**NOISE POLLUTION MONITORING**

**Phase 2: Innovation**

**Objective:**

**Air and sound pollution is a growing issue these days. It is necessary to monitor air quality and keep it under control for a better future and healthy living for all. Here we propose an air quality as well as sound pollution monitoring system that allows us to monitor and check live air quality as well as sound pollution in a particular areas through IOT. System uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data to microcontroller. Also system keeps measuring sound level and reports it to the online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor air pollution in different areas and take action against it. Also authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue.**

**INNOVATION:**

**🡪IOT**

**The Internet of Things (IoT) is a system of interrelated Computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT has evolved from the convergence of wireless technologies, micro-electro mechanical systems (MEMS), micro services and the internet. The convergence has helped tear down the silo walls between operational technology (OT) and information technology (IT), allowing unstructured machine - generated data to be analyzed for insights that will drive improvements.**

**🡪 ARDUINO**

**Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. All Arduino boards are completely open-source, empowering users to build them independently and eventually adapt them to their particular needs. The software, too, is open-source, and it is growing through the contributions of users worldwide.**

**DIFFERENT COMPONENTS**

** Arduino Uno R3 microcontroller**

**It is the most flexible hardware platform used based on ATmega328P which can be programmed according to the Function where it is to be used. It has 6 analog inputs, 14 Digital input/output pins (6 pins of these can be used as PWM outputs), a USB Connection, a 16 MHz quartz crystal, SPI, serial interface, a reset button, a power jack and an ICSP .The Arduino microcontroller is not Only for technical audience but is intended for designers and Artists as well because of its focus to usability based on its Design which helps to achieve the intended goal .It is theprimary component of the framework. In addition, it is an open source microcontroller device with easily accessible software/hardware Platform and is compatible with many sensors available. Everything needed for its working is present on the board; we only require a USB cable to directly**

**connect it to the computer or give power using battery source or AC to DC adapter to get started.**

** ESP8266 Wi-Fi Module**

**The ESP8266 Wi-Fi Module is a self contained SOC with integrated IP protocol stack that can give any microcontroller access to your Wi-Fi network. Wi-Fi module is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Every ESP8266 module comes pre-programmed with an AT command set firmware, meaning, we can simply connect to the Arduino device. The ESP8266 module is an extremely cost effective board.**

**NOISE SENSOR**

**The Noise sensor module can accurately measure the noise levels in the ambient air. The lightweight sound level monitor design is capable of monitoring the ambient noise on a real-time basis.The advanced support electronics of this sensor makes it compact and reliable. The low noise electronics allows stable and reliable measurement of the ambient sound level. This sound level meter provides a direct reading of sound level in decibels (dB).**

**COMPONENTS NEEDED**

**1. Noise detector**

**2. Arduino Uno**

**3. Wi-Fi module ESP8266**

**4. 16X2 LCD**

**5. Breadboard**

**6. 1K ohm resistors**

**7. 220 ohm resistor**

**8. Buzzer**