## Project 1: AQM

## Project Definition:

## The project involves setting up IoT devices to measure air quality parameters and make the data publicly available for raising awareness about air quality and its impact on public health. The objective is to create a platform that provides real-time air quality information to the public. This project includes defining objectives, designing the IoT monitoring system, developing the data-sharing platform, and integrating them using IoT technology and Python.

**1.Project Objectives:**

Industrial processes like burning fossil fuels, chemical processing, mixing and drilling into tunnels and mines, metal casting, coatings, oil paintings emit a large amount of toxic gases like carbon monoxide, carbon dioxide, methane, sulphur dioxide, hydrogen, etc that lead to adverse effects on work environment. In case these gases are inhaled or not controlled in limited proportions, there are chances that it can lead to serious health hazards.Industries like mining, petrochemicals, metal refining, oil & gas, recyclable, fertilizers and refractories are considered dangerous and they ought to manage safety compliances. The accidents due to gas leakages are common there. With an average person spending around 90% of their time indoors, the effects of poor indoor air quality are more injurious compared to outdoor air pollution. That’s why it is important to monitor and control gas emissions from these industrial units.Our IoT-based Smart Air Quality Monitoring Solution with automation capabilities allows you to assess toxic and flammable gas proportions along with the concentration of air pollutants round the clock.

**2.IOT Devices Desings:**

Previously we have built the LPG detector using MQ6 sensor, Smoke dector sensor using MQ2 sensor, and Air quality analyzer but this time we have used MQ135 sensor as the air quality sensor which is the best choice for monitoring Air Quality as it can detects most harmful gases and can measure their amount accurately. In this IOT project, you can monitor the pollution level from anywhere using your computer or mobile. We can install this system anywhere and can also trigger some device when pollution goes beyond some level, like we can switch on the Exhaust fan or can send alert SMS/mail to the user.

**3.Data sharing platforms:**

The implementation of the project focuses on the deployment of the sensor in home, the effort to prevent weather conditions from affecting the sensor measurements, and how the actual program of the sensor was designed to work. The sensor had limited mounting options in the home where it could be installed and it had to function reliably in a long period. Implementation challenges were to protect the sensor from the sun and the rain to prolong its effective lifetime and to avoid any kind of technical malfunctions. At the time of the deployment, Uppsala had a late winter snowstorm, which made it necessary to cover up the sensor probes to prevent them from sinking into the snow and getting wet while still enabling them to take air quality measurements. By adding extra protection, the fluent air flow was disturbed, which became another challenge.

**4.Integration Approach:**

We can install this system anywhere and can also trigger some device when pollution goes beyond some level, like we can switch on the Exhaust fan or can send alert SMS/mail to the user.