**Project Title: AQM – IOT**

**Phase 1: Project Definition and Design Thinking**

**Project Objectives**:

1. **Real-time Air Quality Monitoring:**Ensure continuous monitoring of air quality parameters using IoT devices.

2. **Data Sharing**:Develop a mechanism to share the collected data with the public in an accessible and understandable format.

3. **Public Awareness:**Raise awareness about air quality issues by providing clear, real-time information to the public.

4. **Health Impact:**:Highlight the health implications of poor air quality, emphasizing its impact on public health.

**IoT Devices Designs:**

1. **Sensor Selection:** Choose appropriate sensors for measuring specific air quality parameters like particulate matter (PM2.5, PM10), gases (CO2, SO2, NO2), temperature, and humidity.

2. **Deployment Planning:** Strategically deploy sensors in locations that represent different environmental conditions within the area of interest.

3. **Power Supply:**Ensure a stable power supply for the IoT devices, considering options like battery power or solar panels for sustainability.

4. **Communication Protocols:** Select reliable communication protocols (e.g., Wi-Fi, LoRa, cellular) for transmitting data from sensors to the data-sharing platform.

**Data Sharing Platform:**

1. **User-Friendly Interface:**Design a simple and intuitive web interface that allows users to easily access real-time air quality data.

2. **Data Visualization:** Implement visual elements such as charts, graphs, and maps to present air quality data in an understandable format.

3. **Historical Data Access:** Include features for users to access historical data, enabling trend analysis and comparisons over time.

4. **Alert System:**Implement an alert mechanism that notifies users when air quality levels reach hazardous or unhealthy thresholds.

5. **Mobile Responsiveness:**Ensure the platform is accessible on various devices, including smartphones and tablets, for wider user reach.

**Integration Approach:**

1. **Data Transmission**:Establish a secure and efficient data transmission protocol between IoT devices and the data-sharing platform.

2. **Data Processing:** Use Python for data processing tasks, such as cleaning, analyzing, and aggregating the collected data.

3. **Real-time Updates**:Implement mechanisms for real-time data updates on the platform to provide users with the most recent air quality information.

4.***Error Handling***:Develop error handling mechanisms to address communication failures or sensor malfunctions, ensuring data accuracy and system reliability.