**Noise Pollution Monitoring:**

**Link of the simulation:**

<https://www.tinkercad.com/things/g5uypoz3UtL-copy-of-sound-pollution-monitoring-system-/editel?tenant=circuits>.

**Simulation Code to detect Noise :**

const int pingPin = 7;

const int red=11;

const int blue=10;

int green=9;

void setup() {

// initialize serial communication:

Serial.begin(9600);

pinMode(red,OUTPUT);

pinMode(blue,OUTPUT);

pinMode(green,OUTPUT);

pinMode(3, OUTPUT);

}

void loop()

{

digitalWrite(3, HIGH);

delay(1000); // Wait for 1000 millisecond(s)

digitalWrite(3, LOW);

delay(1000); // Wait for 1000 millisecond(s)

// establish variables for duration of the ping, and the distance result

// in inches and centimeters:

long duration, inches, cm;

// The PING))) is triggered by a HIGH pulse of 2 or more microseconds.

// Give a short LOW pulse beforehand to ensure a clean HIGH pulse:

pinMode(pingPin, OUTPUT);

digitalWrite(pingPin, LOW);

delayMicroseconds(2);

digitalWrite(pingPin, HIGH);

delayMicroseconds(5);

digitalWrite(pingPin, LOW);

// The same pin is used to read the signal from the PING))): a HIGH pulse

// whose duration is the time (in microseconds) from the sending of the ping

// to the reception of its echo off of an object.

pinMode(pingPin, INPUT);

duration = pulseIn(pingPin, HIGH);

// convert the time into a distance

inches = microsecondsToInches(duration);

cm = microsecondsToCentimeters(duration);

Serial.print(inches);

Serial.print("in, ");

Serial.print(cm);

Serial.print("cm");

Serial.println();

if(cm<256){

analogWrite(red,cm);

analogWrite(blue,255-cm);

analogWrite(green,inches);

}

else{

analogWrite(red,0);

analogWrite(blue,0);

analogWrite(green,0);}

delay(100);

}

long microsecondsToInches(long microseconds) {

// According to Parallax's datasheet for the PING))), there are 73.746

// microseconds per inch (i.e. sound travels at 1130 feet per second).

// This gives the distance travelled by the ping, outbound and return,

// so we divide by 2 to get the distance of the obstacle.

// See: http://www.parallax.com/dl/docs/prod/acc/28015-PING-v1.3.pdf

return microseconds / 74 / 2;

}

long microsecondsToCentimeters(long microseconds) {

// The speed of sound is 340 m/s or 29 microseconds per centimeter.

// The ping travels out and back, so to find the distance of the object we

// take half of the distance travelled.

return microseconds / 29 / 2;

//This will give the overview of the noise.