Gas leakage detection and alert system with automatic closing switch

The primary objective of this system is to provide an automated response to gas leaks by notifying users through their mobile devices and simultaneously shutting off the gas supply to prevent further leakage. The system's low-cost, easy-to-install design ensures it can be widely adopted for both residential and industrial use. In addition to real-time detection, the integration of a relay-based automatic closing switch adds an extra layer of safety by preventing accidents when users are not on-site.

The project incorporates a user-friendly mobile interface via the Blynk IoT app, allowing users to monitor gas levels remotely and receive instant alerts when a leak is detected. The system is scalable, offering the possibility of adding more sensors for larger spaces, and is adaptable to different types of gas detectors.

By combining hardware and software components, this project demonstrates the effective use of IoT technology in improving safety standards and reducing the risks associated with gas leaks. The results show that the system is reliable, responsive, and capable of mitigating gas leak hazards in various settings, making it a viable solution for households, commercial kitchens, and industrial environments. One of the most significant features of this project is the inclusion of a relay-controlled automatic closing switch. Upon detecting a gas leak, the system not only alerts the user but also automatically shuts off the gas supply, thus preventing further leakage and reducing the risk of explosions. The system displays gas concentration levels on a 16x2 LCD screen for local monitoring, providing immediate visual feedback to users on-site. This project offers a cost-effective and scalable solution to gas leakage detection, making it suitable for a wide range of applications such as residential homes, commercial kitchens, laboratories, and industrial settings.

Gas leaks are one of the most common and hazardous risks associated with using liquefied petroleum gas (LPG) and other combustible gases. In many

cases, the undetected buildup of gas in an enclosed space can lead to fatal explosions or fires if ignited by a spark. Furthermore, the inhalation of toxic gases can cause significant health issues, including respiratory problems or suffocation. Traditional gas detection systems are often limited to basic alarms that notify the occupants about a gas leak, but these systems lack comprehensive safety measures, such as remote monitoring, real-time alerts, or an automatic shut-off system that could prevent the flow of gas in the event of a leak.

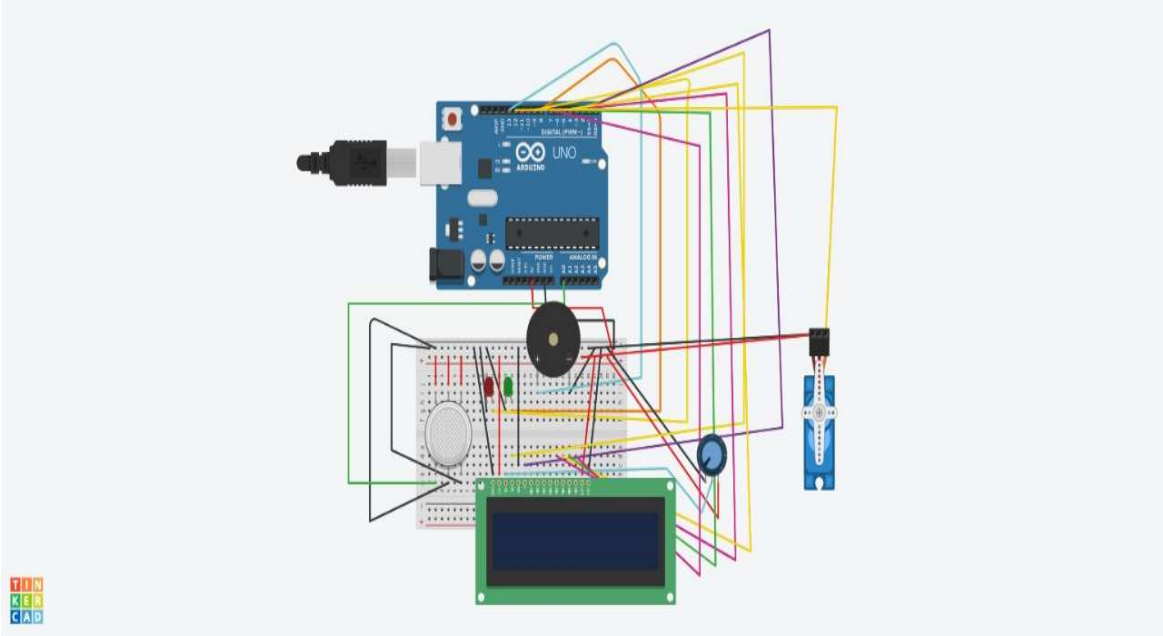
This project addresses the following problems:

1. **Lack of Remote Monitoring**: Many existing systems do not offer real-time alerts or monitoring capabilities for users who are away from the premises, leaving the property vulnerable to gas leaks.
2. **Manual Intervention Required**: In traditional systems, users need to manually turn off the gas supply or contact emergency services in case of a leak, which may not always be feasible, especially if the user is not present.
3. **Delay in Response Time**: Gas leaks need immediate action, and delays in identifying and responding to such leaks increase the likelihood of accidents.
4. **Inaccessibility**: Most sophisticated gas detection systems are expensive and inaccessible to households or small businesses.

This project aims to overcome these challenges by developing a system that:

- Detects gas leaks in real-time.
- Notifies users immediately through a mobile application.
- Automatically shuts off the gas supply to prevent further leakage.

- Circuit Diagram:



1. Results Drawn