Gas Leakage Monitoring and Alerting System for Industries

PROJECT NAME	GAS LEAKAGE MONITORING & ALERTING SYSTEM FOR INDUSTRIES
TEAM ID	PNT2022TMID27029
TEAM MEMBERS	1. ABDUL RAZZAQ S 2. AKASH B 3. AMALAN BOSCO A 4. ARISHRAAJ K G
BRANCH	ELECTRONICS AND COMMUNICATION ENGINEERING

Abstract:

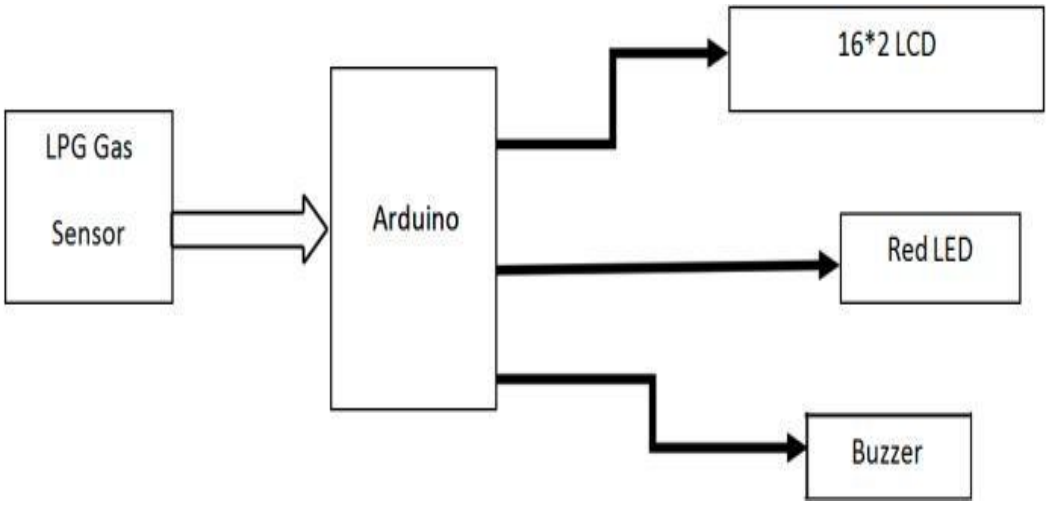
Gas Leakages in open or closed areas can prove to be dangerous and lethal. Gas leakage monitoring and tracking the toxic gas leakage detection in large-scale industries. By using advance technology Wireless Sensor Networks, we can avoid the hazards. Device and network will provide huge safety to environment around the industries and localize people. Power, energy consumption and structure with respect to their industrial boundary.

Introduction:

In the last decade, industrial hazard occur in regular interval. Due to the large amount of death, we need a precaution measure. By using the current technologies, we can prevent the hazards. These gases might toxic elements and flammable which is more dangerous. The Internet of Things have advance technology to solve these problems. This mechanism is very efficient and reliable. It is capable of sensing gases such as CO, CO2, LPG, and CH4. These wireless sensor networks not only have detection and alarming systems inbuilt. The detection information also can be spread to people under the environment with alerting messages.

Objective:

The main objective of the proposed Gas Leakage Detection and Automatic Control System (GLDACS) is to provide a solution by designing an automatic system, which can detect the leakage of liquefied petroleum gas (LPG) at home and control it by turning off the cylinder knob. A gas leakage detector becomes vital and helps to protect people from the dangers of gas leakage. A number of research papers have been published on gas leakage detection techniques.

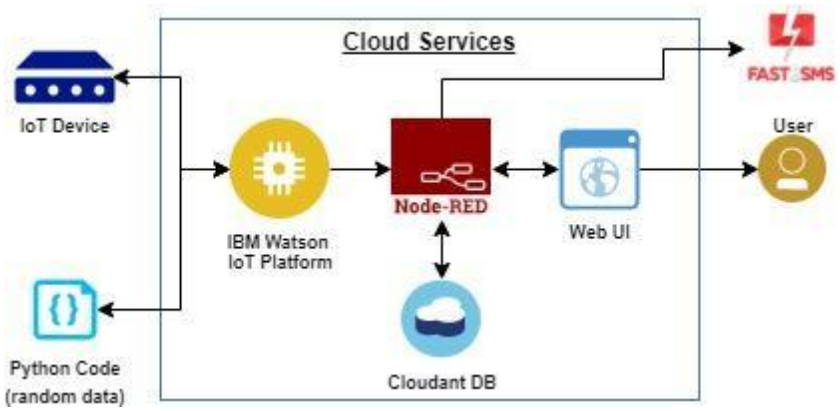


IoT uses:

A mixture of propane and butane makes up the highly flammable liquid petroleum gas (LPG) chemical. LPG is used for cooking in restaurants, at home, and in industrial applications. They have a few flaws, which cause the gas to leak. Adjacent humans can only discover gas leaks; if no one is around, they cannot be found. However, occasionally a human with a poor sense of smell cannot notice it. As a result, this device will aid in detecting gas leaks.

Gas leaks can potentially start fires that harm human property and inflict catastrophic injuries or fatalities. IOT was used in the development of this system to provide users with real-time feedback and send notifications to users.

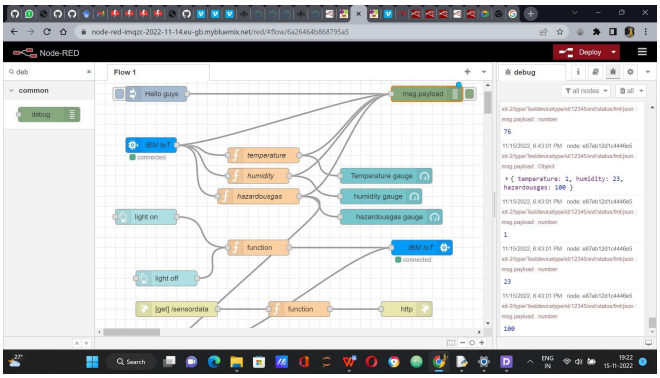
The required basic electronics components for designing a microcontroller based LPG leakage detector circuit mainly include Arduino Pro Mini, LPG gas sensor module, buzzer, BC 547 transistor, 16×2 LCD, 1K resistor, bread board, 9 volt battery and connecting wires.

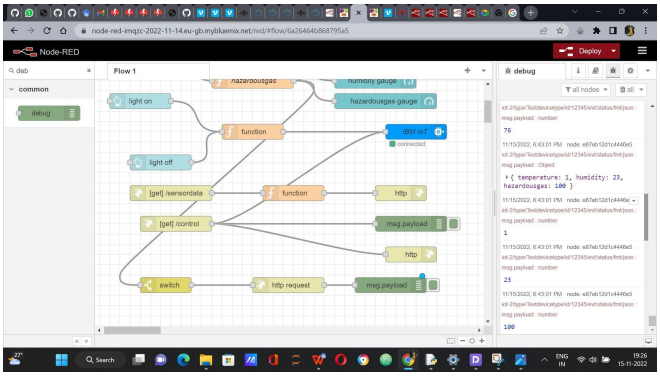


Step 1:

Creating service with IBM cloud and Node-red.

Step 2:





Connecting the flow with IBM modules with node red packages

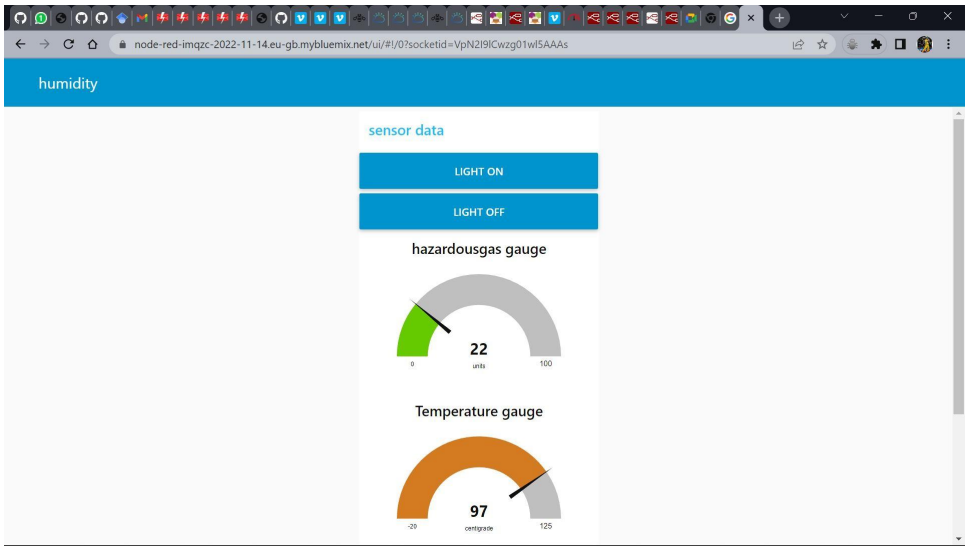
Step 3:

By using python we have connect the Ibm with authentication keys.

Step 4:

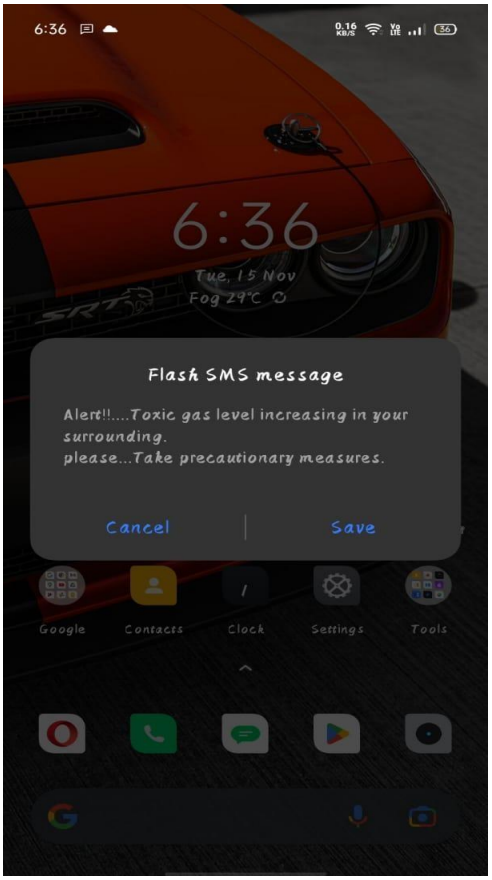
Create UI in node red.

Browse to the web in the Browser.



Step 5:

For mobility and easy notation services, The Fast2sms is used.

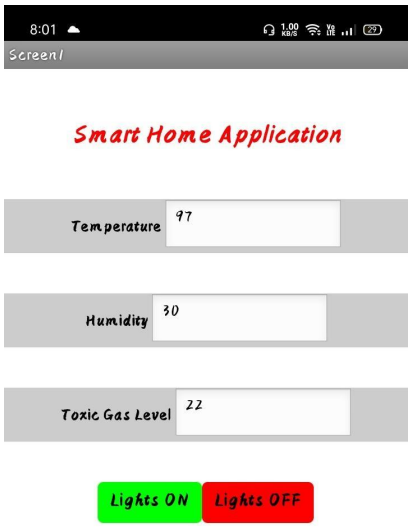


Step 6:

Using MIT app inventor app, user interface app is created.

APP Link:

http://ai2.appinventor.mit.edu/b/193fq



Gas Sensors:

Electronic devices called gas sensors (sometimes referred to as gas detectors) are used to locate and classify various gases. They are frequently employed to gauge gas concentrations and identify explosive or dangerous gases. Gas sensors are used in manufacturing facilities and factories to find gas leaks and to detect smoke and carbon monoxide in residential buildings. Gas sensors come in a wide range of sizes (portable and fixed), sensing capabilities, and ranges. They frequently function as a component of a larger embedded system, such as security and hazmat systems, and are typically connected to an interface or audible alarm. Gas sensors require more frequent calibration than many other types of sensors since they are continually reacting with air and other gases.

However, in our project we have used random output value generated in Python

Conclusion:

In this paper we use IOT technology for enhancing the existing safety standards. While making this prototype has been to bring a revolution in the field of safety against the leakage of harmful and toxic gases in environment and hence nullify any major or minor hazard being caused due to them. We have used the IOT technology to make a Gas Leakage Detector for society which having Smart Alerting techniques involving sending text message to the concerned authority and an ability performing data analytics on sensor.