FIRE ALARM

A PROJECT REPORT

Submitted by

HRIDOY BARUA [22BCS17159]
NAMAN KUMAR [22BCS16373]
GAJENDRA MALVIYA [22BCS17159]
ASHUTOSH SHARAN [22BCS17295]
DIPENDRA SHAH [22BCS17184]
Abhishek [22BCS17259]

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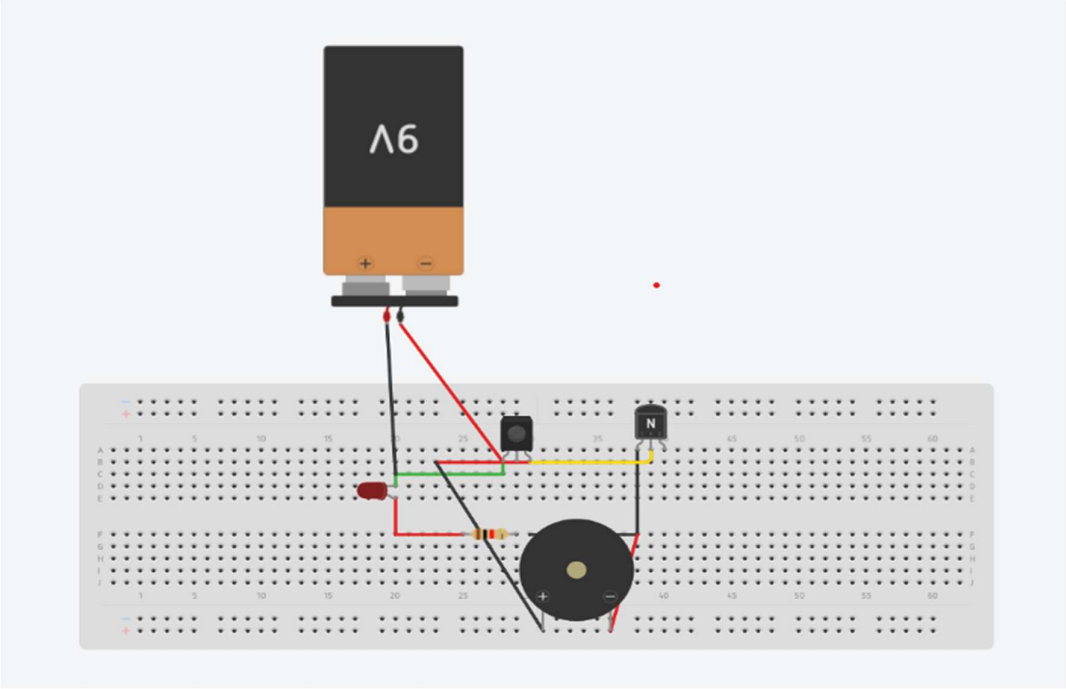
Kanwarpreet Kaur

1) Aim of Project : To detect the Fire and give us signal / alarm Warning .

2) Tools Used; Bread Board , Transistor , power supply , LED light , 10Ohm Resistor , Buzzer , Connecting Wires.

3) Working Principle : On this circuit **the IR receiver is a sensor and when it is connected to base pin of transistor the combination (sensor and transistor) acts as switch**. Fire contains infrared rays. These infrared rays when fall on IR receiver it conducts a small current from positive terminal to base.

Circuit Diagram :



4) THEORY :

[A] IR DETECTOR/ SENSOR: An infrared sensor (IR sensor) is **a radiation-sensitive optoelectronic component with a spectral sensitivity in the infrared wavelength range 780 nm** … 50 µm. IR sensors are now widely used in motion detectors, which are used in building services to switch on lamps or in

alarm systems to detect unwelcome guests.

[B] TRANSISTOR: A transistor is a semiconductor device used to amplify or switch electrical signals and power. It is one of the basic building blocks of modern electronics. It is composed of semiconductor material, usually with at least three terminals for connection to an electronic circuit.

A Transistor has 3 terminals, the emitter, the base and the collector. **Using these 3 terminals the transistor can be connected in a circuit with one terminal common to both input and output in a 3 different possible configurations**.

In this PNP transistor has been used . In PNP transistors, in this type of transistor, **majority charge carriers are holes, and minority charge carriers are electrons**. The emitter emits holes and is collected at the collector. In a PNP transistor, the base current which enters into the collector is amplified.

Connections:

Firstly we have to connect Collector terminal of transistor to -ve terminal of buzzer & with resistor , emitter terminal of transistor to ground , base terminal of transistor to +ve terminal of IR sensor . And then -ve terminal of IR sensor to +ve terminal of LED & other side with +ve terminal of Buzzer , -ve terminal of LED to resistor.

Finally , We have to give Power Supply to -ve terminal of IR sensor & +ve terminal of LED .

Here's the final connections.

Working :

An IR sensor is a device that detects infrared radiation falling on it. The heart of the sensitive fire alarm circuit is an infrared transmitter and infrared

receiver. In normal operating conditions when infrared light is shining from the infrared transmitter from the infrared receiver it will have low impedance. So the voltage at the base will be low and the transistor will not work. In case when a fire is observed an infrared beam will not be able to pass to a receiver. The resistance of the receiver will rise up and the voltage at the base will be positive causing an alarm to activate.

5) RESULT: In case when a fire is observed an infrared beam will not be able to pass to a receiver. **The resistance of the receiver will rise up and the voltage at the base will be positive causing an alarm to activate**.

6) APPLICATIONS;

- Detect Fire. fire alarm system is designed to detect fire in two main ways: smoke and heat.
- Alert Occupants.
- Manage Risks.
- Notify Authorities.
- Inspect All Equipment Regularly.