  
delay(1000);  
  
}
```

LED BUZZER
ULTRASONIC

```
const int ledPin1= 13;
const int ledPin2= 12;
const int ledPin3= 11;
const int ledPin4= 10;
const int ledPin5= 19;
const int buzzerPin= 8;
const int trigPin=7;
const int echoPin=6;
const int DISTANCE_THRESHOLD = 50; // centimeters
void setup() {
  // put your setup code here, to run once:
  pinMode(ledPin1, OUTPUT);
  pinMode(ledPin2, OUTPUT);
  pinMode(ledPin3, OUTPUT);
  pinMode(ledPin4, OUTPUT);
  pinMode(ledPin5, OUTPUT);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(buzzerPin, OUTPUT);
  Serial.begin(9600);
}
```

```
void loop() {  
  // put your main code here, to run repeatedly:  
  long distance, duration;  
  // generate 10-microsecond pulse to TRIG pin  
  digitalWrite(trigPin, HIGH);  
  delayMicroseconds(10);  
  digitalWrite(trigPin, LOW);  
  // measure duration of pulse from ECHO pin  
  duration = pulseIn(echoPin, HIGH);  
  // calculate the distance  
  distance = 0.017 * duration;  
}
```

```
if(distance < 10)
{
    digitalWrite(ledPin1, HIGH);
    digitalWrite(ledPin2, LOW);
    digitalWrite(ledPin3, LOW);
    digitalWrite(ledPin4, LOW);
    digitalWrite(ledPin5, LOW);
    digitalWrite(buzzerPin,HIGH);
    delay(100);
    digitalWrite(buzzerPin,LOW);
    delay(500);//in microseconds
}
```

```
else if(distance<20)
{
    digitalWrite(ledPin1, HIGH);
    digitalWrite(ledPin2, HIGH);
    digitalWrite(ledPin3, LOW);
    digitalWrite(ledPin4, LOW);
    digitalWrite(ledPin5, LOW);
    digitalWrite(buzzerPin, HIGH);
    //tone(buzzerPin, 1200, 500);
    delay(100);
    digitalWrite(buzzerPin, LOW);
    delay(500); //in microseconds
}
```

```
else if(distance<30)
{
    digitalWrite(ledPin1, HIGH);
    digitalWrite(ledPin2, HIGH);
    digitalWrite(ledPin3, HIGH);
    digitalWrite(ledPin4, LOW);
    digitalWrite(ledPin5, LOW);
    //Tone(buzzerPin, HIGH);
    digitalWrite(buzzerPin,HIGH);
    delay(100);//in microseconds
    //Mute(buzzerPin, LOW);
    digitalWrite(buzzerPin,LOW);
}
```

```
else if(distance<40)
{
    digitalWrite(ledPin1, HIGH);
    digitalWrite(ledPin2, HIGH);
    digitalWrite(ledPin3, HIGH);
    digitalWrite(ledPin4, HIGH);
    digitalWrite(ledPin5, LOW);
    digitalWrite(buzzerPin,HIGH);
    delay(100);//in microseconds
    // Mute(buzzerPin, LOW);
    digitalWrite(buzzerPin,LOW);
}
```



```
else if(distance<50)
{
    digitalWrite(ledPin1, HIGH);
    digitalWrite(ledPin2, HIGH);
    digitalWrite(ledPin3, HIGH);
    digitalWrite(ledPin4, HIGH);
    digitalWrite(ledPin5, HIGH);
    digitalWrite(buzzerPin,HIGH);
    //Tone(buzzerPin, HIGH);
//    delay(500);//in microseconds
    delay(100);//in microseconds
    //Mute(buzzerPin, LOW);
    digitalWrite(buzzerPin,LOW);
}
```

```
else if(distance>DISTANCE_THRESHOLD)
{
    digitalWrite(ledPin1, LOW);
    digitalWrite(ledPin2, LOW);
    digitalWrite(ledPin3, LOW);
    digitalWrite(ledPin4, LOW);
    digitalWrite(ledPin5, LOW);
    digitalWrite(buzzerPin,HIGH);
    delay(1000);
    digitalWrite(buzzerPin,LOW);
}

    // print the value to Serial Monitor
    Serial.print("distance: ");
    Serial.print(distance);
    Serial.print(" cm");

    delay(1000);

}
```



THANK YOU

FOR JOINING US
