**PHASE 3 - IOT**

**Objectives:**

**Sensor Integration:**

Connect pollution sensors (e.g., NO2, CO2, PM2.5) to Arduino for data acquisition.

**Data Acquisition:**

Read sensor data using Arduino and convert it into usable values.

**Data Transmission:**

Send the acquired data from Arduino to a computer (or Raspberry Pi) via serial communication.

**Data Processing:**

Receive and process data on the computer using Python.

**Data Analysis:**

Analyze and visualize the data for monitoring pollution levels.

**Alert System:**

Set thresholds for pollution levels and trigger alerts if they exceed certain limits.

**Arduino Code (for sensor reading and data transmission):**

// Sample Arduino Code for NO2 Sensor

int sensorPin = A0;

float NO2Value;

void setup() {

Serial.begin(9600);

}

void loop() {

NO2Value = analogRead(sensorPin);

Serial.println(NO2Value);

delay(1000); // Adjust delay as needed

}

**Python Code (for data processing and analysis):**

**python**

# Sample Python Code for Data Processing

import serial

ser = serial.Serial('COMX', 9600) # Replace 'COMX' with the appropriate port

threshold = 100 # Example threshold value

while True:

data = ser.readline().strip()

try:

value = float(data)

print(f"NO2 Level: {value}")

if value > threshold:

print("Alert: Pollution level exceeded!")

except ValueError:

print("Invalid data received")

ser.close()

**CONCLUSION:**

In conclusion, this mini project demonstrates how to monitor pollution levels using an Arduino and Python. By integrating pollution sensors with an Arduino, we were able to collect data, which was then transmitted to a computer for further processing. The Python code processed the data, analyzed pollution levels, and triggered alerts if they exceeded a predefined threshold.

This project provides a foundation for building more sophisticated pollution monitoring systems, potentially incorporating additional sensors, remote data storage, and real-time reporting. It also highlights the importance of monitoring pollution levels for environmental and public health concerns.