KAMPUS CAWANGAN

MALAYSIAN SPANISH INSTITUTE

STB36403

INTERNET OF THINGS (IOT) TECHNOLOGY

Hazardous Gas Detection TinkerCad

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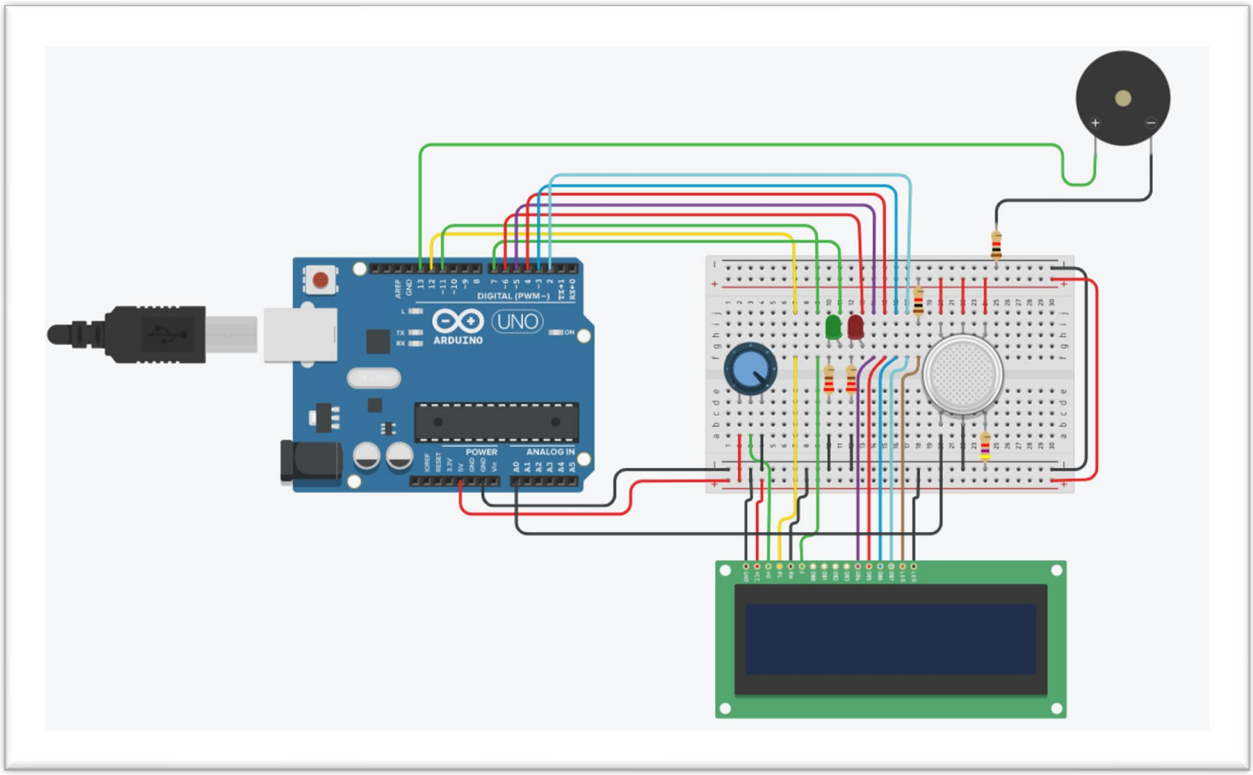
ENCIK AZNIZAM BIN ABDULLAH

NAME	NO.ID	COURSE
KHAIRUL ANWAR BIN KHAIRUL SALLEH	54215121186	BET AE

1. Introduction

Hazardous gas detection is a critical aspect of industrial safety and environmental monitoring. The project implemented in TinkerCad aims to showcase a virtual prototype of a gas detection system. This system employs gas sensors to monitor the ambient air quality and detect the presence of harmful gases. The simulation provides an interactive and illustrative way to understand the functioning of gas detection systems and their significance in preventing accidents and ensuring workplace safety.

2. Circuit Diagram Layout Diagram



3. Source Code with Comments

```
#include <math.h>                       // Include the math library for mathematical functions
#include <LiquidCrystal.h>              // Include the LiquidCrystal library for interfacing with LCDs

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);      // Initialize an LCD object with pin connections

int sensorval = A0;                     // Analog pin for gas sensor
int GreenLed = 7;                       // Digital pin for green LED
int RedLed = 6;                         // Digital pin for red LED
int buzzer = 13;                        // Digital pin for buzzer
int delay1 = 1000;                      // Delay duration for buzzer

void setup()
{
  pinMode(sensorval, INPUT);            // Set gas sensor pin as input
  Serial.begin(9600);                   // Initialize serial communication for debugging

  pinMode(RedLed, OUTPUT);              // Set red LED pin as output
  pinMode(GreenLed, OUTPUT);            // Set green LED pin as output
  pinMode(buzzer, OUTPUT);              // Set buzzer pin as output
  lcd.begin(16, 2);                     // Initialize the LCD with 16 columns and 2 rows
}

void loop()
{
  sensorval = analogRead(A0);           // Read analog value from gas sensor
  Serial.println(sensorval);            // Print sensor value to Serial Monitor

  if (sensorval < 400)
  {
    lcd.setCursor(2, 0);
    lcd.print(sensorval);
    lcd.println("ppm");

    lcd.setCursor(2, 1);
    lcd.println("OK");

    digitalWrite(GreenLed, HIGH);       // Turn on green LED
    digitalWrite(RedLed, LOW);          // Turn off red LED
  }
  else
  {
    lcd.setCursor(2, 0);
    lcd.print(sensorval);
    lcd.println("ppm");

    lcd.setCursor(2, 1);
    lcd.println("Gas Leak.DANGER");

    digitalWrite(RedLed, HIGH);         // Turn on red LED
    digitalWrite(GreenLed, LOW);        // Turn off green LED

    tone(buzzer, 500, delay1);          // Activate buzzer
    delay(delay1);
  }
```

4. Circuit link

Link: *https://www.tinkercad.com/things/1K2wlkzHSJx-hazardous-gas-detection-tinkercad?sharecode=_JRx7BJnCaji8QnQZxSepNkZ0KosgEriSloM-TAAc0A*