Project Objectives

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Team ID	PNT2022TMID33614
Project Name	Gas Leakage monitoring & Alerting system for Industries
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Abstract:

Gas leakage is a major problem with industrial sector, residential premises and gas powered vehicles like CNG (compressed natural gas) buses and cars. Homes and Industrial fires have taken a growing toll in lives and property in recent years. Most gasses used for industrial activities are highly inflammable and can burn even at some distance from the source of leakage. Most fire accidents are caused because of a poor-quality rubber tube or when the regulator is not turned off. The supply of gas from the regulator to the burner is on even after the regulator is switched off. By accident, if the knob is turned on, it results in the gas leaks. Safety plays a major role in today's world and it is necessary that good safety systems are implemented in places of education and work. This project modifies the existing safety model installed in industries and this system also can be used in homes and offices. The main objective of this project is designing microcontroller based gas leakage detecting system. Some hazardous gases like Liquefied petroleum gas (LPG) and propane can be sensed using this device. One of the preventive methods to stop accident associated with the gas leakage is to install gas leakage detection kit at vulnerable places. The aim of this project is to present such a design that can automatically detect gas leakage in vulnerable premises. In particular gas sensor has been used which has high sensitivity. This project was based on liquefied petroleum gas. If these gases exceed the normal level then an alarm is generated immediately. The advantage of this detection and alerting system over the manual method is

that it offers quick response time and accurate detection of an emergency and in turn leading faster diffusion of the critical situation.

By the end of this project, we will:

- Gain knowledge of Watson IoT Platform.
- Connecting IoT devices to the Watson IoT platform and exchanging the sensor data.
- Gain knowledge on IBM Cloudant DB
- Explore Python client libraries of Watson IoT Platform.
- Explore Python library for integrating OpenCV for accessing the Live Camera Input
- Scan the QR code in live streaming and retrieve the QR code details
- Gain knowledge of web application development.
- Gain knowledge of storing the data in Cloudant DB
- Generating QR codes with the required data.

Project Flow:

- The parameters like hazardous gas levels, fire, humidity, and temperature data are published to the Watson IoT platform
- The device will subscribe to the commands from the application and take decisions accordingly to switch on the rainwater sprinkler in case of emergencies
- Sensor data is visualized in the Web Application

To accomplish this, we must complete all the activities and tasks listed below:

- Create and configure IBM Cloud Service
  - Create IBM Watson IoT Platform and Device
  - Create Node-RED service
- Develop the Python Script
  - Develop the Python Script
- Develop a web Application using Node-RED Service
  - Develop the Web application using Node-RED
  - Testing the Web UI by giving the required inputs