A
Practical Activity Report
Submitted for

ENGINEERING DESIGN-II (UTA014)

Assignment-2

Report

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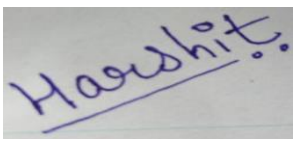
Abstract:

This Report contains solution to Assignment 2 of CSED department (UTA014) where we were supposed to write an Arduino based program and execute it through simulator from the given 24 topics. This report contains all the information about Topic Number "22" i.e. "CNG/LPG Gas Accident Prevention System." Basically, this LPG Gas Accident Prevention System is designed to prevent any accident caused due to its leakage. Here MQ5 Gas sensor is used, which detects the leakage of gas. As soon as gas is detected by sensor, then there is alert sound through buzzer (Piezo) and an alert via Red LED. Also LCD displays the message of Alert & Evacuate.

Declaration:

I, the undersigned Harshit Garg (101954011), student of ELE-5 batch from Electrical Engineering Branch (BE Second Year) here by declare that the Report represented for Assignment 2 is my own work and has not been copied from other students.



Signature of Student

Objective:

To write an Arduino based program of CNG/LPG Gas Leakage Accident Prevention System and execute the program through simulator.

Hardware Used:

Arduino UNO R3, Breadboard, LEDs (Red & Green), MQ5 gas sensor, LCD Display, Resistors, PIR Sensor, Connecting wires.

Software Used:

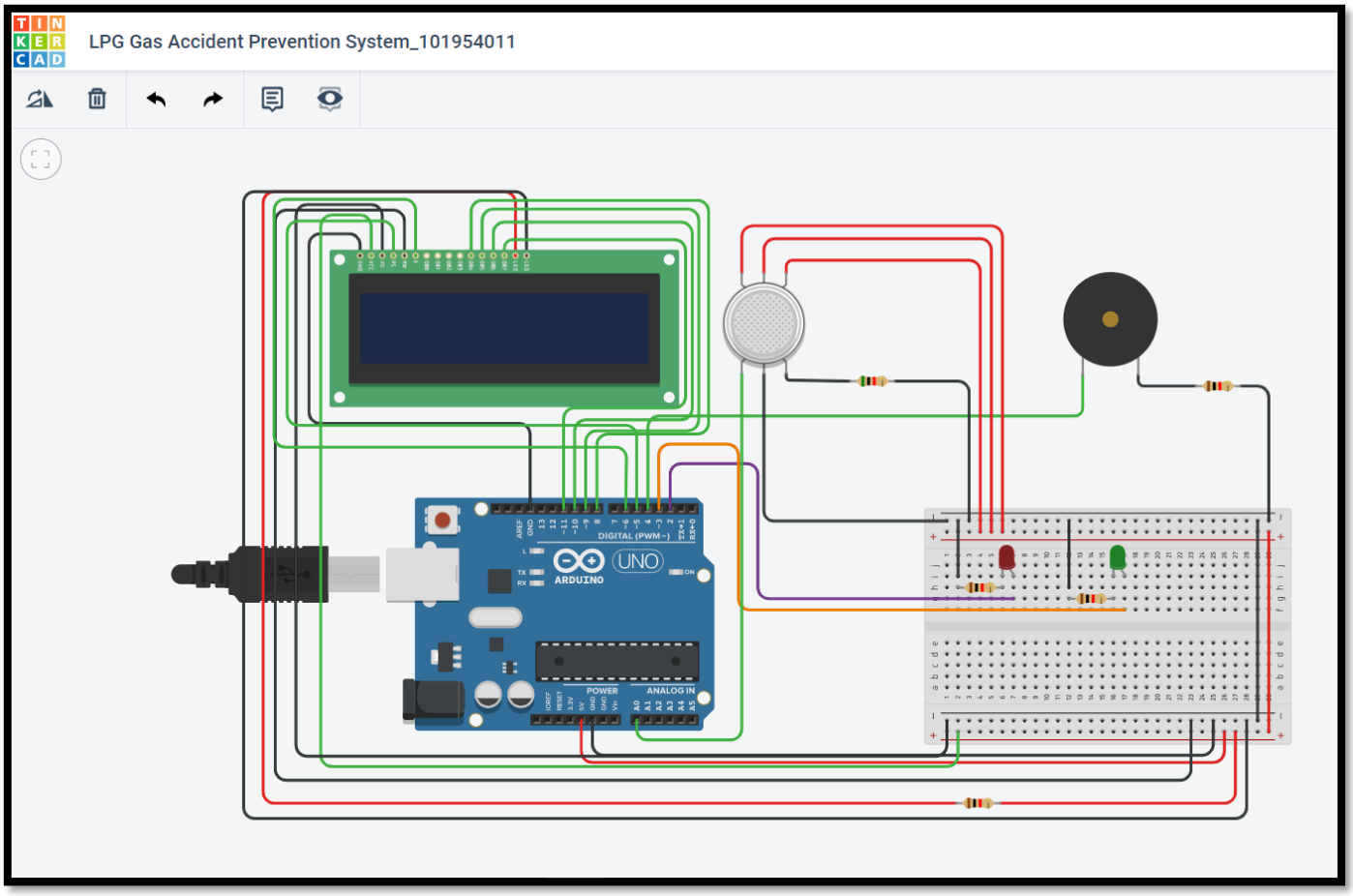
Autodesk Tinkercad

Theory:

Liquefied petroleum gas (LPG), is a flammable mixture of hydrocarbon gases used as fuel in heating appliances, cooking equipment, and vehicles. It is increasingly used as an aerosol propellant and a refrigerant, replacing chlorofluorocarbons in an effort to reduce damage to the ozone layer. When specifically used as a vehicle fuel it is often referred to as Autogas.

Basically, all the detectors in the market today are constructed using microcontrollers like Arduino Uno R3, ATmega328 etc. due to their features like 32 KB flash memory, 2 KB SRAM, High clock speed of 16 MHz etc. For designing purpose of the Gas Sensors especially the LPG gas sensors, we use MQ5 sensor due to its high detection concentration i.e. 400-10000 ppm, High Sensitivity, Stable performance, Long life, Low cost.

Logic/Circuit Diagram:



Video Link:

https://drive.google.com/drive/folders/1cfvK030tZc8O4eKsMEeLFAfM_eb5WBqX?usp=sharing

Result Analysis:

CNG/LPG gas accident prevention system was successfully designed using the Tinker Cad software and the simulation was explained through the video, of which link is provided and the other explanation is provided in the report.