Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID29999
Project Name	Gas leakage monitoring and alerting system for Industries
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Order processing during pandemics for offline mode

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/
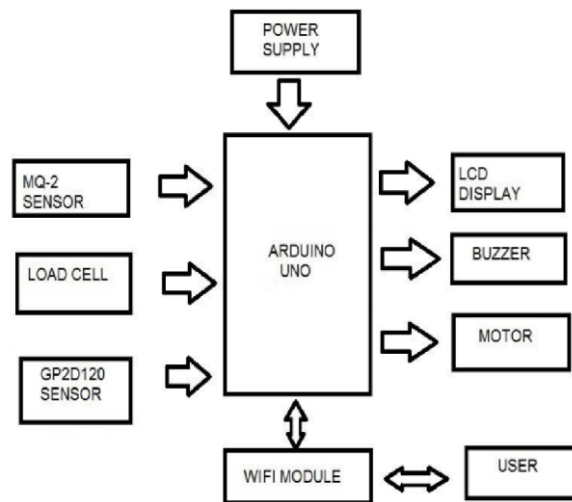
Guidelines:

1. Know the Environment You Are Monitoring
2. Know the Properties of Monitored Gases
3. Coverage Area of a Single Sensor
4. Sensor Maintenance
5. Prompt gas leak alerts

Table-1: Components & Technologies:

S.NO	Component	Description	Technology
1.	User Interface	The gas level value will be displayed on the 16x2 LCD Display. Whenever the excess gas is detected SMS will be sent to a particular phone number.	Temperature, humidity, and pressure sensors.
2.	Application Logic-1	Gas detectors can be used to detect combustible, flammable and toxic gases, and oxygen depletion.	Gas detector may offer early warning of a hazardous gas leak.
3.	Application Logic-2	The sensor-enabled solution helps prevent the high risk of gas explosions and affecting any casualties within and outside the premises.	Catalytic, electrochemical and solid state toxic gas detector
4.	Application Logic-3	The gas sensors help detect the concentration of the gases present in the atmosphere to avoid hazardous consequences like fire breakouts.	Catalytic and infrared (IR)
5.	Database	Analysis is done using graphs using the sensor values stored in database. It shows the graph between gas concentration and the temperature at that time.	Ultrasonic gas leak detectors
6.	Cloud Database	Analyse and store the data and communicate wirelessly for further analysis is possible	Solid-state sensors, IR gas cloud technology
7.	File Storage	a number of policies and measures that are aimed at improving the position of enterprises and eventually improving the technological innovations in the country	Non-dispersive infrared sensors, UEI Combustible Gas Leak Detector.
8.	External API-1	It has been widely used in the detection of noxious and harmful gases and natural gas leakage.	Am-probe Gas Leak Detector.
9.	External API-2	This system is to detect gas leakage, neutralize it, and prevent the explosion.	ALOPLEX Portable Gas Detector.
10.	Machine Learning Model	This type of device is used widely in industry and can be found in locations, such as on oil rigs, to monitor manufacturing processes and emerging technologies such as photovoltaic.	Rid-gid Combustible Gas Detector.
11.	Infrastructure (Server / Cloud)	Anyone can access the leakage data from anywhere using any Internet enabled device like PC, tablet or smart phone, and analyse it.	Tech-amor Yee-zoa Portable Gas Detector

Table-2: Application Characteristics:

S.NO	Characteristics	Description	Technology
1.	Open-Source Frameworks	Gas Leakage identifier with SMS sign utilizing GSM modem venture distinguishes the gas leak spillage.	Arduino (UNO-1), buzzer, alarm.
2.	Security Implementations	The sensor will send an pulse to microcontroller which intern will send an update to the internet through monitoring system, and as well it will trigger an siren alarm in the RF Rx kit	Portable devices and fixed gas detectors.
3.	Scalable Architecture	1. Fire hazard prevention 2. Harmful gas detection 3. Prompt gas leak alerts.	Robot-using-raspberry-pi
4.	Availability	The sensor-enabled solution helps prevent the high risk of gas explosions and affecting any casualties within and outside the premises.	Flame detector, wireless pi camera, MQ5 sensor.
5.	Performance	Unidentifiable gas leaks give rise to explosions that are harmful to the employees working in the hazardous environment.	Humidity and temperature sensors.

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d