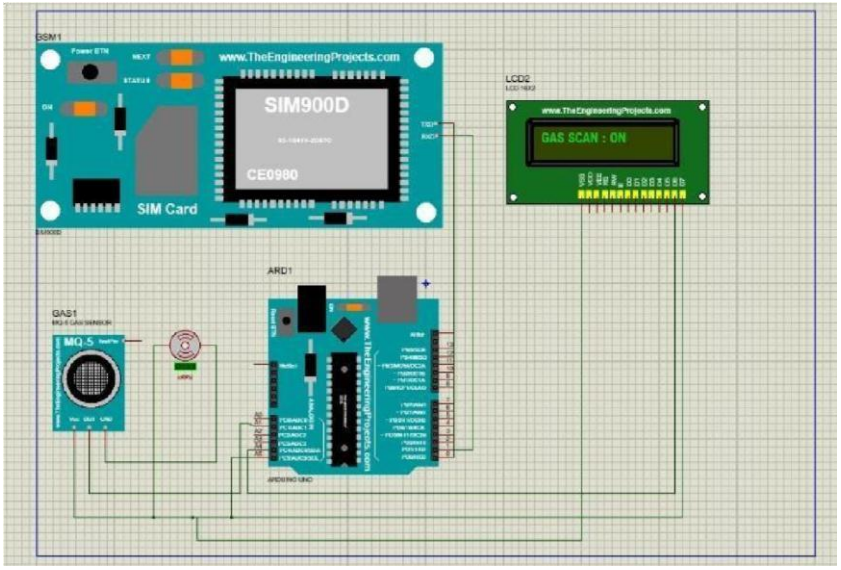
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	25 October 2022
Team ID	PNT2022TMID20495
Project Name	Gas Leakage monitoring & Alerting system for Industries
Maximum Marks	4Marks

Technical Architecture:



Technical :

- MQ5 gas sensor
- Arduino uno board
- GSM 800A module
- DC fan
- LCD display (gas scan and alert)

Functional:

- First detects the gas leak.
- Signal goes to Arduino
- DC fan tuns ON
- Alert SMS sent to user's mobile number
- Source valve turned OFF.

DEVELOPMENT OF TASK ANALYSIS:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web UI, Node-RED, MIT app	IBM IoT Platform, IBM Node red, IBMCloud
2.	Application Logic-1	Create Ibm Watson IoT platform and createnode- red service	Ibm Watson, ibm cloudantservice,ibm node-red
3.	Application Logic-2	Develop python script to publish and subscribe toIBM IoT Platform	python
4.	Application Logic-3	Build a web application using node-red service	IBM Node-red
5.	Database	Data Type, Configurations etc.	MySQL
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant
7.	File Storage	Developing mobile application to store and receive the sensors information and to reactaccordingly	Web UI,python
8.	External API-1	Using this IBM fire management API we can trackthe temperature of the incident place and where the fire had been attacked.	IBM fire management API
9.	External API-2	Using this IBM Sensors it detects the fire, gas leaks , temperature and provides the activationof sprinklers to web UI	IBM Sensors
10.	Machine Learning Model	Using this we can derive the object recognition model	Object Recognition Model
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / CloudCloud Server Configuration	IBM cloudant, IBM IoT Platform

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	MIT app Inventor	MIT License
2.	Security Implementations	IBM Services	Encryptions, IBM Controls
3.	Scalable Architecture	sensor-IoT Cloud based architecture	cloud computing and AI
4.	Availability	Mobile, laptop, desktop	MIT app
5.	Performance	Detects the Fire, gas leak,temperature	sensors

WORKING:

Step 1: A signal from the microcontroller will go to the display and show gas leakage message there.

Step 2: Simultaneously automatically turns on the DC fan to ventilate the leaked gas, and the source solenoid valve will be turns off

Step 3: Signal from microcontroller activates the GSM module and sends an alert SMS “ALERT GAS LEAKING” to the user’s mobile numbe