FIRE DETECTION SYSTEM

DEVICES PROJECT

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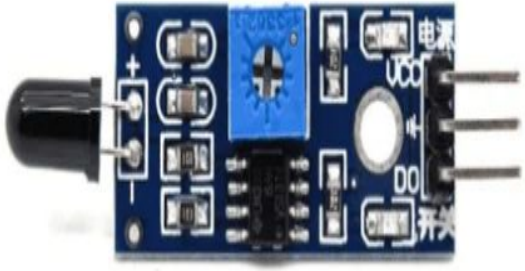
ABSTRACT

Recently there have been a number of cases wherein fire has caused significant damage to properties and might be responsible for the loss of people's lives if not given proper attention. Through this project, we would like to address the issue by designing a fire alarm system which alerts the person in service about the fire so they can take prompt action about it, since in most cases the fire department gets informed after the fire has reached a level where it becomes difficult for them to bring it down or hinders the process of rescuing the occupants of the building who might be stuck inside the building. This system can also be used in godowns, which might help minimise the loss due to the burning away of material stored in the godown.

COMPONENTS USED

ARDUINO UNO

FLAME SENSOR

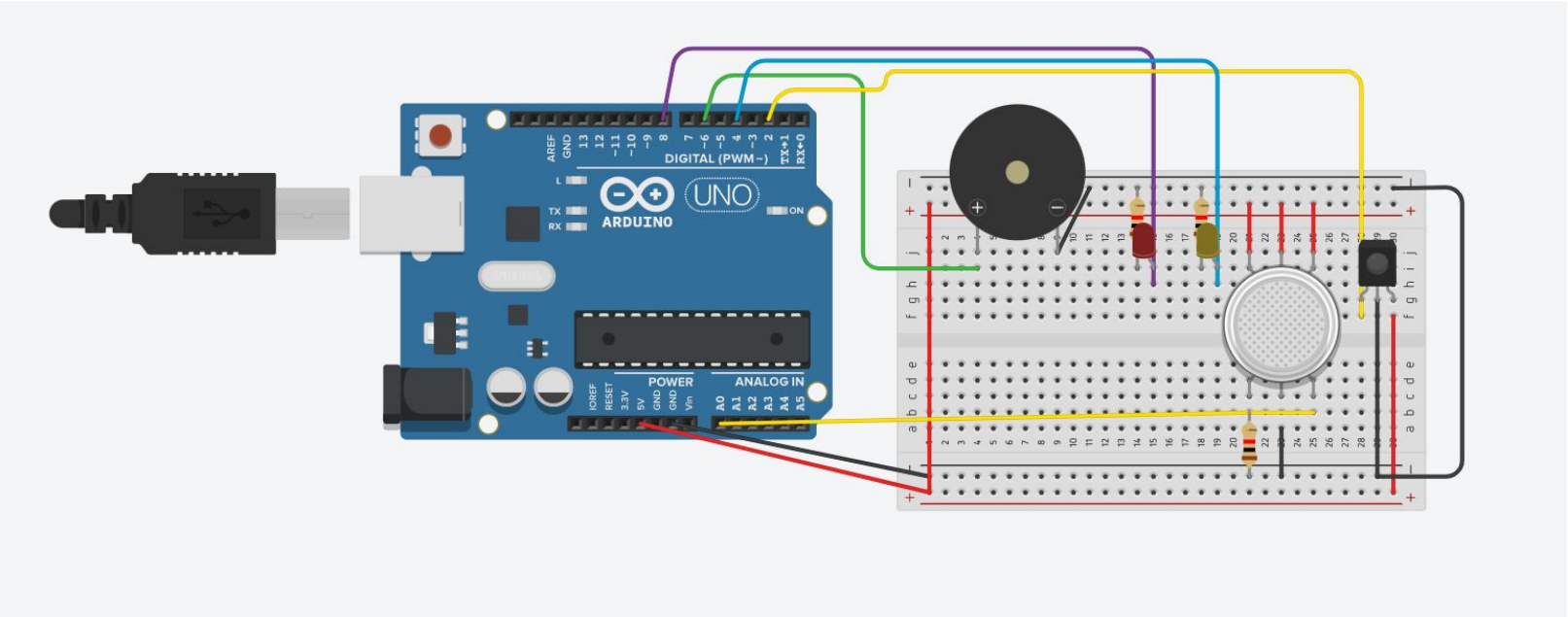


COMPONENTS USED

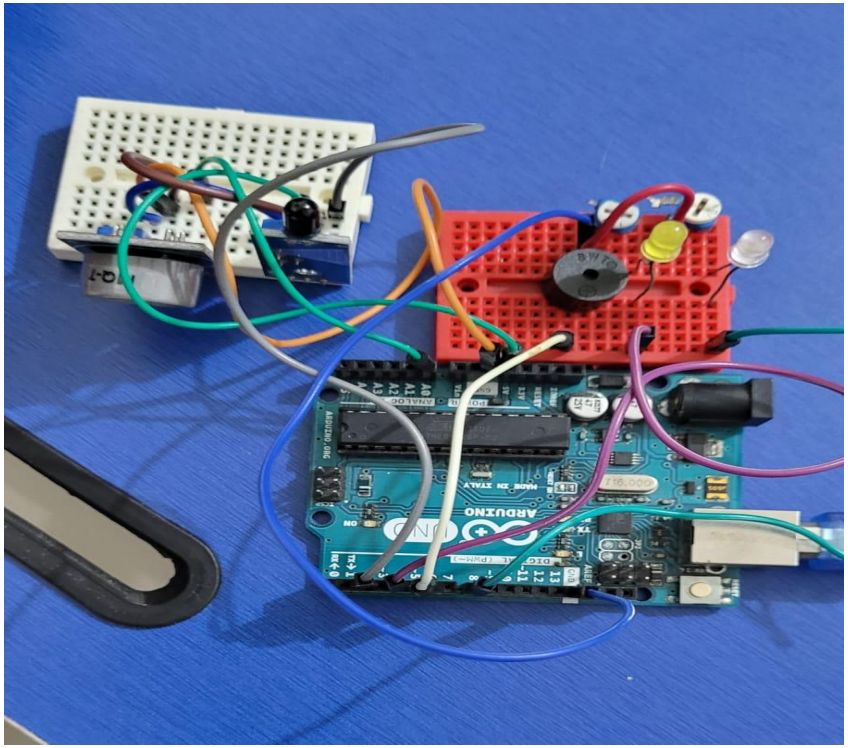
PIEZOELECTRIC BUZZER

LED

CIRCUIT DIAGRAM



ACTUAL CIRCUIT CONNECTIONS



PROCEDURE

1) Make the connections in the circuit as shown in the circuit diagram.
2) Connect the Vcc pin of the flame sensor and the gas sensor to the 5V of the Arduino.
3) Connect the ground to ground of the Arduino and digital out pin of the flame sensor to the D2 of the Arduino.
4) Connect the ground to the ground analog output pin of the gas sensor to A0 of the Arduino.
5) Connect the pc to the Arduino and upload the program.

ARDUINO CODE

```
/*Fire Alarm System
*/
int redLed = 4;
int greenLed = 8;
int buzzer = 6; //PWM (~) pin
int gasPin = A0;
int flamePin = 2;
// Your threshold value
int gasSensorThres = 280;

void setup() {
    pinMode(redLed, OUTPUT);
  pinMode(greenLed, OUTPUT);
  pinMode(buzzer, OUTPUT);
  pinMode(gasPin, INPUT);
  pinMode(flamePin, INPUT);
  Serial.begin(9600);
}

void loop() {
  int gasSensor = analogRead(gasPin);
  int flameSensor = digitalRead(flamePin);

  Serial.print("gasPin Value: ");
  Serial.println(gasSensor);
  Serial.print("flamePin Value: ");
  Serial.println(flameSensor);
  delay(1000);

  if (gasSensor > gasSensorThres  && flameSensor==LOW){
   digitalWrite(redLed, HIGH);
    tone(buzzer, 1000); //the buzzer sound frequency at 5000 Hz
    digitalWrite(greenLed, LOW);
  }
   else if (gasSensor > gasSensorThres)
  {
    digitalWrite(redLed, HIGH);
    tone(buzzer, 1000); //the buzzer sound frequency at 5000 Hz
    digitalWrite(greenLed, LOW);
  }
  else if (flameSensor==LOW){ // HIGH MEANS NO FLAME
    digitalWrite(redLed, HIGH);
    tone(buzzer, 1000); //the buzzer sound frequency at 5000 Hz
    digitalWrite(greenLed, LOW);
    }

  else
  {
    digitalWrite(redLed, LOW);
    noTone(buzzer);
    digitalWrite(greenLed, HIGH);
  }
}
```

Features of the Sensor

- Compact Circuit.
- Low power Consumption.
- Can Connect a modem module to the circuit and aert the nearest fire station about it.

RESULT AND FURTHER IMPROVEMENTS

The current detector we have prepared is a prototype of the circuit that can be used for detecting fire effectively. The range of the detector we have designed and implemented is about 2-3cm. The range of detector can be further improved by increasing the working range of the flame detector made use of in the circuit. We can incorporate this circuit on a rover which can be used in case of mine collapse to detect the fires inside, which will help in saving the rescuers life.