✅ Parts You Have

- Arduino UNO
- Flame sensor
- MQ-2 smoke sensor
- I^2C 16×2 LCD
- Buzzer
- Battery for Arduino
- Jumper wires

✅ Simple Wiring

1. I^2C LCD

- VCC → 5V
- GND → GND
- SDA → A4
- SCL → A5

2. MQ-2 Smoke Sensor

- VCC → 5V
- GND → GND
- A0 → A0 on Arduino

3. Flame Sensor (Digital DO pin)

- VCC → 5V
- GND → GND
- DO → D2

4. Buzzer

-
    - → D8
- – → GND

5. Battery

- 9V battery → Arduino **Vin** or **DC jack**

✅ **Simple Arduino Code**

Copy → Paste → Upload:

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27, 16, 2);

int smokeSensorPin = A0;
int flameSensorPin = 2;
int buzzerPin = 8;

int smokeThreshold = 300;

void setup() {
  pinMode(flameSensorPin, INPUT);
  pinMode(buzzerPin, OUTPUT);

  lcd.init();
  lcd.backlight();
```

```
  lcd.setCursor(0, 0);
  lcd.print("Fire & Smoke");
  lcd.setCursor(0, 1);
  lcd.print("Detector Ready");
  delay(1500);
  lcd.clear();
}

void loop() {
  int smokeLevel = analogRead(smokeSensorPin);
  int flameState = digitalRead(flameSensorPin);

  bool smokeDetected = smokeLevel > smokeThreshold;
  bool fireDetected = (flameState == LOW);

  if (smokeDetected || fireDetected) {
    digitalWrite(buzzerPin, HIGH);

    lcd.setCursor(0, 0);
    lcd.print("!! ALARM !!     ");

    if (smokeDetected) {
      lcd.setCursor(0, 1);
      lcd.print("Smoke Detected  ");
    } else {
```

```
    lcd.setCursor(0, 1);
    lcd.print("Fire Detected   ");
   }
  } else {
   digitalWrite(buzzerPin, LOW);

   lcd.setCursor(0, 0);
   lcd.print("Normal         ");

   lcd.setCursor(0, 1);
   lcd.print("S:");
   lcd.print(smokeLevel);
   lcd.print(" F:");
   lcd.print(flameState);
   lcd.print("   ");
  }

  delay(300);
}
```

✅ **How to Use (Very Simple)**

1. Connect everything as wired above.
2. Upload the code.

3. Wait **1 minute** for the MQ-2 to warm up.
4. Blow a little lighter gas near MQ-2 → *Smoke alarm triggers*.
5. Put a flame in front of flame sensor (not too close!) → *Fire alarm triggers*.