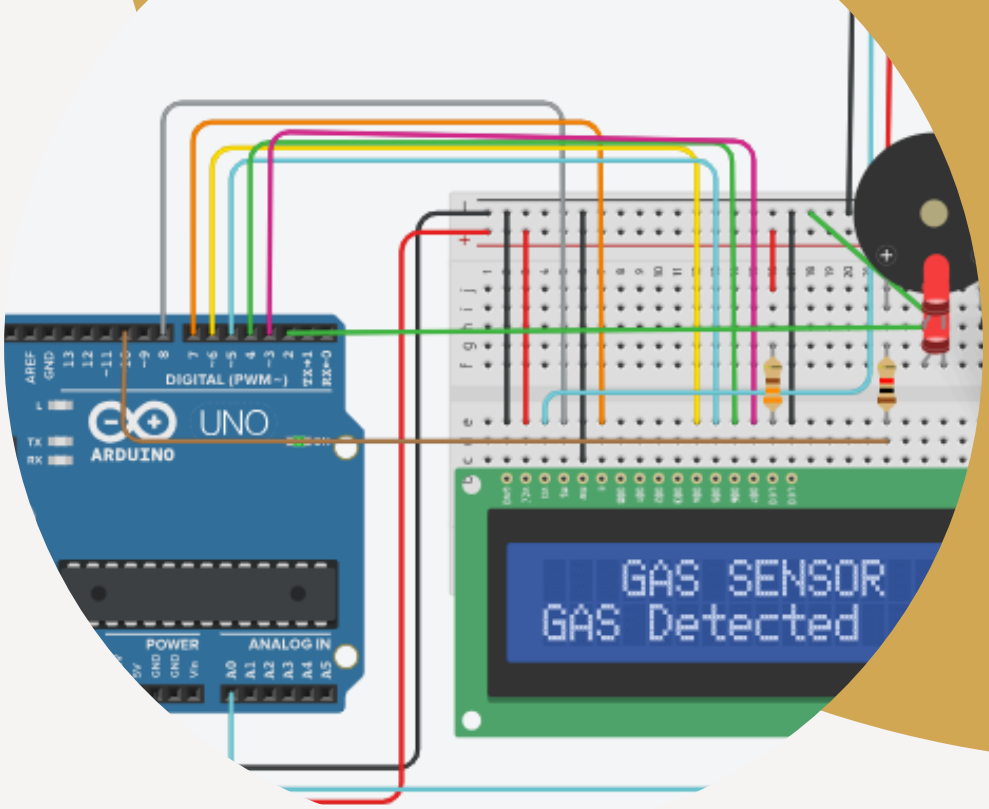
OCTOBER 2023



Project Report

Smart LPG Gas Detection System

MADE BY

UTKARSH KUMAR

utk2312@gmail.com

9761959806

Table of

Content

Project

Abstract

In order to improve safety in home environments, this project presents the development of a robust Arduino Uno gas detection module for Liquefied Petroleum Gas (LPG). The system uses an Arduino Uno microcontroller for real-time processing and control, along with an LCD display, LED indicators, and a buzzer to ensure effective communication of gas leakage, giving users visual and audible alerts.

Because of its modular and user-friendly design, the system can be deployed standalone or integrated into already-existing gas appliances. Its use of Arduino Uno allows for easy customization and expansion, allowing users to add more features for comprehensive gas safety monitoring.

The integration of visual and audio alerts guarantees that users are promptly informed about potential hazards, allowing for timely intervention and mitigating the risks associated with LPG leakage. This project advances smart home safety systems by offering an accessible and affordable solution for LPG gas detection.

Project

Components

- Arduino Uno board
- Gas sensor (MQ 2)
- Buzzer
- LED
- LCD display
- Connecting wires

Project

Introduction

The "LPG Gas Detection Module using Arduino Uno" project aims to address this concern by utilizing the capabilities of Arduino Uno along with the integration of a Buzzer, LED, and LCD display. In modern households, liquefied petroleum gas (LPG) serves as a convenient and widely used energy source for cooking. While LPG is efficient, its potential hazards, such as leaks, pose a serious threat to home safety. A timely and reliable detection system is essential to mitigate these risks and ensure a secure living environment.

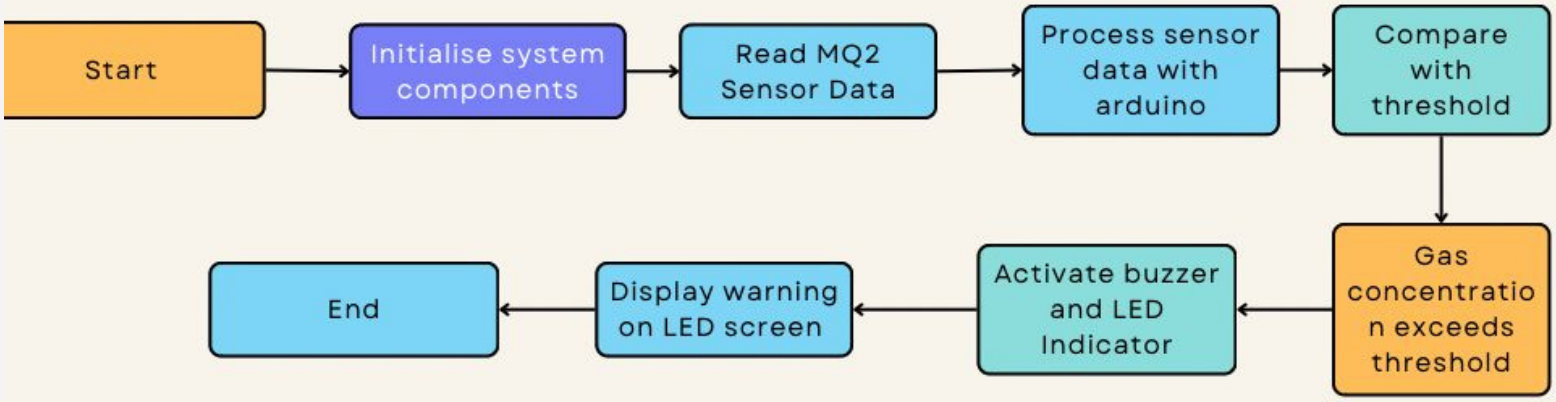
Project

Functionality

1. The LPG gas sensor keeps an eye out for gas concentrations in the surrounding air.
2. The sensor notifies the Arduino Uno when it finds a sizable concentration of LPG.
3. After processing the data, the Arduino turns on the LED and buzzer to provide an instant alert.
4. Quick assessment is facilitated by the LCD panel's simultaneous display of real-time gas concentration information.

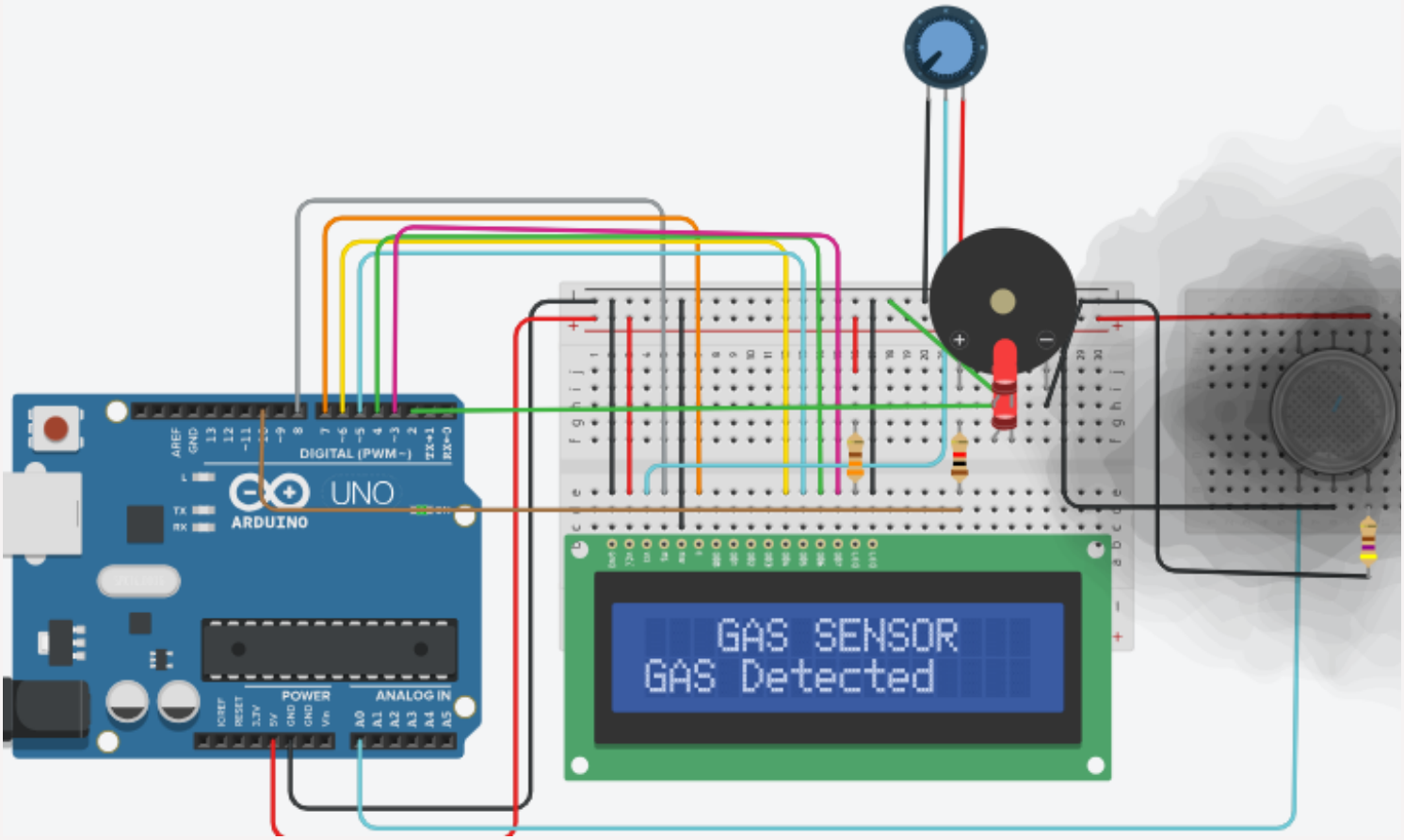
Project

Block Diagram



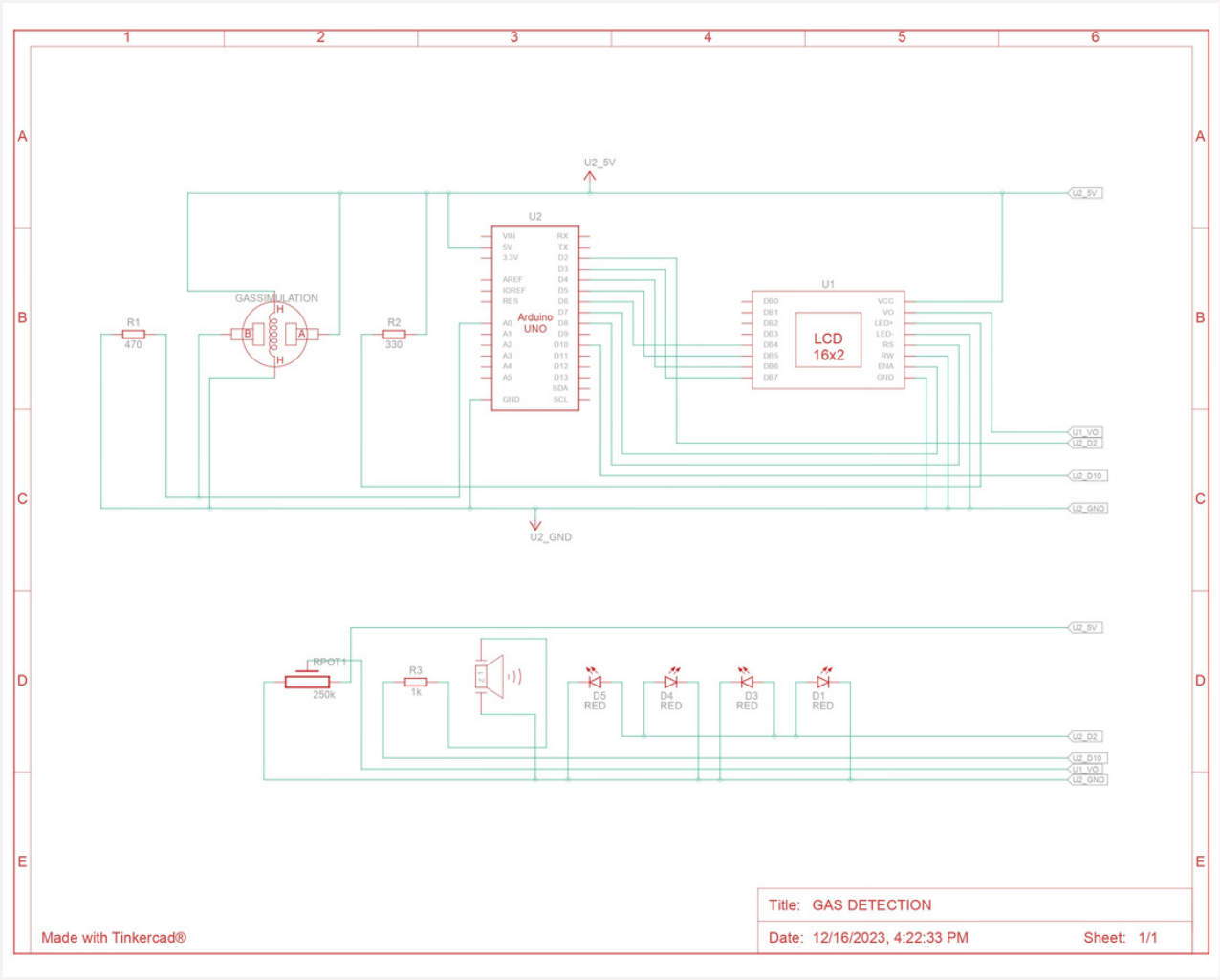
Project

Circuit



Project

Schematic



Project

Benefits

- **Safety:** Prompt identification of LPG leaks guarantees prompt action, averting possible risks and guaranteeing inhabitants' safety.
- **User-Friendly:** Having a real-time LCD display and both visual and audible alerts improves user awareness and speeds up response time.
- **Cost-Effective:** This concept offers a practical and economical way to improve home security without requiring pricey and complicated technologies.

Project

Applications

- **Residential Safety:**
- Installation in kitchens and cooking areas to detect potential gas leaks from stoves or gas cylinders.
- **Commercial Establishments:**
- Integration into restaurants, hotels, and other commercial kitchens to enhance safety during cooking operations.
- Use in industrial canteens and food processing units to monitor gas leaks.
- **Laboratories:**
- Implementation in laboratories where LPG is used as a fuel for Bunsen burners and other applications.

and many more

Project

Conclusion

To sum up, the "LPG Gas Detection Module using Arduino Uno" project leverages the capabilities of Arduino technology in conjunction with sensory modules and user interface elements to produce a dependable, approachable, and reasonably priced solution for protecting homes from LPG gas leaks.

Contact Information

Address ABES ENGINEERING COLLEGE

LinkedIn http://www.linkedin.com/in/utkarsh-kumar-59086927b

Phone 9761959806

Simulation https://www.tinkercad.com/things/ars5puY0ME2-gas-detection?sharecode=WWYmLmm6YnAF8Jsjc3qhxv1d_i3a3tW6nx8Q7zGY-hE

"Guarding homes with intelligence, our Smart LPG Gas Detection System brings safety to the forefront, ensuring a vigilant shield against potential dangers in every breath we take."

Project

Reference

1. **Arduino Official Website:**
   - Arduino. (n.d.). Arduino - Home. https://www.arduino.cc/
2. **MQ2 Sensor Datasheet:**
   - SparkFun Electronics. (n.d.). MQ-2 Gas Sensor Hookup Guide. https://learn.sparkfun.com/tutorials/mq-2-gas-sensor-hookup-guide
3. **Tinkercad Online Simulator:**
   - Tinkercad. (n.d.). Tinkercad - From mind to design in minutes. https://www.tinkercad.com/
4. **LCD (Liquid Crystal Display) Tutorial:**
   - Arduino. (n.d.). LiquidCrystal Library - Arduino Reference. https://www.arduino.cc/en/Reference/LiquidCrystal
5. **Buzzer Tutorial:**
   - Arduino. (n.d.). ToneMelody. https://www.arduino.cc/en/Tutorial/ToneMelody
6. **LED Tutorial:**
   - Arduino. (n.d.). Blink. https://www.arduino.cc/en/Tutorial/Blink
7. **Arduino Programming Guide:**
   - Arduino. (n.d.). Arduino Reference. https://www.arduino.cc/reference/en/