

9512 JP COLLEGE OF ENGINEERING

AIR QUALITY MONITORING SYSTEM

PROJ_21193_TEAM_1

- 1.A.Renuka (au951221106033)
- 2.S.Mahalakshmi (au951221106019)
- 3.R.Navasakthi (au951221106028)
- 4.k.Sakthipriya (au95121106038)
- 5.M.Thilagavathi (au951221106305)

IOT_PHASE_5 PROJECT DOCUMENTATION

PROJECT OBJECTIVES :

The air quality monitoring programme design will be dependent upon the monitoring specific objectives specified for the air quality management in the selected area of interest. What are the expected outputs of the monitoring activity? Which problems do we need to address to?

Defining the output will influence the design of the network and optimise the resources used for monitoring. It will also ensure that the network is specially designed to optimise the information on the problems at hand.

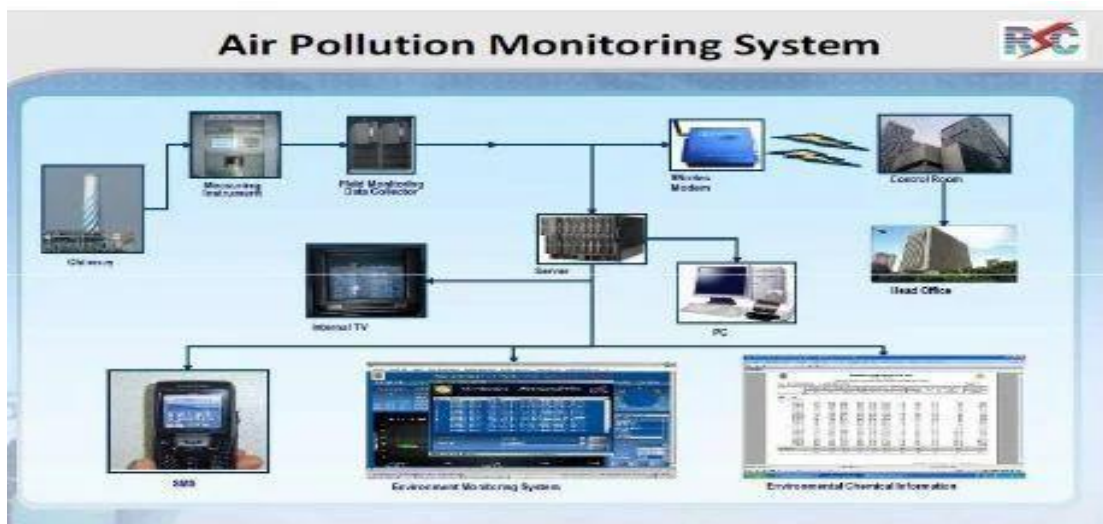
There might be different objectives for the development of the environmental monitoring and surveillance system. Normally, the system will have to provide on-line data and information transfer with a direct /automatically/ on-line quality control of the collected data. Several monitors, sensors and data collection systems may be applied to make on-line data transfer and control possible [3].

The main objectives stated for the development of an air quality measurement and surveillance programme might be to:

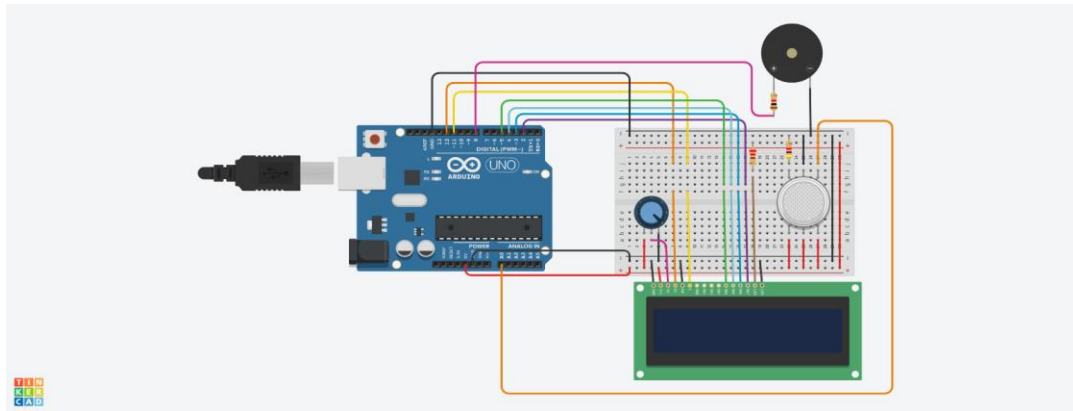
- facilitate the background concentration(s) measurements,
- monitor current levels as a baseline for assessment,
- check the air quality relative to standards or limit values,
- detect the importance of individual sources,
- enable comparison of the air quality data from different areas and countries,
- collect data for the air quality management, traffic and land-use planning purposes,
- observe trends (related to emissions),
- develop abatement strategies,
- determine the exposure and assess the effects of air pollution on health, vegetation or building materials,
- inform the public about the air quality and raise the awareness,
- develop warning systems for the prevention of undesired air pollution episodes,
- facilitate the source apportionment and identification,
- supply data for research investigations,
- develop/validate management tools (such as models),
- develop and test analytical instruments and
- to support legislation in relation to the air quality limit values and guidelines.

The relationships between the data collected and the information to be derived from them must be taken into account when a monitoring programme is planned, executed and reported. This emphasizes the need for users and potential users of the data to be involved in planning surveys, not only to ensure that the surveys are appropriate to their needs but also to justify committing the resources.

PLATFORM DEVELOPMENT:



IOT DEVICE SETUP:



CODE IMPLEMENTATION:

```
import time
```

```
import random
```

```
class AirQualitySensor:
```

```
    def __init__(self):
```

```
        # Initialize sensor parameters
```

```
        self.sensor_id = "AQ-123"
```

```
        self.location = "Living Room"
```

```
    def measure_air_quality(self):
```

```
        # Simulate air quality measurement (replace with actual sensor data)
```

```
        pm_concentration = random.uniform(0, 100)
```

```
        return pm_concentration
```

```
class IoTPlatform:
```

```
    def send_data(self, sensor_id, location, data):
```

```

        # Simulate sending data to an IoT platform (replace with actual IoT platform code)
        print(f"Sending data to IoT platform: Sensor ID - {sensor_id}, Location - {location}, Data - {data}")

def main():
    air_quality_sensor = AirQualitySensor()
    iot_platform = IoTPlatform()

    try:
        while True:
            # Measure air quality
            pm_concentration = air_quality_sensor.measure_air_quality()

            # Send data to IoT platform
            iot_platform.send_data(air_quality_sensor.sensor_id, air_quality_sensor.location,
                                  pm_concentration)

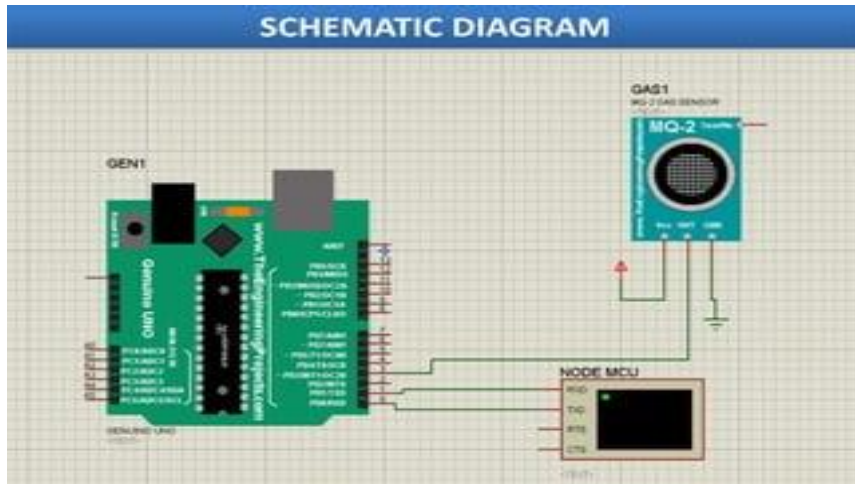
            # Wait for a specified interval (e.g., 1 hour)
            time.sleep(3600)

    except KeyboardInterrupt:
        print("Monitoring stopped.")

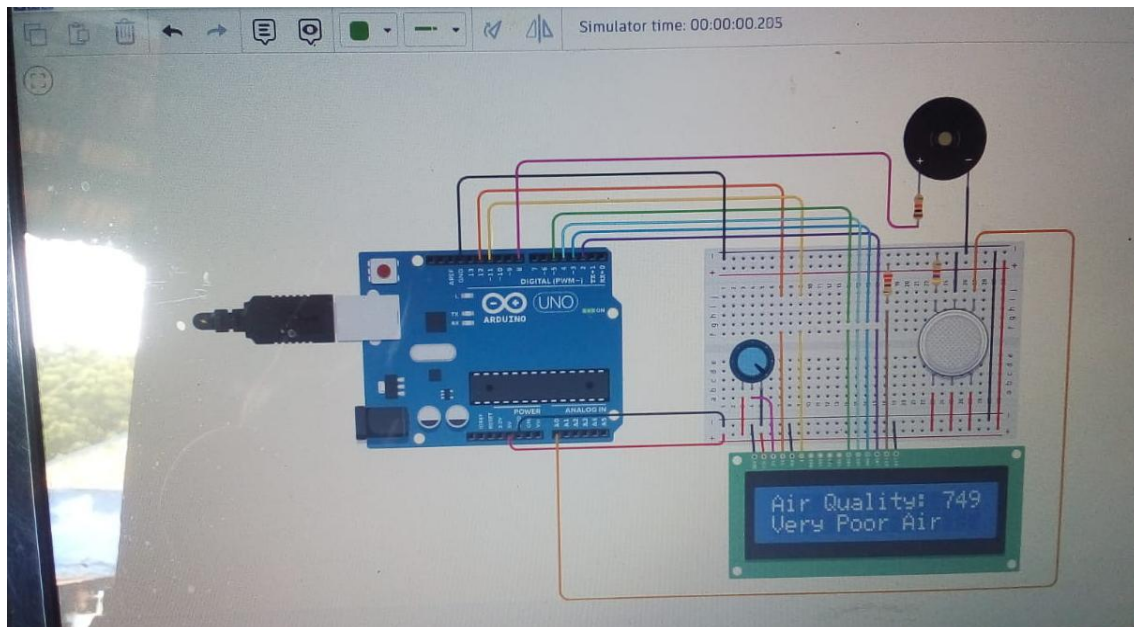
if __name__ == "__main__":
    main()

```

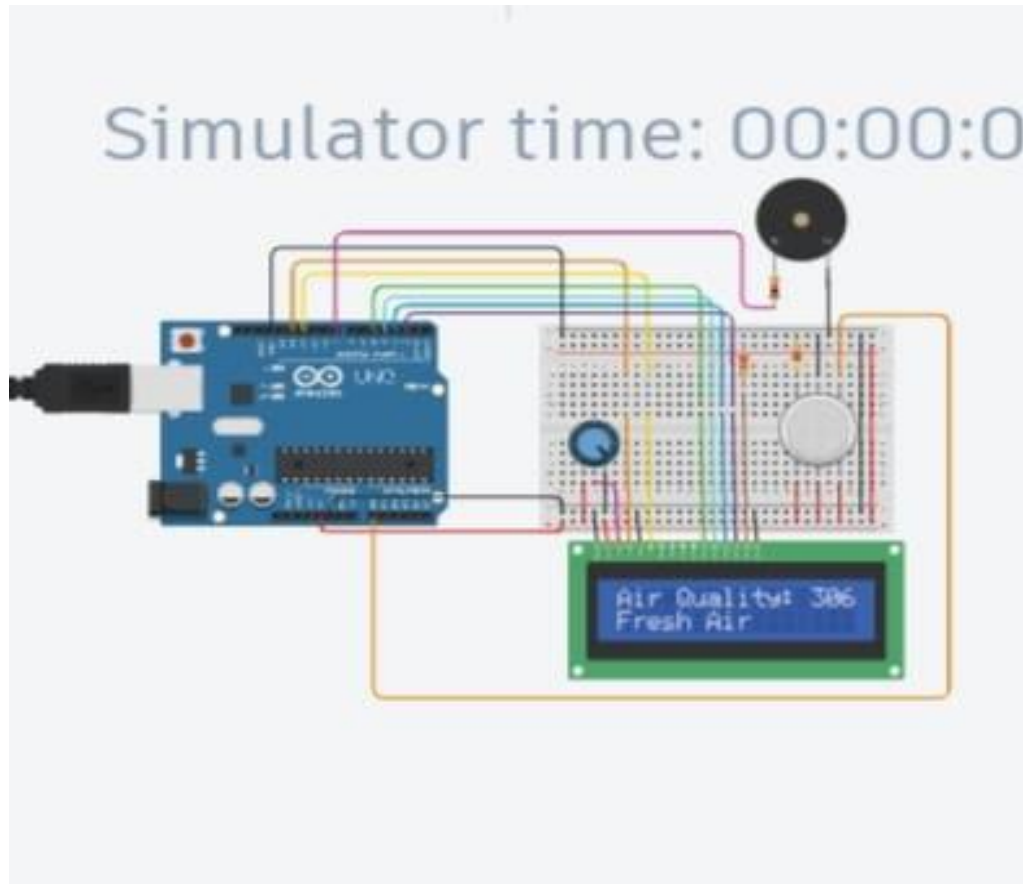
SCHEMATIC :



AWARENESS REAL TIME AIR QUALITY MONITORING SYSTEM:



AWARENESS OF PUBLIC:



HEALTH IMPACTS:

The health harms of air pollution

