University of Engineering & Management, Kolkata

Department of Computer Application

Stream: BCA

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Air Pollution Monitoring System

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Synopsis :-

This system will help us to monitor the air quality. If there is a sensitive person this system will help him/her to warn about the air quality.
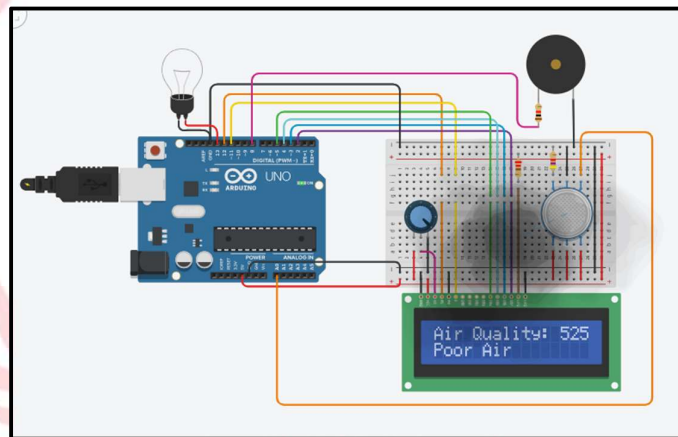
Features :-

- This system can detect NH3, NOx, Alcohol, Benzene, smoke, CO_2 and some other gases.

- This project is budeget friendly.

- This project is very simple to build.
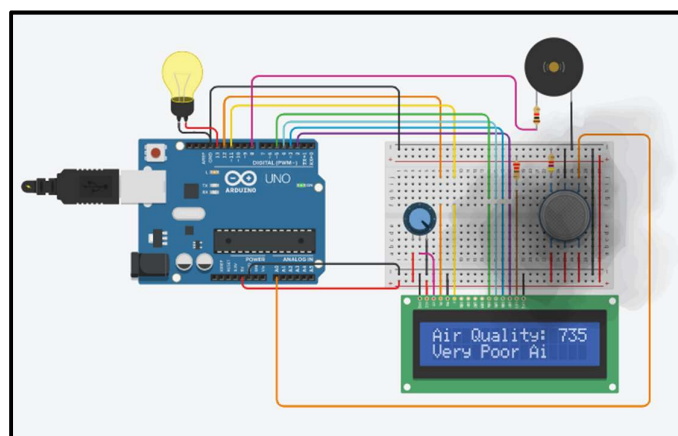
Working Principle :-

1. When this GAS sensor detect 0-500 then air quality is Fresh.
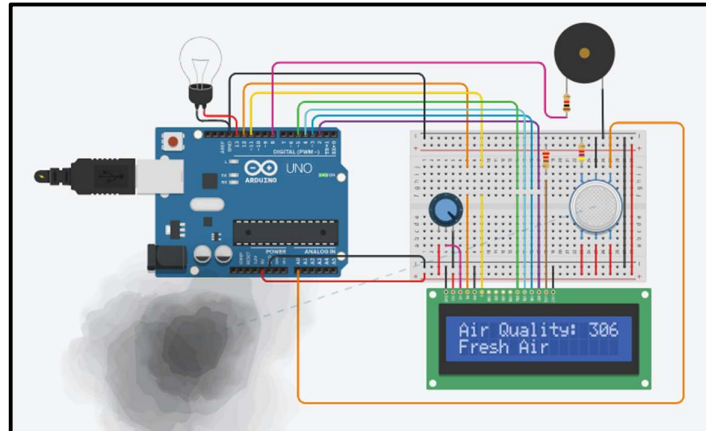
2. When this GAS sensor detect 500-700 then air quality is Poor.

3. When this GAS sensor detect 700+ then air quality is Very Poor also light up the Bulb and activate the Buzzer.
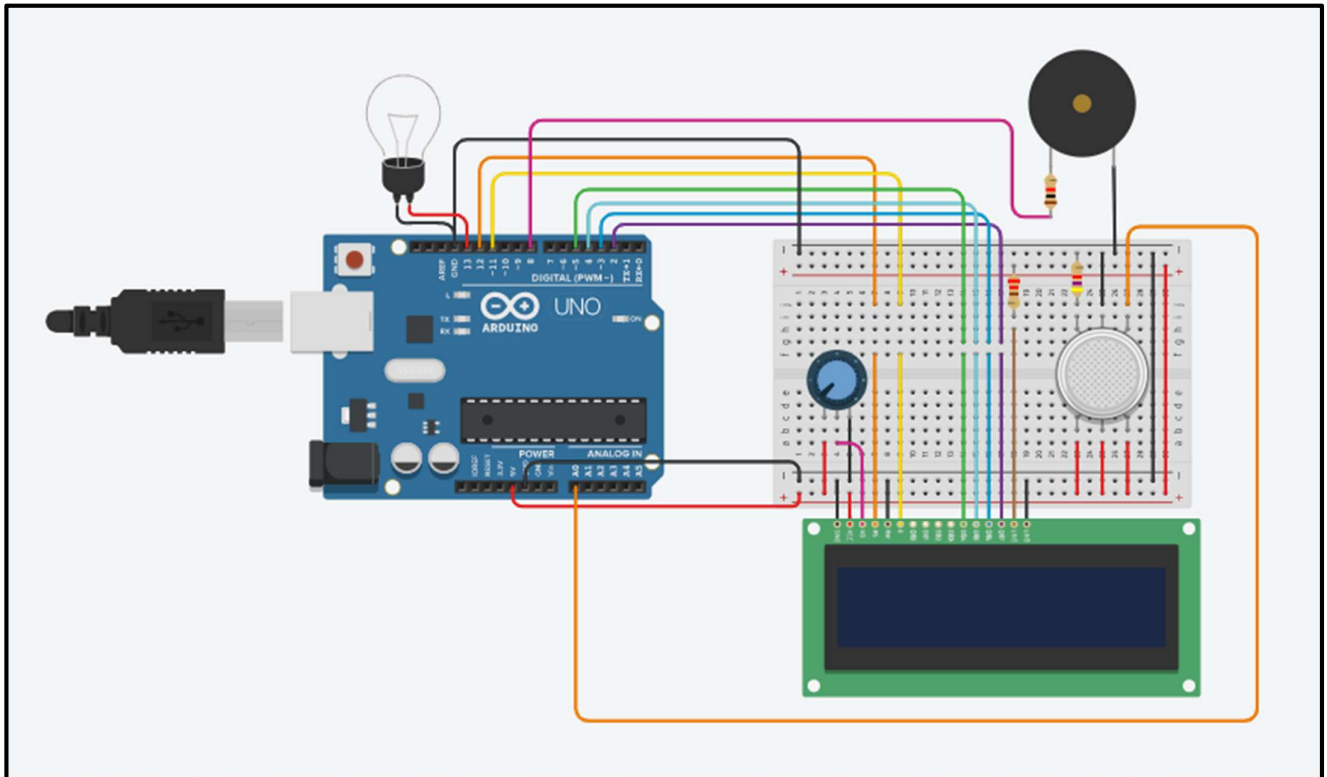
Components :-

- 1 X Arduino Uno R3
- 1 X LCD 16 x 2
- 1 X 220 Ω Resistor
- 1 X 4.7 kΩ Resistor
- 1 X 10 kΩ Potentiometer
- 1 X Piezo (Buzzer)
- 1 X 1 kΩ Resistor
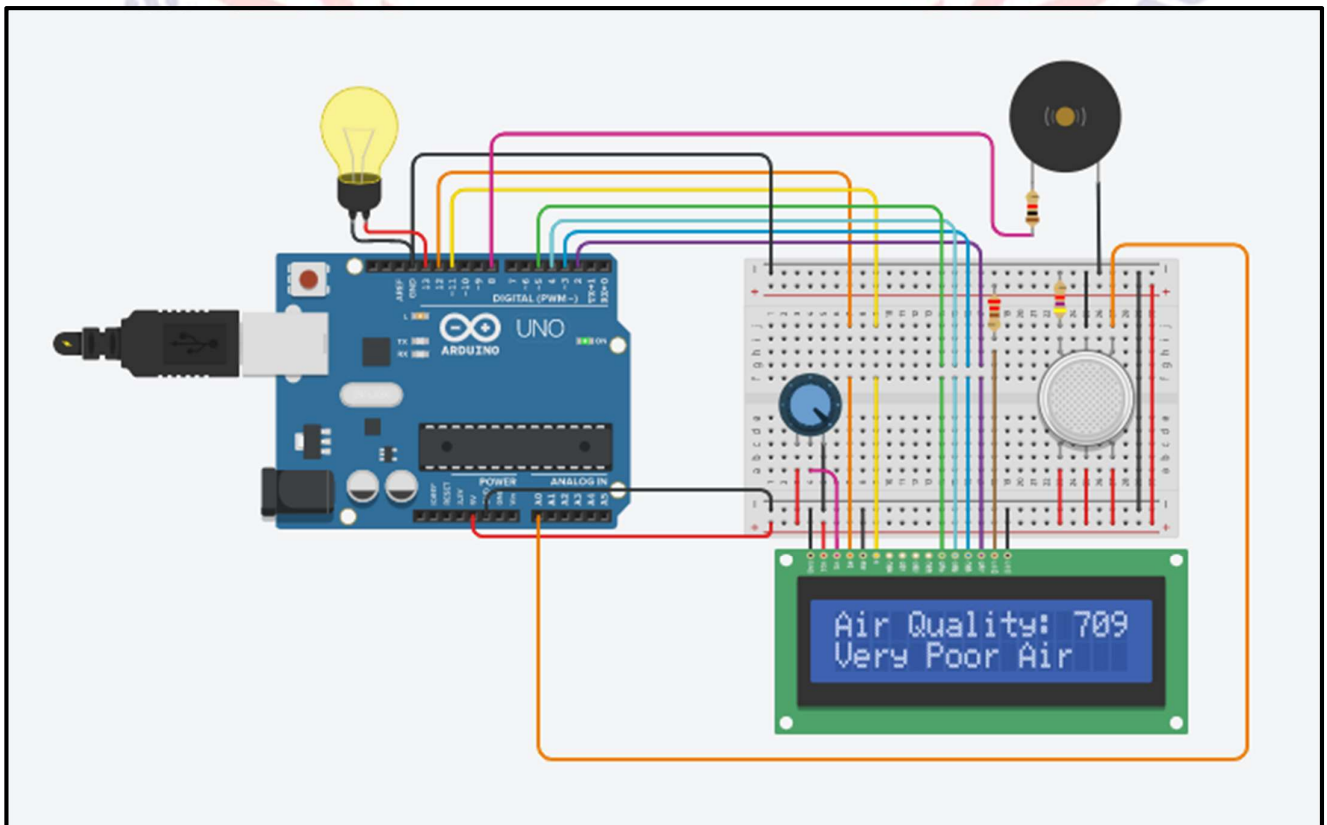- 1 X MQ-135 Gas Sensor
- 1 X Light bulb
- 32 X Jumper Ware

Circuit Diagram :-

- ## Before Run :-

- ## After Run :-

Code :-

```cpp
#include <LiquidCrystal.h>

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

int buzzer = 8;
int analogPin = A0;
int sensorValue = 0;
int bulb=13;

void setup() {
  pinMode(analogPin, INPUT);
  pinMode(buzzer, OUTPUT);
  pinMode(bulb, OUTPUT);
  lcd.begin(16, 2);
  lcd.print("What is the air ??  ");
  lcd.print("quality today?");
  Serial.begin(9600);
  lcd.display();
}

void loop() {

  delay(1000);
  sensorValue = analogRead(analogPin);
  Serial.print("Air Quality in PPM = ");
  Serial.println(sensorValue);

  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print ("Air Quality: ");
  lcd.print (sensorValue);

  if (sensorValue<=500)
   {
   Serial.print("Fresh Air ");
   Serial.print ("\r\n");
   lcd.setCursor(0,1);
   lcd.print("Fresh Air");
   }
  else if( sensorValue>=500 && sensorValue<=700 )
   {
   Serial.print("Poor Air");
   Serial.print ("\r\n");
   lcd.setCursor(0,1);
   lcd.print("Poor Air");
   }
  else if (sensorValue>=700 )
   {
   Serial.print("Very Poor Air");
```

```
    Serial.print ("\r\n");
    lcd.setCursor(0,1);
    lcd.print("Very Poor Air");
    }

  if (sensorValue >650) {
    digitalWrite(buzzer, HIGH);
    digitalWrite(bulb, HIGH);
  }
  else {
    digitalWrite(buzzer, LOW);
    digitalWrite(bulb, LOW);
  }
}
```

Drawbacks :-

- We can't use this system while we are out side of our home . We can only monitor air quality by physical approach.
- This device is not portable .
- This system is unable to detect Carbon monoxide(CO) which is a very harmful gas.

Solution :-

- If we use ESP 32 module then we can monitor our device remotely.
- We can solve portability problem by using a 12volt battery.
- To solve CO detecting problem we need to use MQ-9 gas sensor.

Link To The Project :-

https://www.tinkercad.com/things/a5bwKKbkE6X-air-pollution-monitoring-system-/editel?sharecode=yt0jfI0HT5_pf2qwC4hDpn8J8gxoGx5DmOoDpsAaMEE