PROJECT REPORT

1. INTRODUCTION

1.1Project Overview:

In today's world, safety is of the utmost importance, and certain measures must be taken at both work and home to e ensure it. Working or living in a dangerous environment necessitates specific safety measures, whetherthe subject is electricity or oil and gas. A type of nat ural gas known as "Liquified PetroleumGas"(LPG) is compressed under high pressure and stored in a metal cylinder. LPG is extremely vulnerable to fire and can result in catastrophic damage if left unprotected near any fire source. LPG is primarily utilized for cooking and is more readily available than any other natural gas. Sadly, its widespread use makes gas leakage or even a blast a common occurrence. As a result, a system for detecting and monitoring gas leaks is required. Through a flame sensor, the system will keep an eye on fire and flame. The buzzer begins to ring when a fire is detected. Tests have shown that the system can keep track of the wastage of gas and leaks and notify the user. The performance that was produced showed that it was successful in reducing the amount of domestic gas that was wasted.

1.2 Purpose:

Nowadays the home safety detection system
plays an important role in the security of people. Since all the people from the home goes to work on a daily bases, it makes it impossible to check on the appliances available at home especially LPG gas cylinder, wired circuits, Etc.

In the last three years, there is a tremendous hike in the demand for liquefied petroleum gas (LPG) and natural gas. To meet this access amount of demand for energy and replace oil or coal due to their environmental disadvantage, LPG and natural gas are preferred. These

gases are mostly used on a large scale in industry, as heating, home appliances, and motor fuel. To monitor this gas leak, the system includes an MQ6 gas detector. This sensor detects the amount of leaking gas present in the surrounding atmosphere. In this way, the consequences of an explosion or gas leak can be avoided.

2. LITERATURE SURVEY

2.1 Existing Problem:

The Internet of Things aims towards making life simpler by automating every small task around us. As much as IoT helps in automating tasks, the benefits of IoT can also be extended to enhancing the existingsafety standards. Safety, the elementary concern of any project, has not been left untouched by IoT. Gas Leakages in open or closed areas can prove to be dangerous and lethal. The traditional Gas Leakage Detector Systems though have great precision, fail to acknowledge a few factors in the field of alerting people about the leakage. Therefore, we have used IoT technology to make a Gas Leakage Detector for society which has Smart Alerting techniques involving sending a text message to the concerned authorityand the ability to perform data analytics on sensor readings. Our main aim is to propose a gas leakage system for a society where each flat has gas leakage detector hardware.This will detect the harmful gases in the environment and alerting to so through the alarm and sending respect notifications

2.2 References:

Gas Leakage monitoring & Alerting system for Industries

PUBLISHED YEAR : 2020
AUTHOR : Meteb Altaf, Alaa Menshawi, Ruba Al-Skate, Taghreed AlMusharraf, Wejdan Al-Sakaker
JOURNAL NAME : International Journal of Computer Science and Engineering

SUMMARY : Liquid petroleum gas (LPG) is used for variant purposes at home such as central heating and cooking. LPG is primarily consisting of propane and butane which are highly flammable chemical compounds. Gas leakage can introduce risk of fire, which can occur inside homes, commercial premises or factories. Since the LPG does not have any odour, gas companies add an odorant such as Ethanethiol, Thiophene or Mercaptan so human can detect the leakage by the sense of smell. However, this is detection approach is not safe since sleeping person, children, low smellsense people might not detect the leakage. Therefore, a more robust and reliable detection mechanism is required to increase safety at home. This project introduces a reliable, robust and instant-response solution for such a problem. Gas Leakage Detection System (GLDS) can detect leakage at homes, commercial premises or factories. Two highly important safety factors are considered in this system including: time and control. GLDS detects the leakage soon after it happened and sends users an immediate alarm on the incident. Moreover, by the application of theIOT (Internet of Things) people can control their home premises remotely. Consequently, in the case of users being away from home, he/she can remotely interact with the system to control the safety at home by cutting off electricity or ventilating the house.

2.3 Problem Statement Definition:

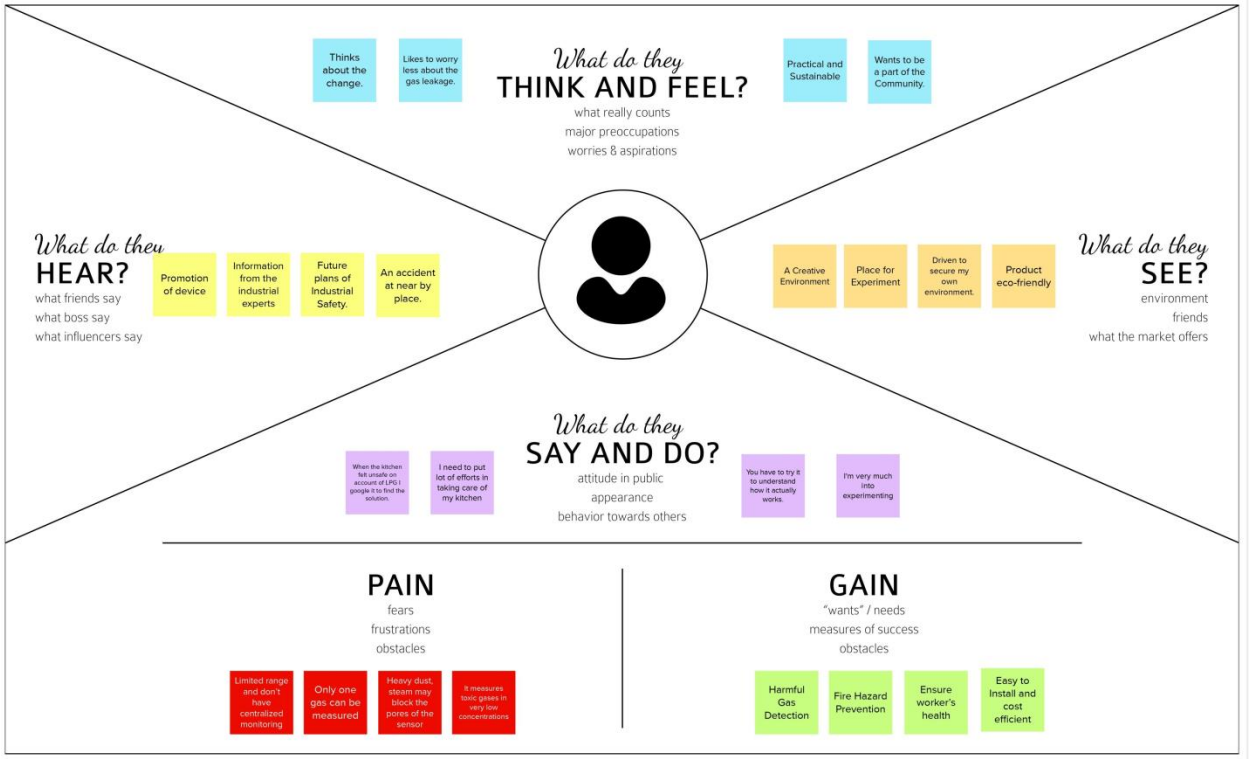
PS -1:

PS -2:

Problem Statement(PS)	**I am (Customer)**	**I am trying to**	**But**	**Because**	**Which makesme feel**
PS-1	Industrialist	Monitor gas leakagein the industry	I have no efficientsystem formonitoring	High cost andComplicated process of Installing	Disappointed
PS-2	Industrialist	Control the gasleakage	Also, theinstallation process is too complicated	The numberofsensors is unpredictable and the positioning of equipment is improper	Frustrated

3.IDEATION &PROPOSED SOLUTION:

3.1 Empathy Map



3.2 Ideation & Brainstorming:

The Internet of Things aims towards making life simpler by automating every small task around us. As much as IoT helps in automating tasks, the benefits of IoT can also be extended to enhancing the existing safety standards. Safety has always been an important criterion while designing a home, buildings, industries as well as cities. The increased concentration of certain gases in the atmosphere can prove to beextremely dangerous. These gases might be flammable at certain temperature and humidity conditions, toxic after exceeding the specified concentrations limits, or even a contributing factor in the air pollution of an area leadingto problems such as smog and reducedvisibil ity which can in turn cause severe accidentsand have an adverse effect on the health of people. Most societies have a fire safety mechanism.

Butcanuse after the fire exists.In order to have controlover such conditions we proposed a system that uses sensorsthat can detect the gases such as LPG, CO2, CO, and CH4. This system will not only able to detect the leakage of gas but also alert through audible alarms. The presence of excess amounts of harmful gases in the environment then this system can notify the user. The system can notify to society admin about the condition before a mishap takes place through a message. The system consists of gas detector sensors, an Arduinoboard, ESP8266, and a Cloud server. One Society authority p erson can registerthe all-flat memberuser to our system. Society admin can add the details of per flat user such as user name, mobile number, userflat sensor detailsinformation. Society admin can configure the threshold value of each sensor.System hardware can be deployed on each flat. Sensors can sense the value per time. The system can sendthe values to the cloud server. The server can Check that the sensor values existed in the thresholdvalue. Ifthe sensor value can cross the lim it the server can send the commandto the hardware for buzzingthe alarm .The server also sends the notification message to the user.

In this paper, we use IOT technology for enhancing the existing safety standards.Whilemakingthis prototype has bring a revolution in the field o f safetyagainst the leakageof harmful and toxic gasesin the environment a nd hence nullify any major or minor hazardbeing caused due to them.

3.3 Proposed Solution :

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Workers who are engaged with a busy industries packed withgas either harmful or harmless needsaway to monitortheir gas pipelines continuously and detect early if there is any leakage of gas in their surroundings so that they can work efficiently on major crises rather than worrying about monitoringor leakage of gas, this will indeed reduce the manpower of that industry and create a peaceful environment.
2.	Idea / Solution description	Workers who are engaged with a busy industries packed withgas either harmful or harmless needsaway to monitortheir gas pipelines continuously and detect early if there is any leakage of gas in their surroundings so that they can work efficiently on major crises rather than worrying about monitoringor leakage of gas, this will indeed reduce the manpower of that industry and create a peaceful environment.
3.	Novelty / Uniqueness	Even though there are many existing solutions forthis problem they failed to satisfy the needs of customer. Some of the solutions are only detectingsome particular gaseswhere some othersfailed toalert the main department and other solutions are with some delays. Our solution not only notify the industry person but also notify the fire fighters so that can take control over the situation and oursolution will alertthe workers even there is a small leak of gases.
4.	Social Impact/ CustomerSatisfaction	Our solution will be very helpful for the workersand the society which is associated or located nearby the industries. Our solution will prevent greatdisasters like Bhopal Gas Tragedy so that so many lives can be saved.Through this projectthe workersmental pressure will be reduced so that theycanconcentrate on other worksor by relaxing them.

5.	Business Model (Revenue Model)	The main target of our solution is Industries so wehave planned to visit industries and explain them aboutthe benefits of our products. So that they can aware of the importance of this solution and use it.
6.	Scalability of the Solution	Our solution can be integrated for further future usebecause the solution we have provided will be lay on the basic or initial stageof any upgraded version.

3.4 Problem Solutionfit:

1. CUSTOMER SEGMENT(S) •Industrialists •Engineers •Safety Control Personals	2. JOBS-TO-BE-DONE /PROBLEMS •Capability of the device to withstand a harsh environment is questionable. •Due to network issuesdata could not be always uploadedto the cloud.	3. TRIGGERS •Usage of the deviceis portrayed in the news. •In real-life situations, the device has helped in savingseveral individuals.
4. EMOTIONS: BEFORE/AFTER •Before the action is taken, theuser feels deceived and cheated. •After the problem is resolved,the user feels the sincerity of the developers.	5. AVAILABLE SOLUTIONS •Upgrading to a premium network plan. •Availing of network connection from a reliableService provider.	6. CUSTOMER CONSTRAINTS •Network Connection Complexity in Installation

7. BEHAVIOUR •Harsh environment is prevailing only in the certain industry; thus, the frequency ofthe said problem is lo w. In such a case the customer complains multiple times to getattention. •Network issue is very common as most of the industries are in the countryside. Here the contactboththe develop ers and the service provide	8 .CHANNELS OF BEHAVI OUR a. ONLINE •E-Mail to developers •Online Community b. OFFLINE •Complaint Letters	9. PROBLEMROOT C AUSE •Quality of the material using which the device is made up of plays a vital role in the capability of the device to workin harsh environments. •Location of the device installation and the networkplan used by the user is the causeof the Netw ork issue.
10. YOUR SOLUTION •Network strength must beboosted in the devi ce •Device can be manufactured with multiple standards basedon the environme nt.		

4.REQUIREMENT ANALYSIS :

4.1 Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story/ Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail / Industry mailRegistration throughLinkedIN
FR-2	User Confirmation	Confirmationvia Email Confirmationvia OTP
FR-3	User Login	Login as Industry Workers Login as Disaster Management Login as Industry Admin Department
FR-4	Industry Map	Map of the Industry displaying the prominent featureof the industry (available for IndustryWorkers and AdminDepartment)
FR-5	Zone Safety	Alert message is provided in this storyif gas leakage occurs
FR-6	Sensor Parameters	Only Admin Department can view the sensor parameters which shows the recorded valuesof particular sensor.

4.2 Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The sensor-enabled solution helps prevent the highrisk of gas explosions and affecting any casualties within and outsidethe premises.

NFR-2	**Security**	The device is intended for use in household safety where appliances and heaters that use natural gas and liquid petroleum gas (LPG) maybe a source of risk.
NFR-3	**Reliability**	Gas Leakage Detection system(GLDS) can detect leakageat homes, commercial premises or factories. GLDS detects the leakage soon after it happened and sendsusers an immediate alarm on theincident.

NFR-4	**Performance**	The gas leakage detector is a wall mounted device fitted closeto the floorlevel with an alarm settingat 20% of lower explosive limit. Whenever there is a leak, the built-in sensor detects and alerts the user in lessthan 5 minutes, much before it can causeany accident.
NFR-5	**Availability**	The circuit for an LPG leakage detector is readily available in the market, but it is extremely expensive. Presented here is a low costcircuit for a Gas leakage Detection that you can build easily.
NFR-6	**Scalability**	The system proves the need for gas detection alarmsystems to be 100% reliable. A backup powersupplycan b e included in the system design to augmentforpower failure condition. Also, calibration of the gas sensor canbe done in other for a specific gas to be sensed insteadof the LPG numerous gases.

Data Gathering:

Using multiple sensors, we are goingto gather the necessary data.

Data Store:

Collected data is storedin Cloud and Necessary databases.

Data Analysis:

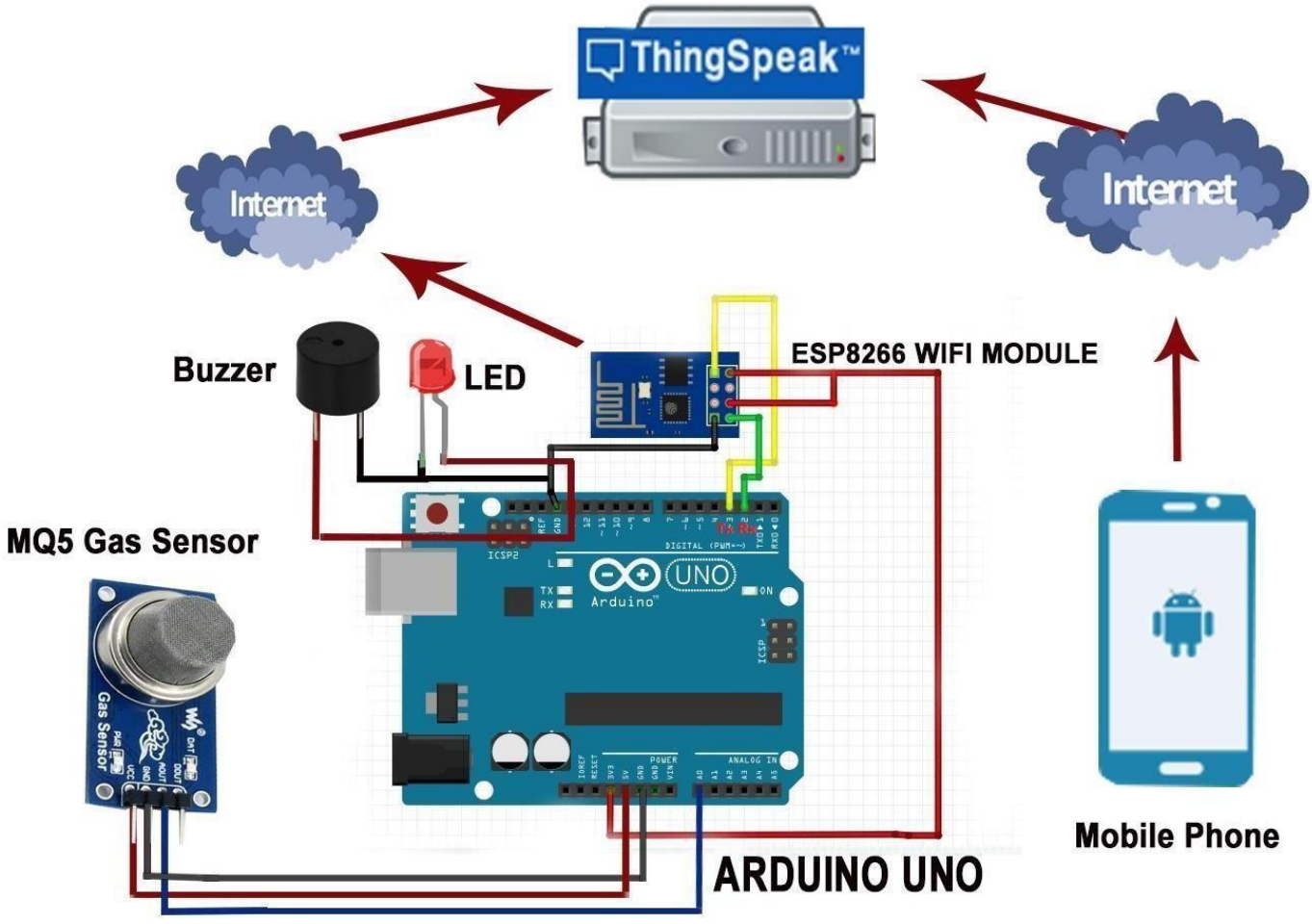
Data from the store must be analyzed for raising alerts in case of necessity.

Data Monitoring:

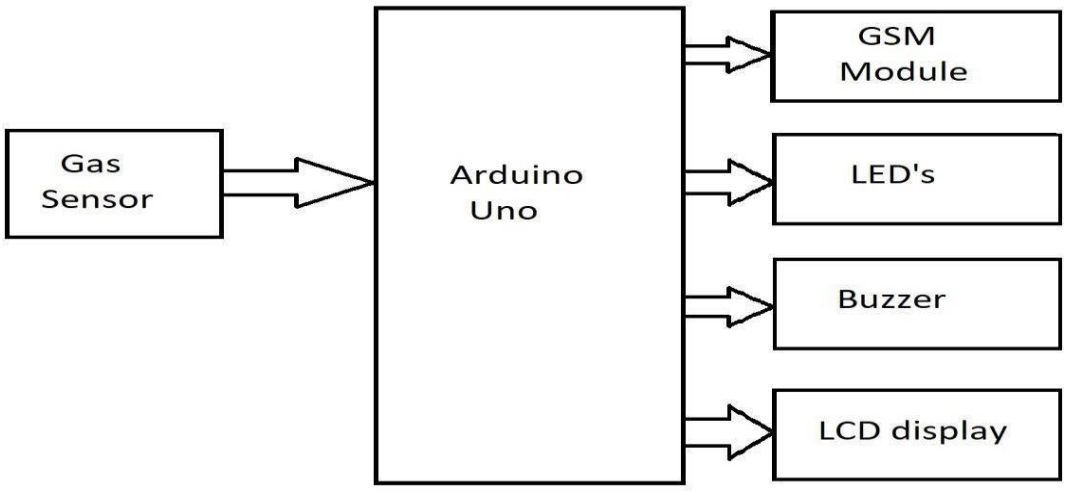
Gathered data must be displayed to the user for monitoring.

5. PROJECT DESIGN

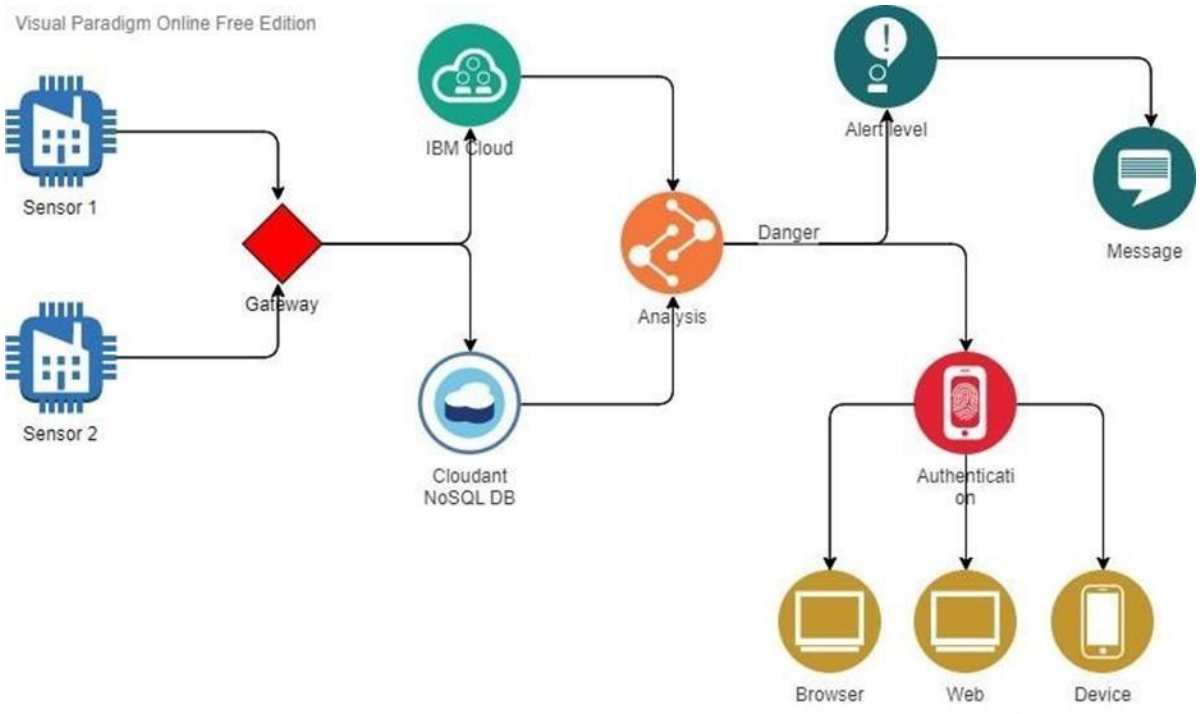
5.1 DATA FLOW DIAGRAMS



BLOCK DIAGRAM:



5.2 Solution & Technical Architecture:



5.3 User Stories:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (workers)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can register through my Gmail and get access to dashboard	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can see the dashboard which shows industry safety details.	High	Sprint-1
	Dashboard	USN-6	As a user, Iable to see industry name and green symbol/red symbol.	I can check whether the industry is safe or not		
Customer (Disaster Department)	login	USN-7	As a user, I can log in through Gmail	I can access dashboard.		
	dashboard		I able to see industry name, safety and location details.	I can monitor the industry Safety conditions.		
Customer (Administrator)	Registration	USN-8	As a user, I can register through industry email.	I can receive a confirmation email and click confirm.		
	login		I can log into the application through registeredGmail	I can access my dashboard.		
	dashboard		I can monitor the industry and see every sensor details.	I can control the access of the workers dashboard.		
			Dashboard shows the sensor parameters.	If sensor value increase certain value it will enable alert notification to worker mobile.		

6.
PROJECT PLANNING & SCHEDULING :

6.1 SPRINT PLANNING AND ESTIMATE :

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	objective	USN-1	As a system, sensor should detect gas	8	High
Sprint-1	Features	USN-2	As a system, the gassensor values should be displayed in a LCDscreen	2	Low
Sprint-1	Features	USN-3	As a system, as soonas the detected gas reaches the threshold level,the red colorLEDshould be turned ON.	5	High
Sprint-1	Features	USN-4	As a system, as soonas the detected gas reaches the threshold level,the siren shouldbeturned ON.	5	High
Sprint-2	Focus	USN-5	As a system, it shouldthe send the location where the gas is detected	8	High
Sprint-2	Focus	USN-6	As a system, it shouldalso send the alerting	2	Low

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
			SMS to the registered phonenumber		
Sprint-2	Features	USN-7	As a system, the gasleakagepipe sh ould beclosed automatically once th ere it attains the threshold value	5	Medium
Sprint-2	Features	USN-8	As a system, it will indicate that thegas leakagepipe is cl osedin the LCD screen and send SMS to the registered mobilenumber.	5	Medium
Sprint-3	Data Transfer	USN-9	As a program, it shouldretrieve the API key of the IBM cloud to send thedetails of the system.	2	Low
Sprint-3	Data Transfer	USN-10	As a system, it shouldsend the dataof se nsor values alongwith latitudes and longitude s to theIBMcloud	5	Medium
Sprint-3	Data Transfer	USN-11	As a cloudsystem, the IBM cloud shoul dsend the data to NodeRed	2	Medium
Sprint-3	Data Transfer	USN-12	As a system, it should collect the data fromtheNodeRed and give it to the backend of the mitapp.	3	Medium
Sprint-3	Data Transfer	USN-13	As an application, it should display t he details ofthe gas level and other details to the user through the frontend of the mit app.	8	High

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-4	Registration	USN-14	As a user, I mustfirst register my e mail and mobile numberin the website	2	High
Sprint-4	Registration	USN-15	As a user, I mustreceive confirmati on mail and SMS on registration.	2	Medium
Sprint-4	Login	USN-16	As a user,I can login into the web a pplication through emailand password.	3	High
Sprint-4	Dashboard	USN-17	As a user,I can access the dashboar d and make use of available resources.	2	Medium
Sprint-4	Focus	USN-18	As a user, I mustreceive an SMS o nce the leakage is detected.	5	High
Sprint-4	Allocation	USN-19	As an admin, I must receiveinfor mation about theleakage alongwi th location and share exact location and route to the person.	3	High

6.2 SPRINT DELIVERY SCHEDULE:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date(Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date(Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022		05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022		12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022		19 Nov 2022

Velocity:

Imagine we havea 10-day sprint duration,
The velocityof the team is 20 (pointsper sprint).
Let's calculate the team's average
velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

7. CODING & SOLUTIONING :

7.1 FEATURE :

```
#IBM Watson IOT Platform
#pip install wiotp-sdk
import wiotp.sdk.device
import time
import random
myConfig = {
    "identity": {
        "orgId": "9o9mmj",
        "typeId": "MyTestDevices12",
        "deviceId":"12345"
    },
    "auth": {
        "token": "p4UutM8yj+EW*I7glD"
    }
}

def myCommandCallback(cmd):
    print("Message received from IBM IoT Platform: %s" % cmd.data['command'])
    m=cmd.data['command']

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

while True:
    temp=random.randint(-20,125)
    hum=random.randint(0,100)
    myData={'temperature':temp, 'humidity':hum}
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0,
      onPublish=None)
    print("Published data Successfully: %s", myData)
    client.commandCallback = myCommandCallback
    time.sleep(2)
client.disconnect()
```

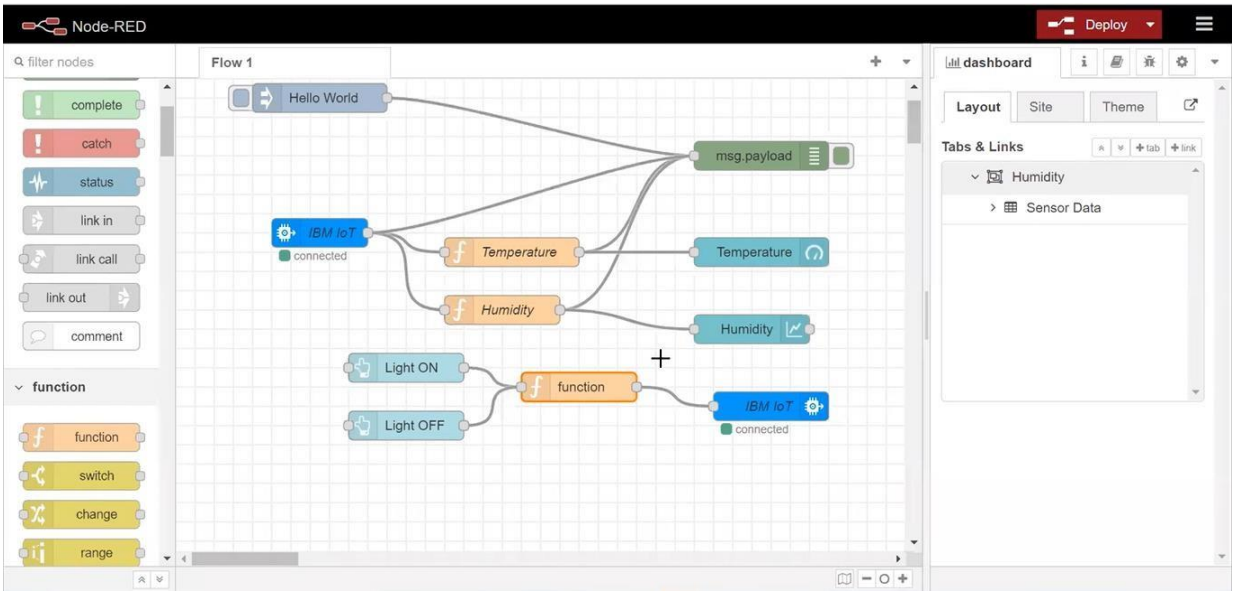
7.2 FEATURE :

```
import random
```

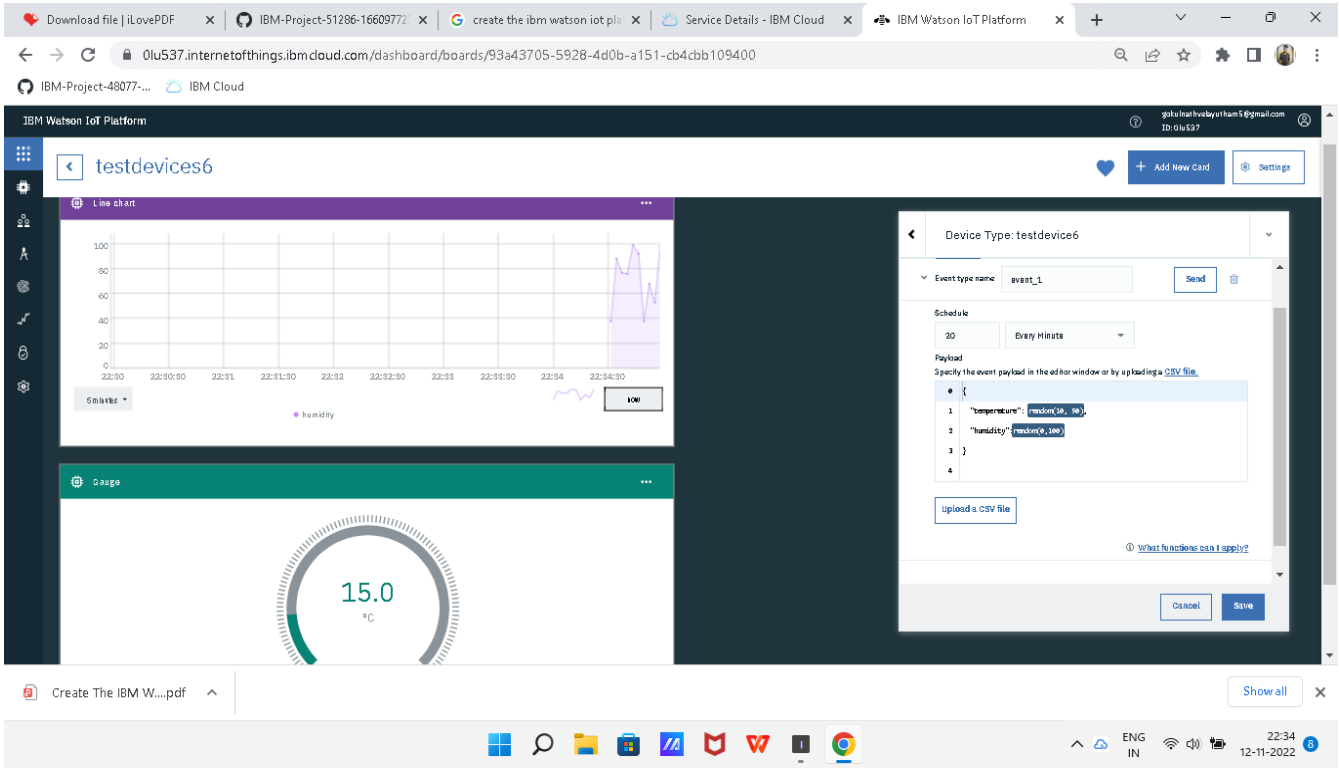
```
print('Hazardous Gas Level=',str(random.randint(0,100)))
print('Temperature=',str(random.randint(0,100)))
print('Humidity=',str(random.randint(0,100)))
print('Pressure=',str(random.randint(0,100)))
```

7.3 DATABASE SCHEMA:

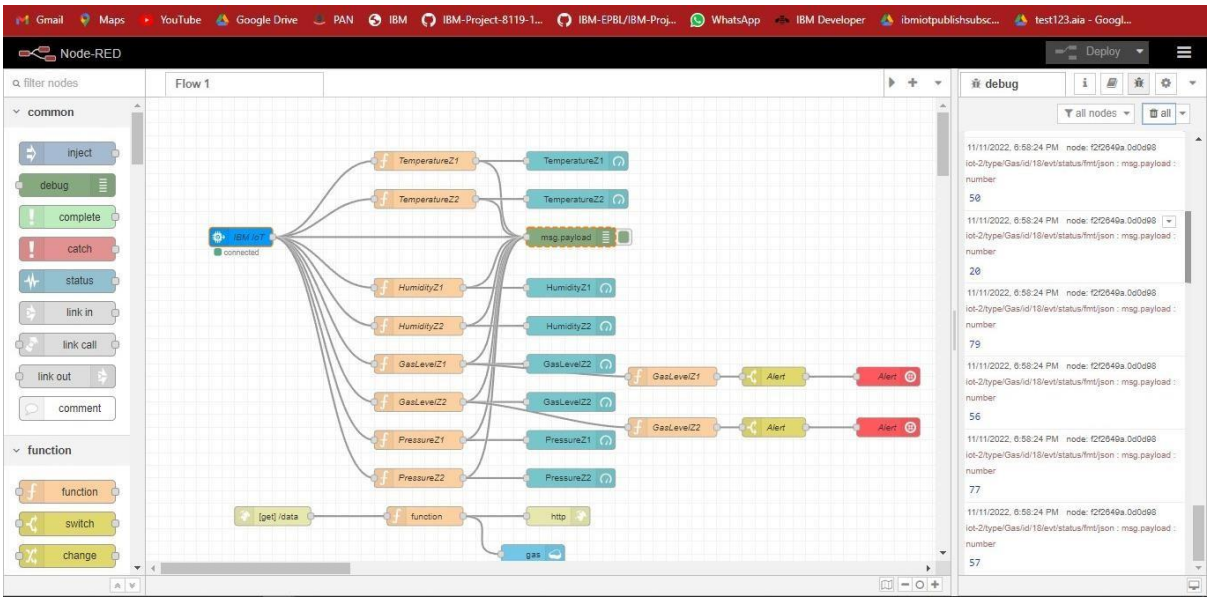
NODE -RED SERVICES:



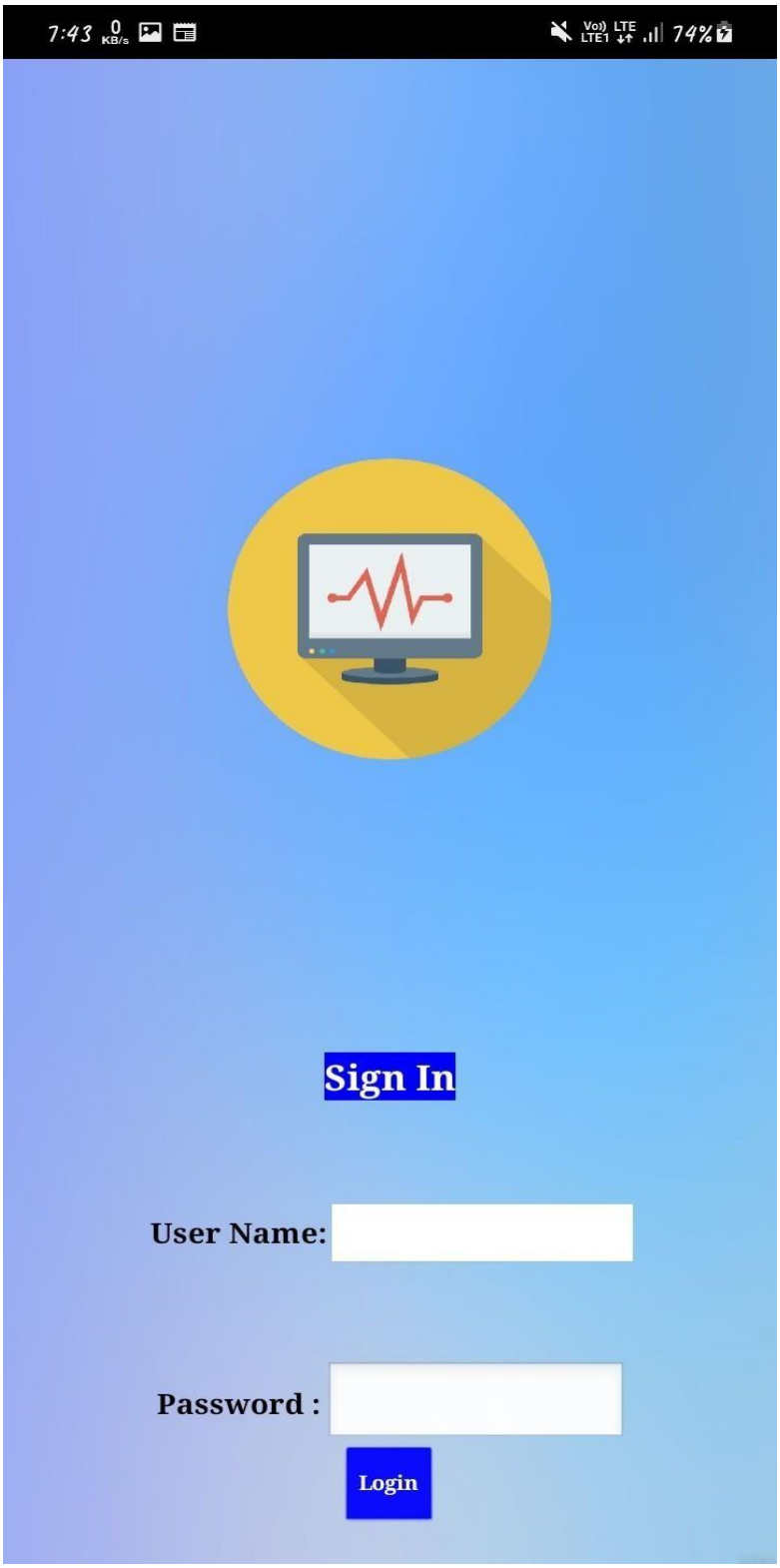
IBM WASTON PLATFORM AND DEVICES:



WEB APPLICATION USING NODE -RED:




7:43
74%
Gas Leakage Monitoring
And Alerting


7:43
74%
Sign In
User Name:
Password :
Login

7:43 6 KB/s 74%

Gas Leakage Monitoring

Dashboard

ZONE 1:

Temperature : 76 °C

Humidity : 82 %

Gas Level : 73 ppm

Pressure : 35 Pa

ZONE 2:

Temperature : 88 °C

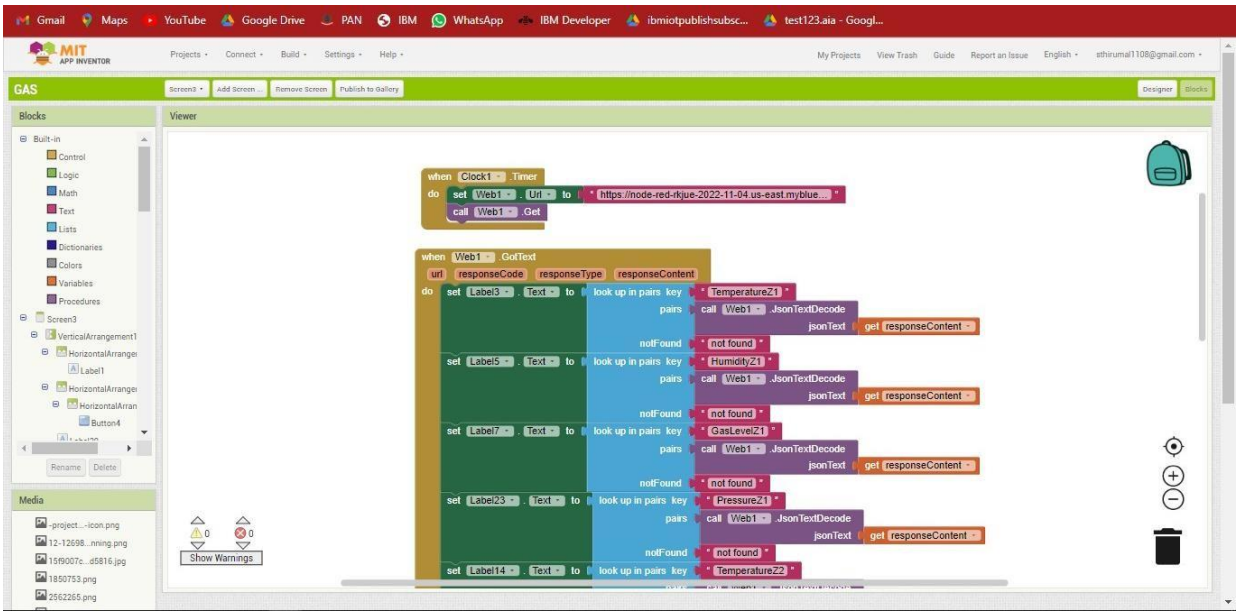
Humidity : 93 %

Gas Level : 47 ppm

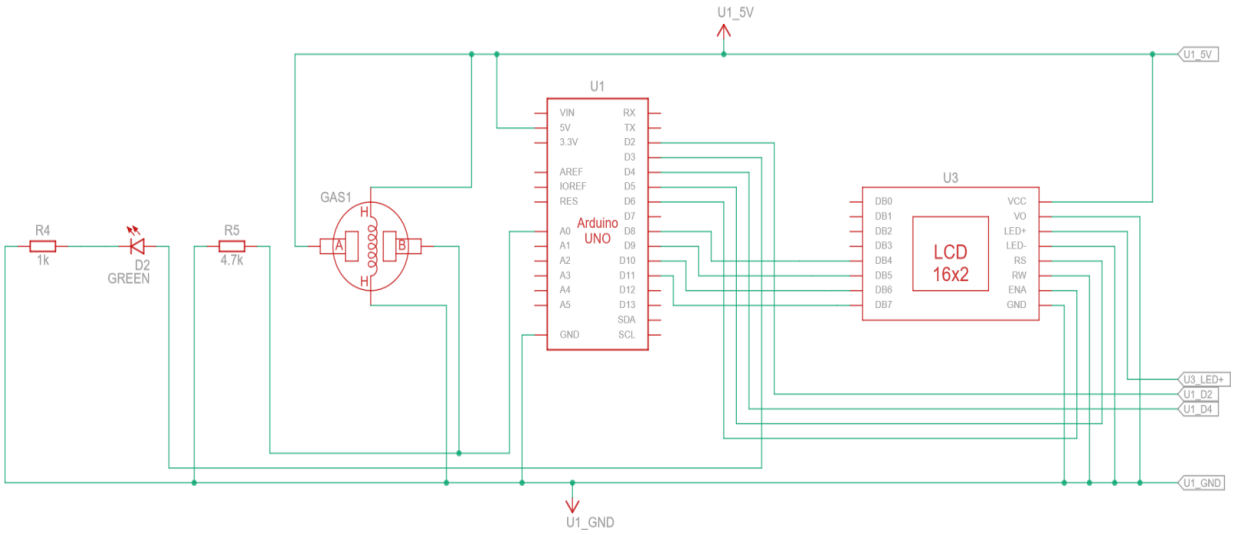
Pressure : 27 Pa

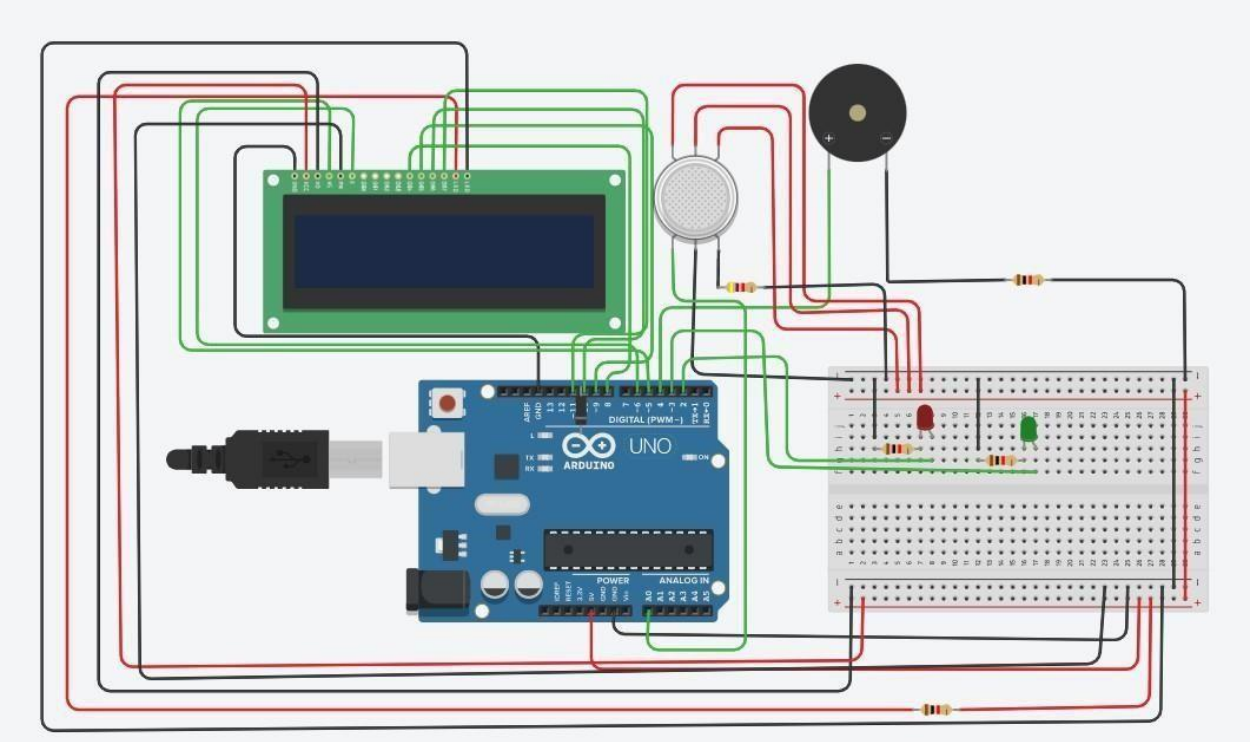
Switch

Sprinkler ON | Sprinkler OFF



CIRCUIT DIAGRAM:





Components:

The designof a sensor-
based automatic gas leakage detectorwith an alert and controlsystem. T
hecomponents are

S. No.	Nameof the Component	Quantity
1.	Arduino UNO R3	1
2.	Breadboard	1
3.	LED	2
4.	Resistor	5
5.	Piezo	1
6.	Gas Sensor	1
7.	LCD (16x2)	1

8.TESTING :

8.1 TEST CASES:

Test Case Analysis

This report shows the number of test cases that have passed,faile d, and untested

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
ClientApplication	51	0	0	51
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final ReportOutput	4	0	0	4
Version Control	2	0	0	2

8.2 USER ACCEPTANCE TESTING:

Purpose of Document

The purposeof this document is to briefly explainthe test coverageand open issuesof the[ProductName] project at the time of the release to User Accepta nce Testing (UAT).

Defect Analysis

This report shows the number of resolved or closed bugs at each severity level,and howthey were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	4	2	3	20
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	24	14	13	26	77

9.RESULT :

9.1PERFORMANCES METRICES:

In this project 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 alerting techniques involving sending text message to the concerned authority and an ability performing data analytics on sensor. This system will be able to detect the gas in environment using the gas sensors. This will prevent form the major harmful proble.

10. ADVANTAGES AND DISADVANTAGES:

Advantages:

1. Low cost
2. Low power consumption
3. High accuracy
4. It also detects alcohol so it is used as liquor tester.
5. The sensor has excellent sensitivity combined with a quick response time.

Disadvantages :

1. No prevention of fires possible with kit.
2. Applicable only as an indicator/alarming device.
3. It works only when at 5V power supply is given.
4. Its sensitivity depends on Humidity and temperature.
5. It is a little sensitive to smoke

11. CONCLUSION:

After this project performance can conclude that the detection of the LPG gas leakage is incredible in the project system. Applicable usefully for industrial and domestic purposes. In dangerous situations, we can save the life by using this system. An alert is indicated by the GSM module. A sensor node senses gas like CO_2, oxygen, and propane. The estimated range of transmission and consumption of power is obtained. The simple procedures and ArduinoUNO Micro controller area used tobuild the sensor.

12. FUTURE SCOPE :

We propose to build the system using an MQ6 gas detection sensor and interface it with an Aurdino Uno microcontroller along with an LCD Display.

Our system uses the gas sensor to detect any gas leakages. The gas sensor sends out a signal to the microcontroller as soon as it encounters a gas leakage. The microcontroller processes this signal and a message is displayed on the LCD to alert the user.

For the first stage project presentation the required research work has been completed and the validation of project has been proved. Hence it can be said that the aim of the project “LPG Gas Detection System Using GSM Module” can be achieved successfully. The further designing and fabrication of the working model will be completed by February 2016. After which the different experiments will be conducted for efficiency improvement.

13. APPENDIX :

SOURCE CODE:

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(5,6,8,9,10,11);

int redled = 2;
int greenled = 3;
int buzzer = 4;
int sensor = A0;
int sensorThresh = 400;

void setup()
{
pinMode(redled, OUTPUT);
pinMode(greenled,OUTPUT);
pinMode(buzzer,OUTPUT);
pinMode(sensor,INPUT);
Serial.begin(9600);
lcd.begin(16,2);
}

void loop()
{
  int analogValue = analogRead(sensor);
  Serial.print(analogValue);
  if(analogValue>sensorThresh)
  {
    digitalWrite(redled,HIGH);
    digitalWrite(greenled,LOW);
    tone(buzzer,1000,10000);
    lcd.clear();
    lcd.setCursor(0,1);
    lcd.print("ALERT");
    delay(1000);
    lcd.clear();
    lcd.setCursor(0,1);
    lcd.print("EVACUATE");
    delay(1000);
```

```
  }
  else
  {
    digitalWrite(greenled,HIGH);
    digitalWrite(redled,LOW);
    noTone(buzzer);
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("SAFE");
    delay(1000);
    lcd.clear();
    lcd.setCursor(0,1);
    lcd.print("ALL CLEAR");
    delay(1000);
  }

}
```

LINK:

GITHUB LINK:
https://github.com/IBM-EPBL/IBM-Project-51286-1660977234

PROJECT DEMO LINK:

IBM WATSON IoT Platfrom:

https://9o9mmj.internetofthings.ibmcloud.com/dashboard/devices/browse

NODE -RED: SERVICES:
https://node-red-ahtsg-2022-11-17.eu-gb.mybluemix.net/red/#flow/aa0f2c1a9539f858

DEMO VIDEO LINK:
https://drive.google.com/file/d/1Gaa0cvOiPFE8hiPkV4piieTr2Lv5llok/view?usp=drivesdk