Fire Alarm System

Introduction

A fire alarm system using Arduino is a simple yet effective project that can detect fire or high temperatures and trigger an alarm to alert people nearby.

🔧 Basic Concept

The system usually uses a **flame sensor** or a **temperature sensor** (like the LM35 or DHT11) to detect the presence of fire or a significant rise in temperature. When the sensor detects danger, the Arduino processes the signal and activates an output, like a **buzzer**, **LED**, or even a **relay** to sound an alarm or shut down equipment.

🧩 Key Components

- **Arduino board** (Uno, Nano, etc.)
- **Flame sensor or temperature sensor**
- **Buzzer or speaker** for alarm
- **LEDs** for visual indication

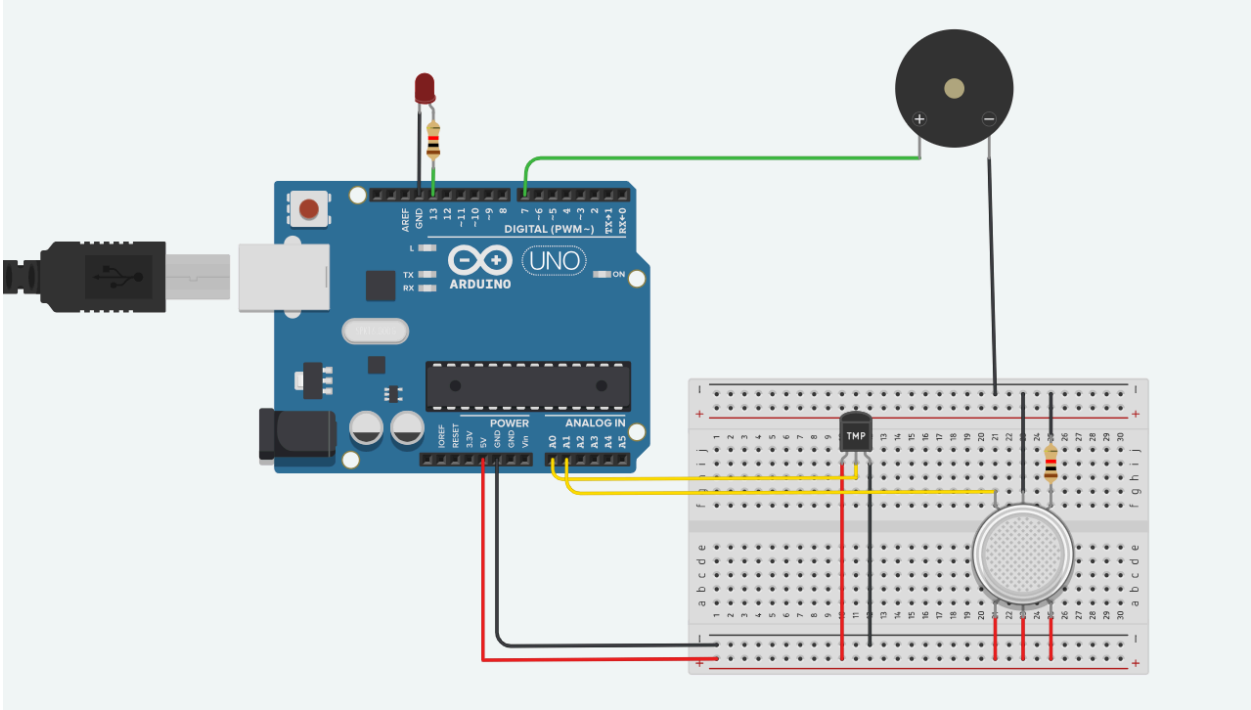
⚙️ How It Works

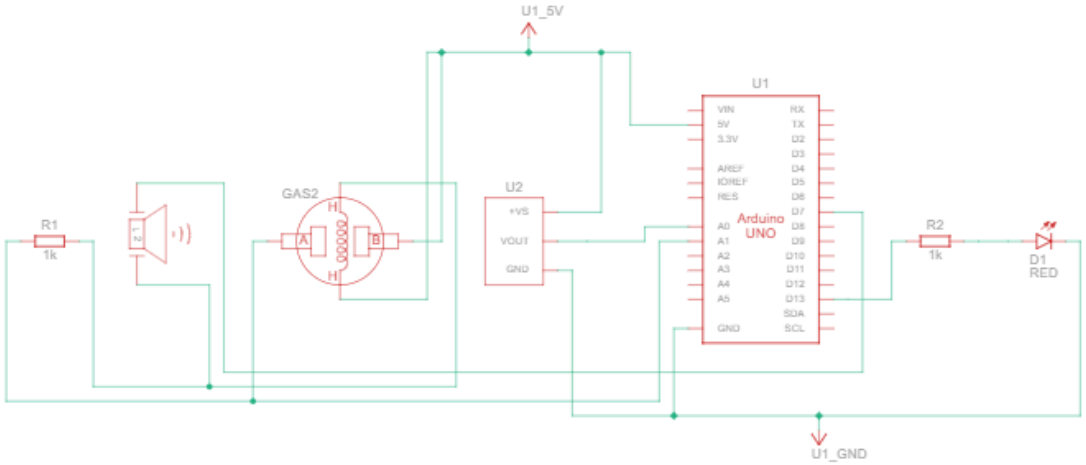
1. The sensor constantly monitors the environment.
2. If fire or abnormal temperature is detected, the sensor sends a signal to the Arduino.
3. The Arduino triggers the buzzer to produce a loud alarm.

🔍 Use Cases

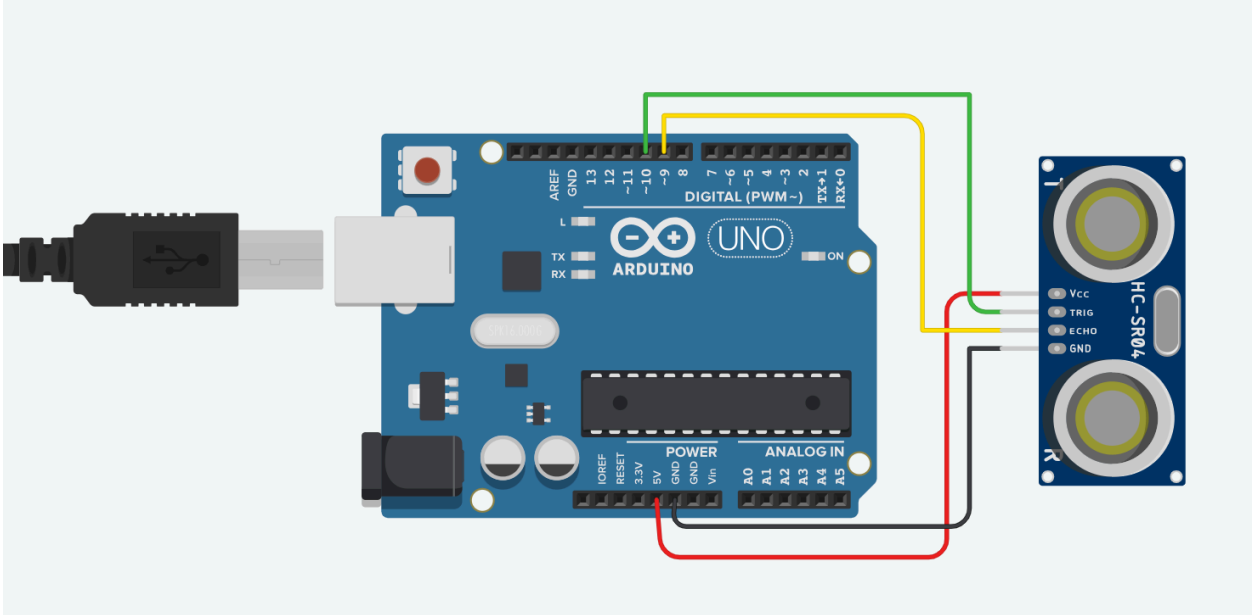
- Home or office fire safety systems
- Fire detection in remote electrical equipment
- Kitchen or workshop monitoring systems

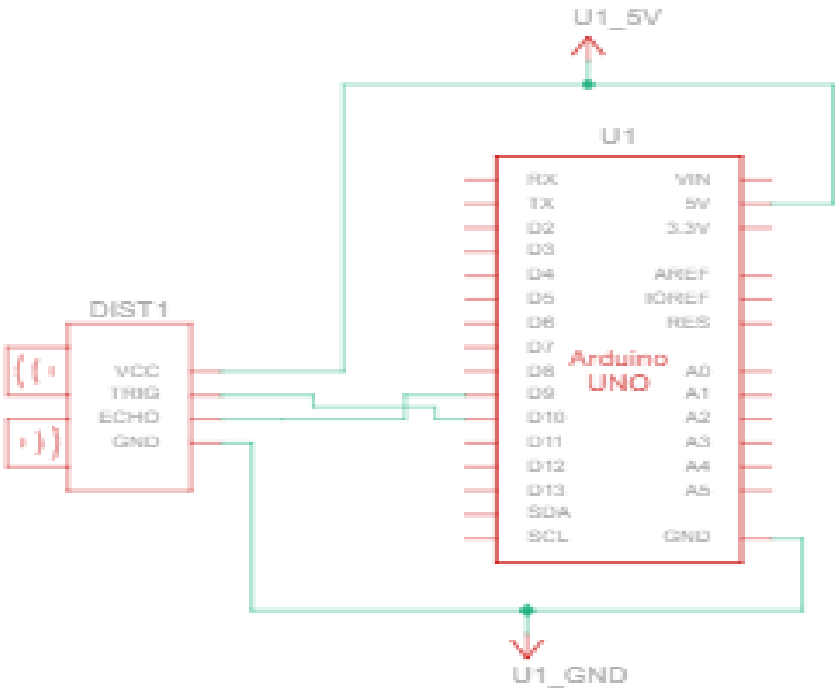
Circuit Diagram:




U1_5V
U1
VIN
5V
3.3V
AREF
IOREF
RES
RX
TX
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
SDA
SCL
A0
A1
A2
A3
A4
A5
GND
Arduino
UNO
U2
+VS
VOUT
GND
GAS2
H
A
B
H
R1
1k
R2
1k
D1
RED
U1_GND

Circuit Diagrams





C++ code:

```
 int trigpin =10;
int echopin=9;
long time;
int distance;

void setup()
{
  pinMode(10,OUTPUT);
  pinMode(9,INPUT);
  Serial.begin(9600);
}

void loop()
{
  digitalWrite(10,LOW);
  delayMicroseconds(2);
  digitalWrite(10,HIGH);
  delayMicroseconds(10);
  digitalWrite(10,LOW);

  time=pulseIn(9,HIGH);
  distance=time*0.034/2;

  Serial.print("Distance: ");
  Serial.println(distance);
}
```

Components:

1. Arduino Uno r3
2. Ultrasonic Distance Sensor (4 pin)