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Subject Name and Code: Foundation Skills in Sensor Interfacing (01CT1103)	**Date of Experiment:**27/01/2022

Task: Fire detector notification using Blynk application and turn on led and buzzer.

Components:

1. Nodemcu nESP8266
2. Flame Sensor
3. Bread Board
4. Jumper Wires
5. Buzzer
6. LEDs
7. Resistor(220Ω)

About the Project:

FLAME SENSOR :-

A flame-sensor is one kind of detector which is mainly designed for detecting as well as responding to the occurrence of a fire or flame. The flame detection response can depend on its fitting. It includes an alarm system, a natural gas line, propane & a fire suppression system. This sensor is used in industrial boilers. The main function of this is to give authentication whether the boiler is properly working or not. The response of these sensors is faster as well as more accurate compare with a heat/smoke detector because of its mechanism while detecting the flame.

Working principle:

This sensor/detector can be built with an electronic circuit using a receiver like electromagnetic radiation. This sensor uses the infrared flame flash method, which allows the sensor to work through a coating of oil, dust, water vapor, otherwise ice.

SPECIFICATION OF FLAME SENSOR :-

This module Consist of a 5mm infra-red receiver LED, a LM393 dual differential comparator, a 3296W trimmer potentiometer, 6 resistors,2 indicator LEDs and 4 male header pins. The board features an analog and a digital output.

Operating Voltage	3.3V ~ 5.5V
Infrared Wavelength Detection	760nm ~ 1100nm
Sensor Detection Angle	60°
Board Dimensions	1.5cm x 3.6cm [0.6in x 1.4in]

NodeMCU :-

NodeMCU is an open source platform based on ESP8266 which can connect objects and let data transfer using the Wi-Fi protocol. In addition, by providing some of the most important features of microcontrollers such as GPIO, PWM, ADC, and etc, it can solve many of the project's needs alone.

FEATURES OF NodeMCU :-

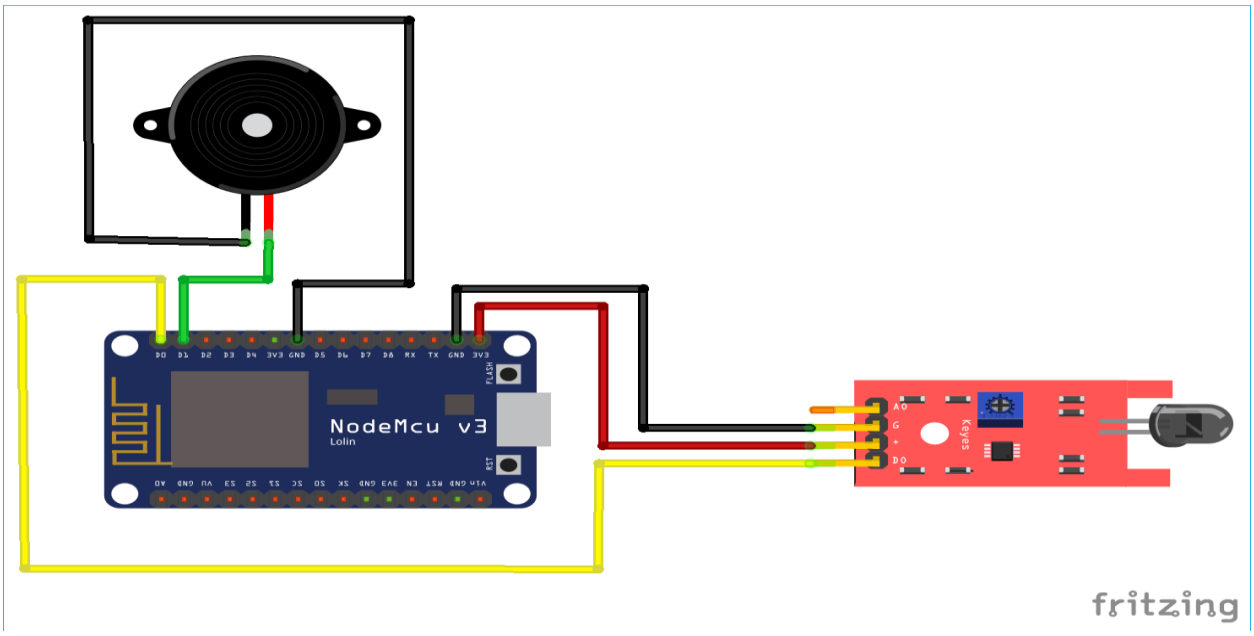
- Easy to use
- Programmability with Arduino IDE or IUA languages
- Available as an access point or station
- practicable in Event-driven API applications
- Having an internal antenna
- Containing 13 GPIO pins, 10 PWM channels, I2C, SPI, ADC, UART, and 1-Wire

FIRE ALARM SYSTEM :-

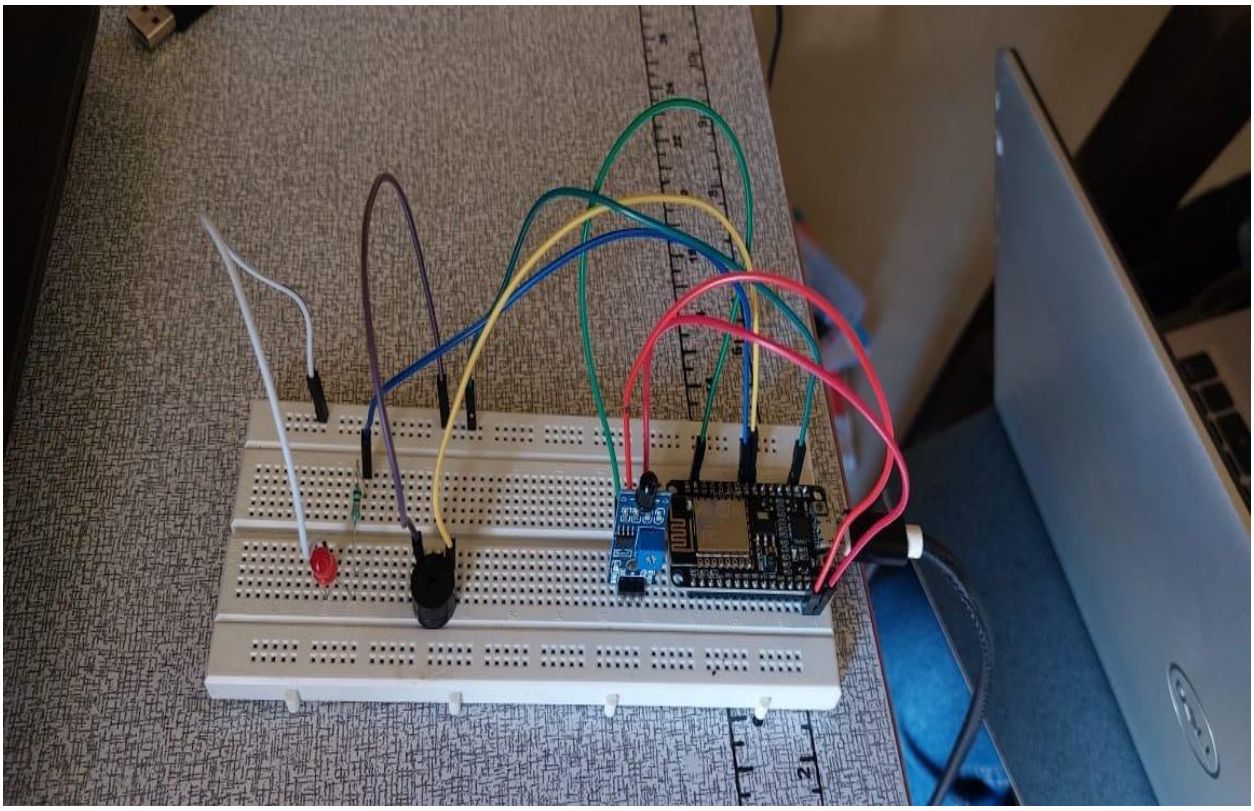
Fire Alarm Systems are very common in commercial building and factories, these devices usually contain a cluster of sensors that constantly monitors for any flame, gas or fire in the building and houses and triggers an alarm if it detects any of these. One of the simplest way to detect fire is by using an IR Flame sensor, these sensors have an IR photodiode which is sensitive to IR light. Now, in the event of a fire, the fire will not only produce heat but will also emit IR rays, yes every burning flame will emit some level of IR light, this light is not visible to human eyes but our flame sensor can detect it.

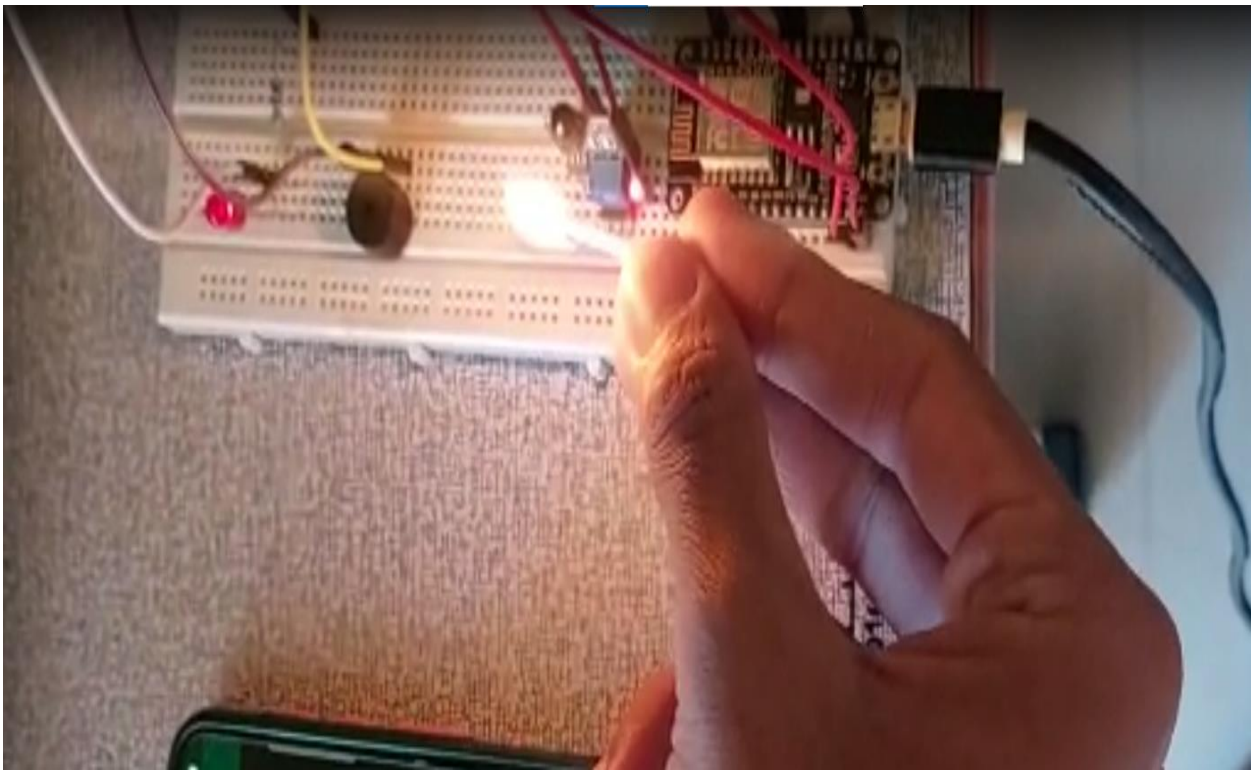
Connection:
Flame Sensor connect to NodeMCU
Digital output pin connect to D1 pin in esp8266
GND connect to GND
VCC pin coonect to 5V

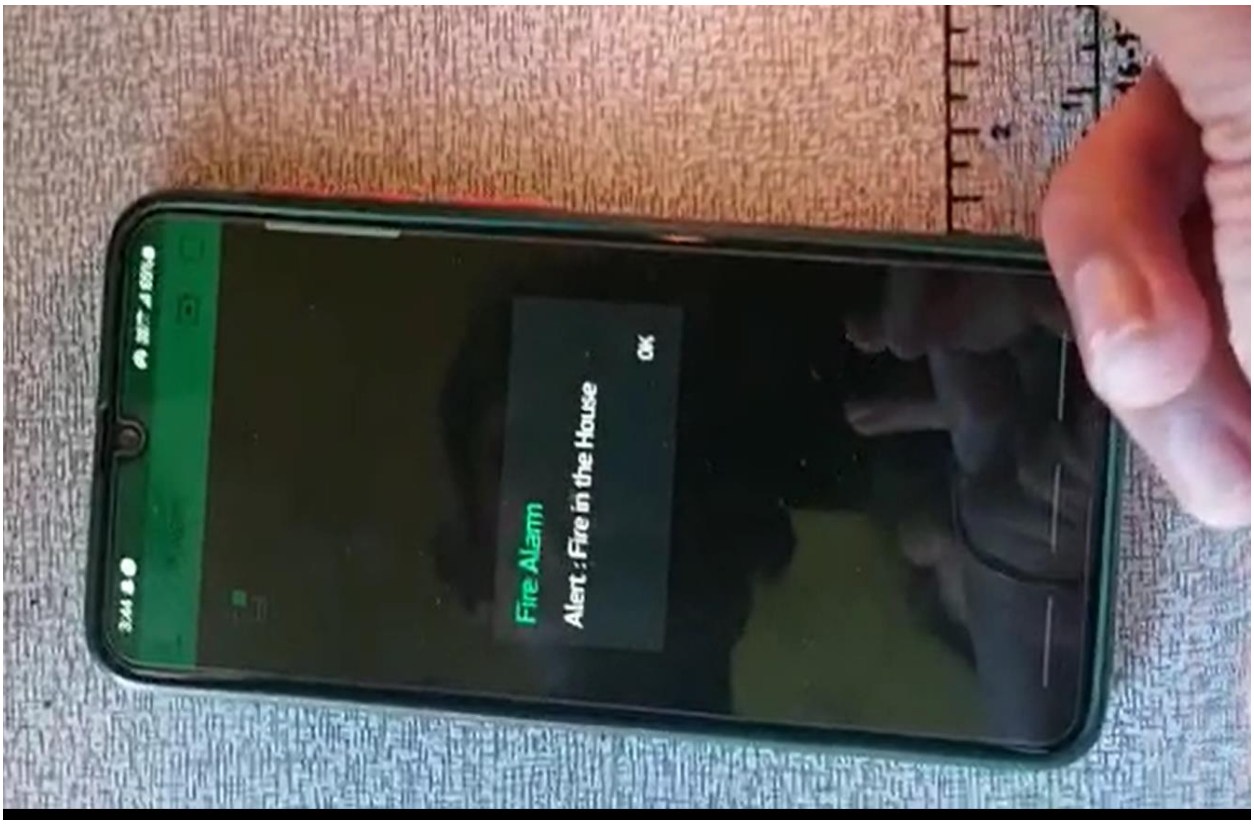
Schematic:



Output:






Fire Alarm
Alert : Fire in the House
OK

Code:

```
//Blynk Fire Alarm Notification
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
BlynkTimer timer;
char auth[] = "RgEJ6Mmg8qW63g2S4RZlOdEeby_eS9QC"; //Auth code sent via Email
char ssid[] = "Danvir Karna"; //Wifi name
char pass[] = "Password";  //Wifi Password
int flag=0;
int led = D5;
int buzzer = D6;
void notifyOnFire()
{
  int isButtonPressed = digitalRead(D1);
  if (isButtonPressed==1 && flag==0) {
    Serial.println("Fire in the House");
    Blynk.notify("Alert : Fire in the House");
    digitalWrite(led,HIGH);
    digitalWrite(buzzer,HIGH);
    flag=1;
  }
  else if (isButtonPressed==0)
  {
    Serial.println("Fire Not in the House");
    digitalWrite(led,LOW);
    digitalWrite(buzzer,LOW);
    flag=0;
  }
}
void setup()
{
Serial.begin(9600);
Blynk.begin(auth, ssid, pass);
pinMode(D1,INPUT_PULLUP);
pinMode(led,OUTPUT);
pinMode(buzzer,OUTPUT);
timer.setInterval(1000L,notifyOnFire);
}
void loop()
{
  Blynk.run();
  timer.run();
}
```

Application:

Fire Alarm System is designed to alert us to an emergency so that we can take action to protect ourselves, staff and the general public. Whatever the method of detection is, if the alarm is triggered, sounders will operate to warn people in the building that there may be a fire and to evacuate.

Conclusion:

In this project I learn what is flame sensor, esp8266 nodemcu. I learn principle of flame sensor and esp8266. And I learn how to work. I leran what is principle of fire alarm. And I understood How to work fire alarm.