**NOISE POLLUTION MONITORING**

**PHASE 2**

**810021106084: R.SUSILGANTH**

**INTRODUCTION:**

Noise monitoring refers to the systematic process of measuring, recording, and assessing sound levels in various environments to understand the extent of noise pollution and its potential impact on human health and the surrounding ecosystem. It involves using specialised equipment to gather data, which is then analysed to make informed decisions about noise management, regulatory compliance, and mitigation strategies.

**COMPONENTS REQUIRED:**

ESP8266 NodeMCU Board

Microphone sensor

16\*2 LCD Module

Breadboard

Connecting wires

**MICROPHONE BASED SOUND DETECTOR:**

The microphone based sound sensor is used to detect sound. It gives a measurement of how loud a sound is. The sound sensor module is a small board that mixes a microphone (50Hz-10kHz) and a few processing circuitry to convert sound waves into electrical signals. This electrical signal is fed to on-board LM393 High Precision Comparator to digitize it and is made available at the OUT pin.

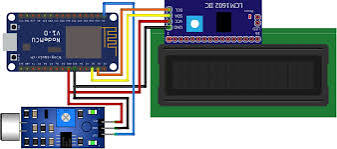
The module features a built-in potentiometer for sensitivity adjustment of the OUT signal. We will set a threshold by employing a potentiometer. So that when the amplitude of the sound exceeds the edge value, the module will output LOW, otherwise, HIGH. Apart from this, the module has two LEDs. The facility LED will illuminate when the module is powered. The Status LED will illuminate when the digital output goes LOW.

**SOUND SENSOR MODULE:**



The sound sensor only has three pins: VCC, GND & OUT. VCC pin supplies power for the sensor & works on 3.3V to 5V. OUT pin outputs HIGH when conditions are quiet and goes LOW when sound is detected.

**CIRCUIT DIAGRAM:**



**SETUP ARDUINO FOR REMOTE MONITORING:**

For the IoT part, we will be using the Arduino IoT cloud platform.In this application, we will be adding a gauge to display the intensity of sound in decibels.

1. First of all, install the Arduino IOT cloud app from PlayStore and create an account.

2. First we need to create a Thing,for that we have to do three steps

⦁ We have to create variables and select the data type.

⦁ And then we have to connect the device that we have created using ESP8266.

⦁ Finally we have to link the networks using mobile wifi.

3.For creating variables we have to give names and datatypes we are

creating the noise pollution monitoring so we need integer type datatype.

select the variable update policy to on change and click on add variable.

4.we will see select device option there click on it.we have to select

the third party device.

5.After selecting the third party device we have to select the device type

that was ESP8266 and also the model we are using to create our project.

6.After that we have to give the device name,then it will generate the device ID and secret key,we have to save the id and key to connect the

device to the internet.

7.And now we are moving to the network section select configure to

provide internet to the device using the mobile wifi.

8.Type the name of your wifi and password and also the secret key we

have already saved and click on save.

9.Now we will see the code already build in the sketch section and we

need to include the libraries of the sound sensor and upload it to the

ESP8266.we can edit the code in the web editor.

10.Go to the dashboard section and click on build dashboard and add widgets.

**APPLICATIONS:**

1. To estimate the pollution.

2. To design server and upload data on that server with

date and time.

3. We can use it at industrial area as there is lot of noise

pollution

4. In city roads traffic noise.

5. Activities like shooting, open air events, football and

cricket matches.

6. At small level, in schools and colleges we can use this

device.

**CONCLUSION:**

By using this project each and every variation we can analyse and inform nearby people in time. We can also analyse data from home using thingspeak.The most important factor of this system is that it is

small, cost efficient and portable. Sensors are available easily anywhere.

This system is fully helpful to save lives and overcome all the problems related to the environment.