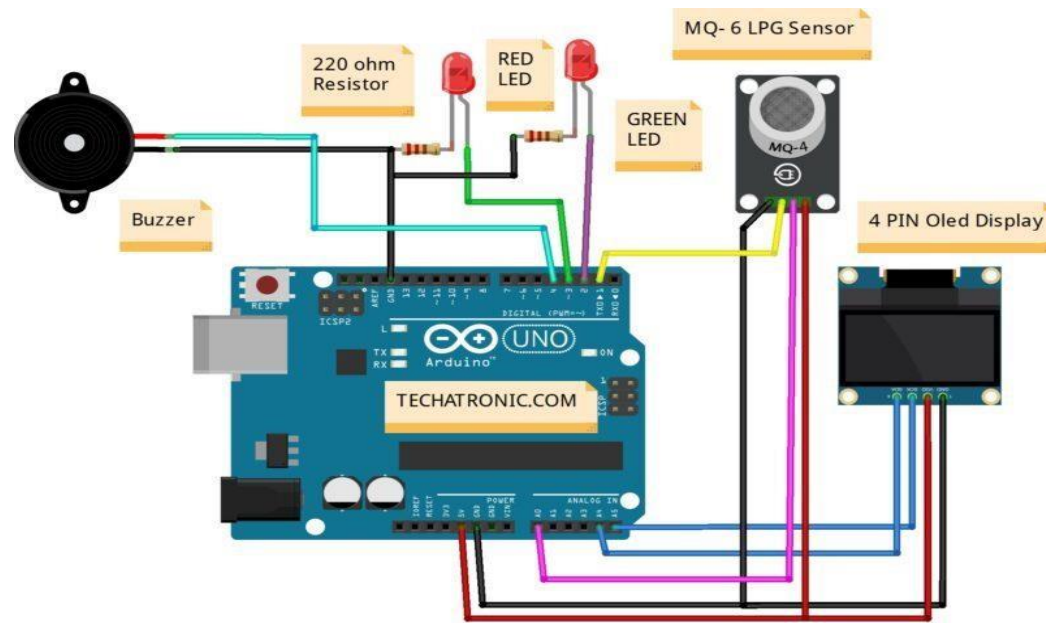


**Project Design Phase-II**  
**Technology Stack (Architecture & Stack)**

Date	03 October 2022
Team ID	PNT2022TMID39853
Project Name	Gas Leakage Monitoring & 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



fritzing Guidelines:

1. Include all the processes (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local)
3. Indicate external interfaces (third party sensor etc.)
4. Indicate AC and DC sources/ Power supply
5. Indicate interface to machine learning models (if applicable)

**Table- 1 : Components & Technologies:**

S.No	Component	Description	Technology
1.	Arduino Pro Mini	The Arduino Pro Mini is <b>a microcontroller board based on the ATmega328P</b>	It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, an on-board resonator, a reset button
2.	BC 547 transistor	BC547 is usually used for <b>current amplifier, quick switching and pulse-width modulation (PWM).</b>	<b>the flow of current will be through the collector terminal.</b>
3.	connecting wires	They possess negligible resistance to the passage of current.	Wires are used for <b>establishing electrical conductivity between two devices of an electrical circuit.</b>
4.	9 volt battery	9V battery capacity last for about four hours with the rechargeable Lithium lasts for 7 to 7.5 hours	power our smoke alarms, household items and toys.
5.	LPG gas sensor module	This sensor is <b>attached to an alarm circuit to give an alert to the operators through a buzzer sound in the area where the gas leak is occurring.</b>	<b>MQ2 gas sensor</b> is used to detect the presence of LPG, Propane and Hydrogen, Methane.
6.	buzzer	which may be mechanical, electromechanical, or piezoelectric (piezo for short).	Typical uses of buzzers and beepers include alarm devices, timers, train and confirmation of user input such as a mouse click or keystroke.
7.	16x2 LCD	A 16x2 LCD means <b>it can display 16 characters per line and there are 2 such lines</b>	In this LCD each character is displayed in 5x7 pixel matrix.

8.	bread board	The term breadboard <b>comes from the early days of electronics, when people would literally drive nails or screws into wooden boards on which they cut bread in order to connect their circuits.</b>	A breadboard (sometimes called a plug block) is used for <b>building temporary circuits.</b>
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**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	<i>Harmful Gas Detection</i>	The sensing of toxic gases such as H <sub>2</sub> S, Methane, and CO is of great importance in any industry to avoid unwanted leakage and consequences like poisoning or explosions.	The sensor-enabled solution helps prevent the high risk of gas explosions and affecting any casualties within and outside the premises.
2.	<i>Fire Hazard Prevention</i>	a gas monitoring solution uses gas analyzers to generate alerts regarding the temperature increase.	This allows the management to take immediate actions to curb harmful fire explosions.
3.	<i>Oxygen Level Measurement</i>	Sensing the presence of gases is a necessity to conduct industrial operations as several pitmen had lost their lives due to lack of oxygen in the process of mining explorations.	Technology used

**References:**

<https://www.biz4intellia.com/blog/applications-and-benefits-of-using-gas-monitoring/>

<https://www.elprocus.com/microcontroller-based-lpg-leakage-detector-circuit-and-working/>