

# IOT Phase-04

## NOISE POLLUTION MONITORING

### Introduction:

In this phase we are developing a noise level monitor and a platform to use it .The platform is designed using MIT app inventor.

```
#define FIREBASE_HOST "npddb-5104d-default-rtdb.firebaseio.com"
#define FIREBASE_AUTH "AIzaSyBalis1hLG4Yv4FnX1HIwFv2JsE6iRAwtg"
```

Firestore database connection establishment

```
// calculate the sound levels in dB for each microphone
float voltage1 = micValue1 * 5.0 / 1024.0;
float voltage2 = micValue2 * 5.0 / 1024.0;
float voltage3 = micValue3 * 5.0 / 1024.0;
float dB1 = 20 * log10(voltage1/0.0063);
float dB2 = 20 * log10(voltage2/0.0063);
float dB3 = 20 * log10(voltage3/0.0063);

// calculate the average sound level in dB for all microphones
float averageDB = (dB1 + dB2 + dB3) / 3;
```

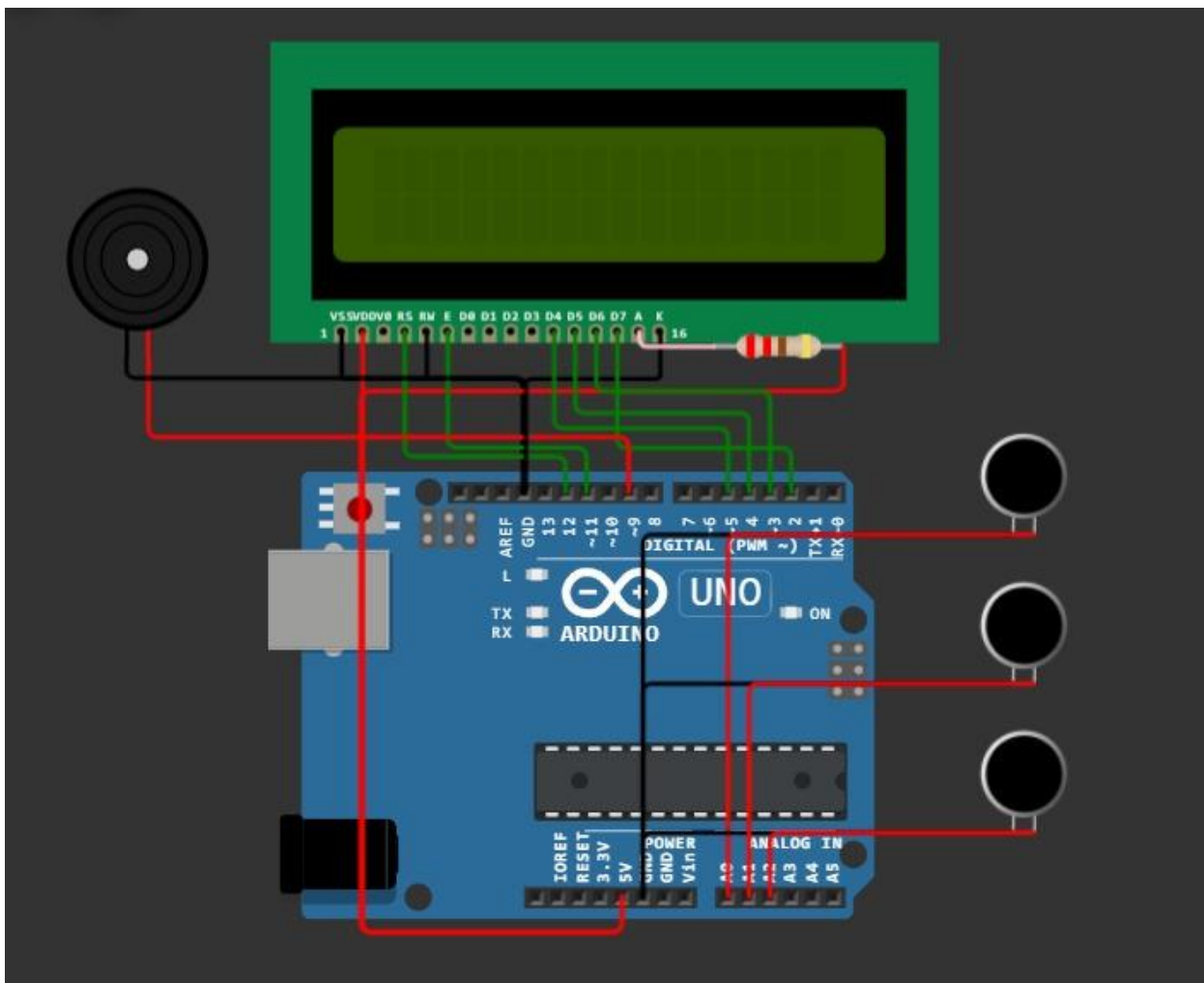
calculating avg decibels from 3 microphones

```
// display the sound level on the LCD display and the serial monitor
lcd.setCursor(0, 0);
lcd.print("Sound Level: ");
lcd.setCursor(0, 1);
lcd.print(averageDB);
Serial.print("Sound Level: ");
Serial.println(averageDB);
```

Code for displaying sound level in a LCD display

```
// control the LED and the buzzer based on the sound level
if (averageDB > 70) {
  digitalWrite(ledPin, HIGH);
  tone(buzzerPin, 1000, 500);
} else {
  digitalWrite;
}
```

Code for sounding alarm if the sound reaches a certain threshold



## The Architecture Noise level monitor

The three black circles in the right are mics. The black circle on the left is a buzzer.

### Output of the noise level monitor

```
Sound Level: 40.57
Sound Level: 43.47
Sound Level: 44.93
Sound Level: 47.10
Sound Level: 47.26
Sound Level: 47.42
Sound Level: 47.91
Sound Level: 47.80
Sound Level: 48.75
Sound Level: 49.68
Sound Level: 50.64
Sound Level: 50.95
Sound Level: 51.24
Sound Level: 51.41
Sound Level: 51.61
Sound Level: 51.70
Sound Level: 51.65
Sound Level: 51.83
Sound Level: 51.80
```

The sound is checked every 200ms

## Realtime Database

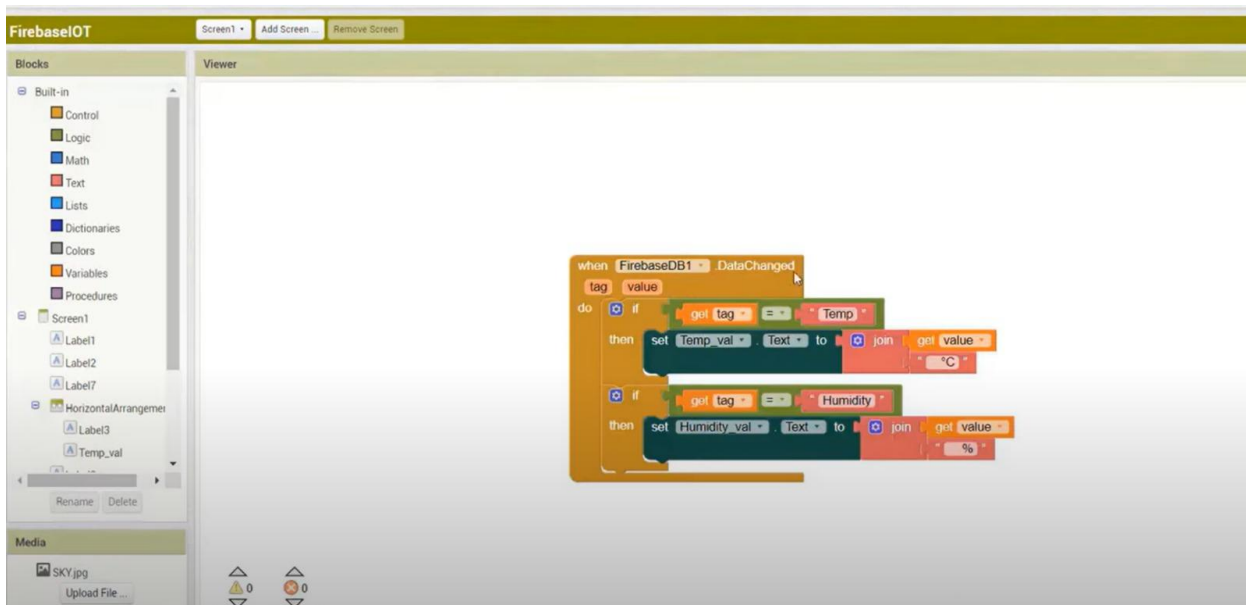
[Data](#) [Rules](#) [Backups](#) [Usage](#) [Extensions](#)

Protect your Realtime Database resources from abuse, such as billing fraud or phishing [Configure App Check](#) [×](#)

<https://noisepollution-cf3fc-default-rtdb.firebaseio.com> > LED

LED: "OFF"

Its a database called firebase, were all the information gathered from the iot devices and stored



We have the backend code for our application, were the output is displayed on the user's application

