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

// Define the pin connections
#define gasSensorPin A0
#define buzzerPin 8
#define ledPin 13
#define fanPin 9

// Set the threshold value for gas detection
#define gasThreshold 50

// Initialize the LCD with the I2C address 0x27
LiquidCrystal_I2C lcd(0x27, 16, 2);

// Initialize the SoftwareSerial for SIM800L
SoftwareSerial sim800l(2, 3); // RX, TX

void setup() {
  // Initialize the serial communication
  Serial.begin(9600);
  sim800l.begin(9600);

  // Initialize the LCD
  lcd.init();
  lcd.backlight();

  // Set pin modes
  pinMode(gasSensorPin, INPUT);
  pinMode(buzzerPin, OUTPUT);
  pinMode(ledPin, OUTPUT);
  pinMode(fanPin, OUTPUT);

  // Print welcome message on LCD
  lcd.setCursor(0, 0);
  lcd.print("Gas Leak Detect");
  lcd.setCursor(0, 1);
  lcd.print("Initializing...");

  delay(2000); // Delay for 2 seconds
}

void loop() {
  int gasValue = analogRead(gasSensorPin);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Gas Level: ");
```

```
  lcd.print(gasValue);

  if (gasValue > gasThreshold) {
    // Gas leak detected
    digitalWrite(buzzerPin, HIGH);
    digitalWrite(ledPin, HIGH);
    digitalWrite(fanPin, HIGH);

    lcd.setCursor(0, 1);
    lcd.print("Leak Detected!");

    // Send SMS alert
    sendSMS("Warning: Gas leak detected!");

  } else {
    // No gas leak detected
    digitalWrite(buzzerPin, LOW);
    digitalWrite(ledPin, LOW);
    digitalWrite(fanPin, LOW);

    lcd.setCursor(0, 1);
    lcd.print("Safe");
  }

  delay(1000); // Delay for 1 second
}

void sendSMS(String message) {
  sim800l.println("AT+CMGF=1");    // Set SMS to text mode
  delay(100);
  sim800l.println("AT+CMGS=\"+919500008561\""); // Replace with your phone
numberS
  delay(100);
  sim800l.print(message);
  delay(100);
  sim800l.write(26); // ASCII code for CTRL+Z to send SMS
  delay(1000);
}
```