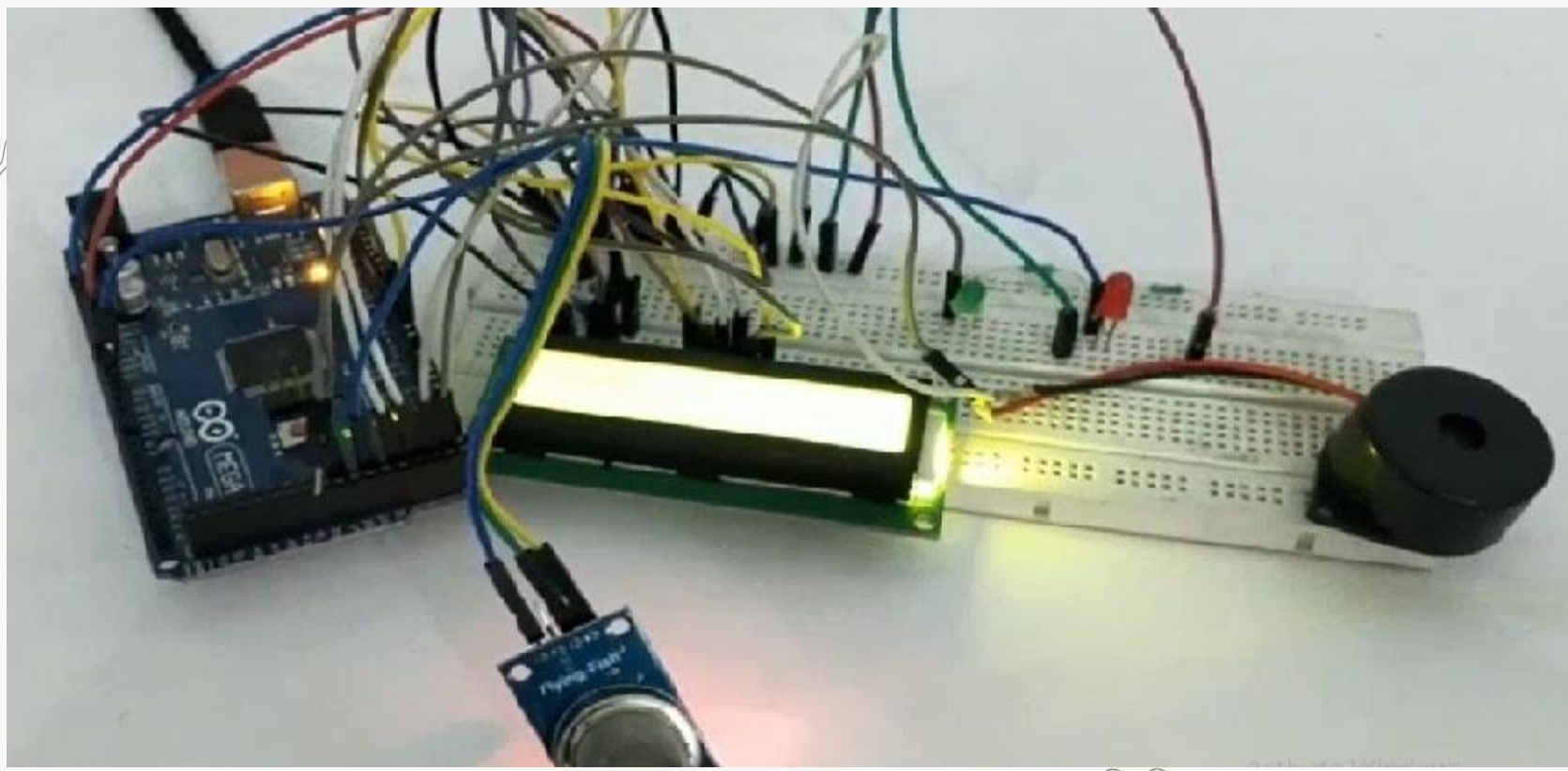


Pollution Detector



Air Quality Sensor(MQ-135)

MQ135 Gas Sensor module for Air Quality having Digital as well as Analog output. Sensitive material of MQ135 gas sensor is SnO₂, which with lower conductivity in clean air. When the target combustible gas exist, The sensors conductivity is more higher along with the gas concentration rising. MQ135 gas sensor has high sensitivity to Ammonia, Sulphide and Benze steam, also sensitive to smoke and other harmful g
suitable for different applicat



Working of MQ135 (Air Quality Sensor)

- The MQ-135 gas sensor senses the gases like ammonia nitrogen, oxygen, alcohols, aromatic compounds, sulfide and smoke.
- MQ-135 gas sensor can be implemented to detect the smoke, benzene, steam and other harmful gases. It has potential to detect different harmful gases.
- The MQ-135 Gas sensor consists of a tin dioxide (SnO_2), a perspective layer inside aluminium oxide micro tubes (measuring electrodes) and a heating element inside a tubular casing.
- The end face of the sensor is enclosed by a stainless steel net and the back side holds the connection terminals.

Working of MQ135 (Air Quality Sensor)

- Ethyl alcohol present in the breath is oxidized into acetic acid passing through the heat element. With the ethyl alcohol cascade on the tin dioxide sensing layer, the resistance decreases.
- By using the external load resistance the resistance variation is converted into a suitable voltage variation.

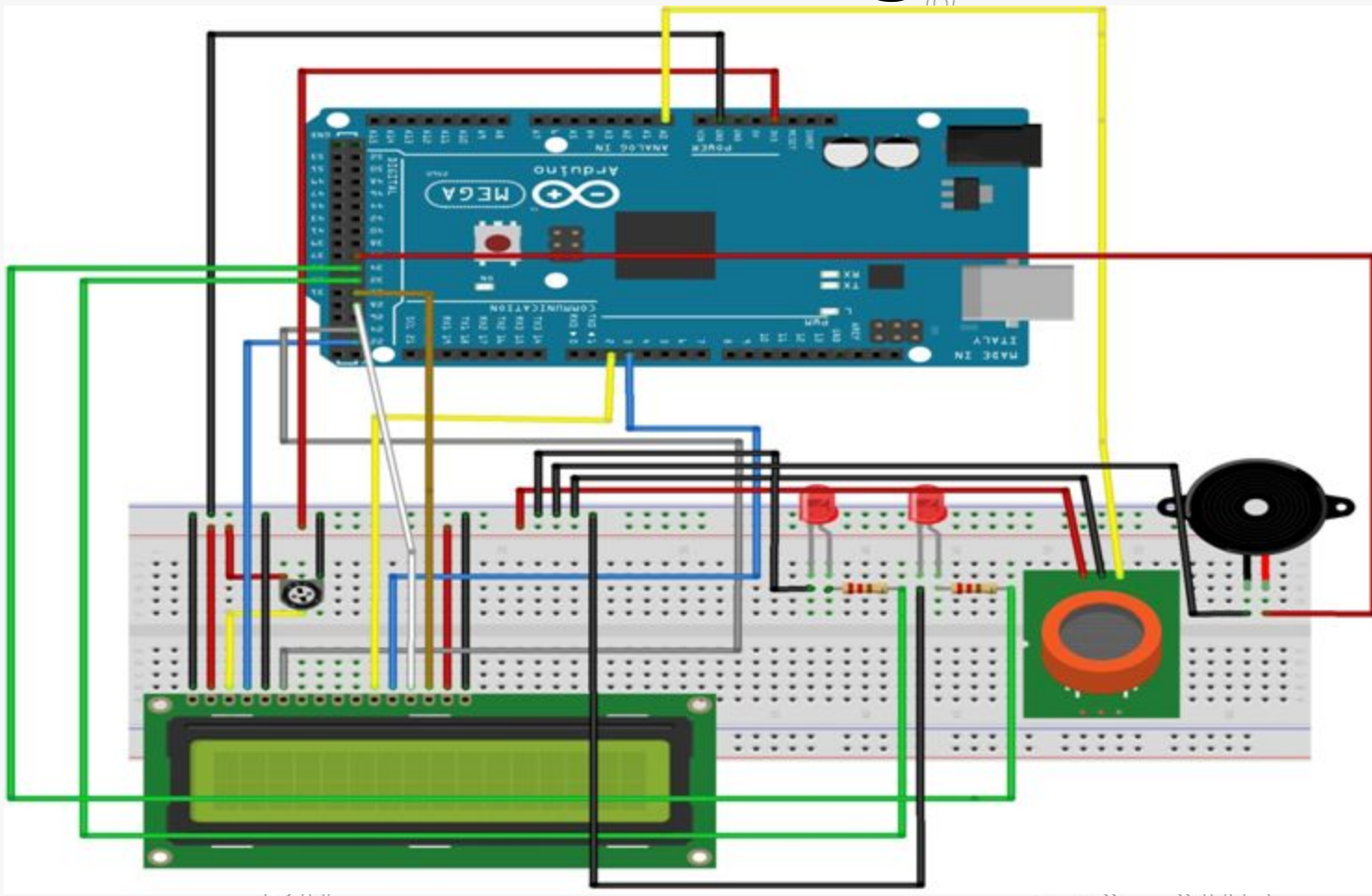
Working of project

Basically in this project we have interfaced Air quality sensor with Arduino Mega to check the level of smoke(impurities) in the environment which has been shown on 16x2 LCD display. At normal level, green led will glow and as the smoke level increases, red led will glow and alert will create through buzzer.

Components required

- Arduino Mega
- MQ-135
- Big buzzer
- LEDs
- Resistors(220ohm)
- Breadboard
- Jumper wires
- 16x2 LCD
- Potentiometer

Connection Diagram

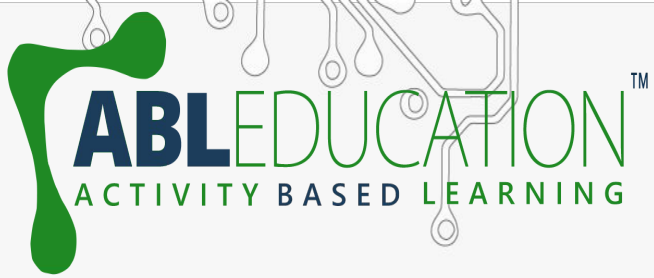


MQ135 sensor and other connections :

- Connect Ao pin of MQ135 sensor with Ao pin of Arduino Mega.
- Connect Vcc and GND(ground) pin of MQ135 sensor with Arduino's 5V and GND respectively.
- Connect LED 1 positive with 32 pin of Arduino and LED's negative with GND of Arduino.(Connect resistor of 220 ohms)as shown in interfacing circuit.
- Connect LED 2 positive with 34 pin of Arduino and LED's negative with GND of Arduino .(Connect resistor of 220 ohms)as shown in interfacing circuit.
- Connect buzzer's positive with 36 pin of Arduino and buzzer's negative with GND of Arduino.

Connections for LCD :

- PIN₁ or VSS to ground
- PIN₂ or VDD or VCC to +5v power
- PIN₃ or VEE to potentiometer (gives maximum contrast best for a beginner)
- PIN₄ or RS (Register Selection) to PIN₂₂ of ARDUINO
- PIN₅ or RW (Read/Write) to ground
- PIN₆ or E (Enable) to PIN₂₄ of ARDUINO
- PIN₁₁ or D₄ to PIN₂ of ARDUINO
- PIN₁₂ or D₅ to PIN₃ of ARDUINO
- PIN₁₃ or D₆ to PIN₂₈ of ARDUINO
- PIN₁₄ or D₇ to PIN₃₀ of ARDUINO
- PIN₁₅ or A to +5V of ARDUINO
- PIN₁₆ or K to GND of ARDUINO



Code

pollution_detector | Arduino 1.8.19

File Edit Sketch Tools Help



pollution_detector

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(22,24,2,3,26,28);

int redLed = 32;
int greenLed = 34;
int buzzer = 36;
int smokeA0 = A0;
// Your threshold value
int sensorThres = 400;

void setup() {
  pinMode(redLed, OUTPUT);
  pinMode(greenLed, OUTPUT);
  pinMode(buzzer, OUTPUT);
  pinMode(smokeA0, INPUT);
  Serial.begin(9600);
  lcd.begin(16,2);
}

void loop() {
  int analogSensor = analogRead(smokeA0);

  Serial.print("Pin A0: ");
  Serial.println(analogSensor);
  lcd.print("Smoke Level:");
  lcd.print(analogSensor-50);
  // Checks if it has reached the threshold value
  if (analogSensor > 500) {
    digitalWrite(redLed, HIGH);
    digitalWrite(greenLed, LOW);
    digitalWrite(buzzer, HIGH);
  } else {
    digitalWrite(redLed, LOW);
    digitalWrite(greenLed, HIGH);
    digitalWrite(buzzer, LOW);
  }
}
```

pollution_detector | Arduino 1.8.19

File Edit Sketch Tools Help



pollution_detector

```
void loop() {
  int analogSensor = analogRead(smokeA0);

  Serial.print("Pin A0: ");
  Serial.println(analogSensor);
  lcd.print("Smoke Level:");
  lcd.print(analogSensor-50);
  // Checks if it has reached the threshold value
  if (analogSensor-50 > sensorThres)
  {
    digitalWrite(redLed, HIGH);
    lcd.setCursor(0, 2);
    lcd.print("Alert....!!!");
    digitalWrite(12, LOW);
    tone(buzzer, 1000, 200);
  }
  else
  {
    digitalWrite(redLed, LOW);
    digitalWrite(greenLed, HIGH);
    lcd.setCursor(0, 2);
    lcd.print(".....Normal.....");
    noTone(buzzer);
  }
  delay(500);
  lcd.clear();
}
```

Project Link : <https://youtu.be/q8mjT8qvMos>