

## **EXPERIMENT NO :-10**

**Title:** -Mini Project.

**Aim:**-Report preparation of mini project.

# **Smoke and Gas Detector System Using Arduino UNO**

### **Introduction :-**

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards can read digital & analog inputs from the sensors and The MQ2 smoke sensor is sensitive to smoke gases like LPG, Butane, Propane, Methane, Alcohol, Hydrogen.

In this project, We will learn how can we make a Smoke Detector Alarm using Arduino. When the MQ2 Gas Sensor will detect the smoke level high, the buzzer will start and the smoke level is low , the buzzer will stop. The MQ2 gas sensor detects the level of smoke in the environment and sends the analog value to the Arduino. which compares the value with the standard value if the value is higher, Arduino sends the signal to the buzzer and the buzzer will be started.

### **Working :-**

As soon as the system is powered, the sensor starts giving output according to the smoke present. It gives the output in the form of a number.

We set the threshold for a smoke at 400. So as soon as the sensor gives output higher than 400, the system triggers the condition that smoke is detected.

Now in this condition, the Arduino board sends the signal to the buzzer to make noise and it will send the signal to light up the red led.

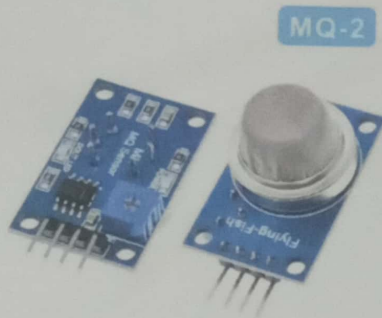
As soon as the smoke value falls below the threshold, the condition will be lifted and the Arduino board will send the signal to light up the green led and the buzzer will stop.

### **Theory:-**

### MQ-2 Sensor

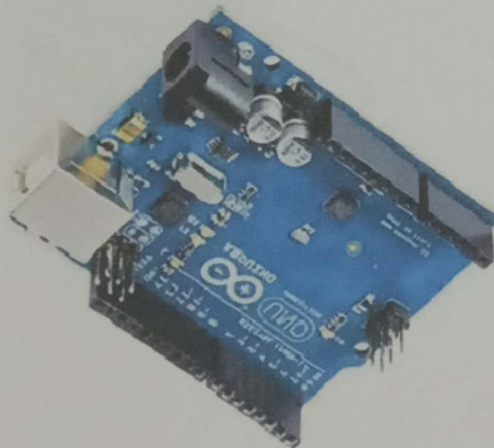
MQ-2 sensor is a smoke and flammable gas sensor which can detect LPG, methane, propane, butane, alcohol, and hydrogen. The sensor has a built-in sensing material that changes its resistance depending upon the type of gas it detects. This type of sensor is also called chemiresistors.

This sensor also has a potentiometer on its back which can be adjusted according to the sensitivity required.



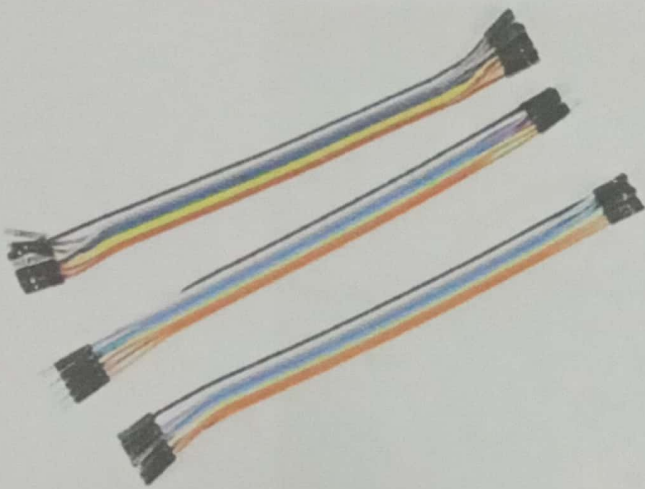
### Arduino UNO:

Arduino is an open-source electronics platform based on easy-to-use hardware and software. The Arduino UNO is the best board to get started with electronics and coding. The UNO is the most used and documented board of the whole Arduino family.



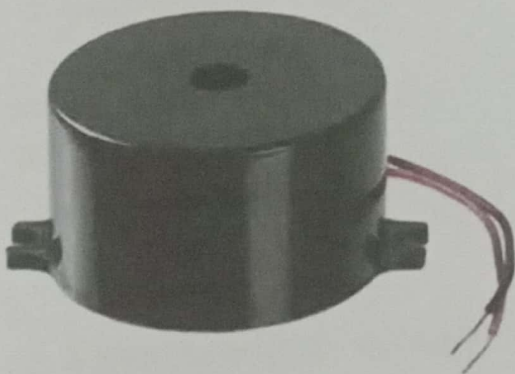
### Jumpers Wires:

It is an electrical wire having connector (pin) at each end which is used for connecting the components. There is no need of soldering if one is using the breadboard for making connections between components in their project.

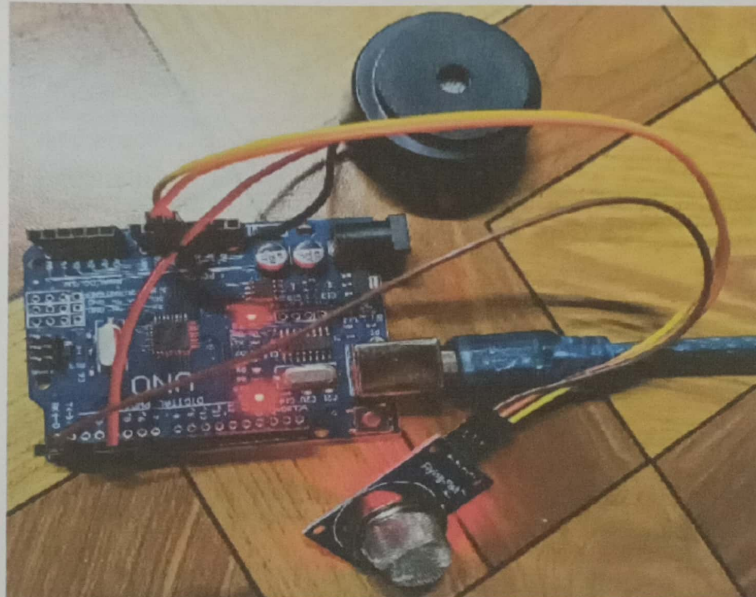


### **Buzzer:**

An audio signaling device like a beeper or buzzer may be electro mechanical or piezoelectric or mechanical type. The main function of this is to convert the signal from audio to sound.



## Circuit Diagram:-

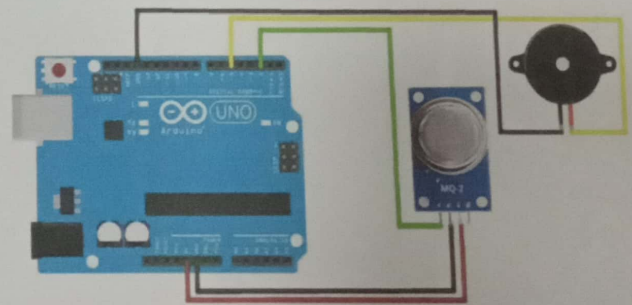


Arduino

code

:-

```
void setup()
{
  pinMode(5,OUTPUT);
  pinMode(2, INPUT);
}
void loop()
{
  if( digitalRead(2)==LOW)
  {
    digitalWrite(5, HIGH);
    delay(1000);
  }
  else
  {
    digitalWrite(5, LOW);
  }
}
```



Sr. No.	Part name	Part No / Description	Quantity	Unit cost in Rs	Total cost in Rs
1	Arduino UNO	A000066	1	350	350
2	Arduino USB cable	Common A To B type  Peripheral USB cable	1	30	30
3	Jumper Wire	Electrical wire with connector pins on each and end that are used to connect two points without soldering	3	30	90
4	Buzzer	A buzzer is an efficient component to include the features of sound in our system or project.	1	40	40
5	MQ 2 Gas Sensor	to measuring or detecting a particular Gas	1	150	<del>Total =</del> 150 <del>Rs 600</del>

Total =  
Rs 600



## Conclusion:

The project successfully detect the smoke and gas using MQ-2 sensor and an Arduino board. The code is simple and easy to understand, making it a great starting point for further projects.

Submitted By:

Semester & Section: 5th sem (B)

1. Keshav Bhute (209)

Branch: ECE

2. Vikas sah (220)

Academic Year: 2024-25

3. Pratham bulbule (212)

4. Abhishek chauhan (216)]

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