# Madhav Institute of Technology & Science,Gwalior

(A Govt. Aided UGC Autonomous and NAAC Accredited Institute , Affiliated to RGPV , Bhopal)

NAAC ACCREDIATED WITH A++ GRADE

**DEPARTMENT OF ELECTRONICS ENGINEERING**

## A Skill Based Mini Project Report

## On

## Invisible Burglar Alarm


Submitted By:

**Ratnesh Asati (0901EC221087)**

Under the Mentorship of

**Dr. R.Jenkin Suji**

**(Assistant Professor)**

**Department of Electronics Engineering**



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## Certificate

We are hereby certify that the skill based Mini Project entitled Design hardware model for Invisible burglar alarm which is being submitted in the **Department of Electronics Engineering** is a record of our work carried out under the mentorship of **Dr. R.Jenkin Suji,** Assistant Professor, Department of Electronics Engineering, Madhav Institute Of Technology & Science, Gwalior.

Date:

Place: Gwalior

**Ratnesh Asati** **(0901EC221087)**

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This is to certify that the above statement made by the candidates is correct to the best of our knowledge and belief.

Dr. R. Jenkin Suji
Assistant Professor
Dept. of Electronics

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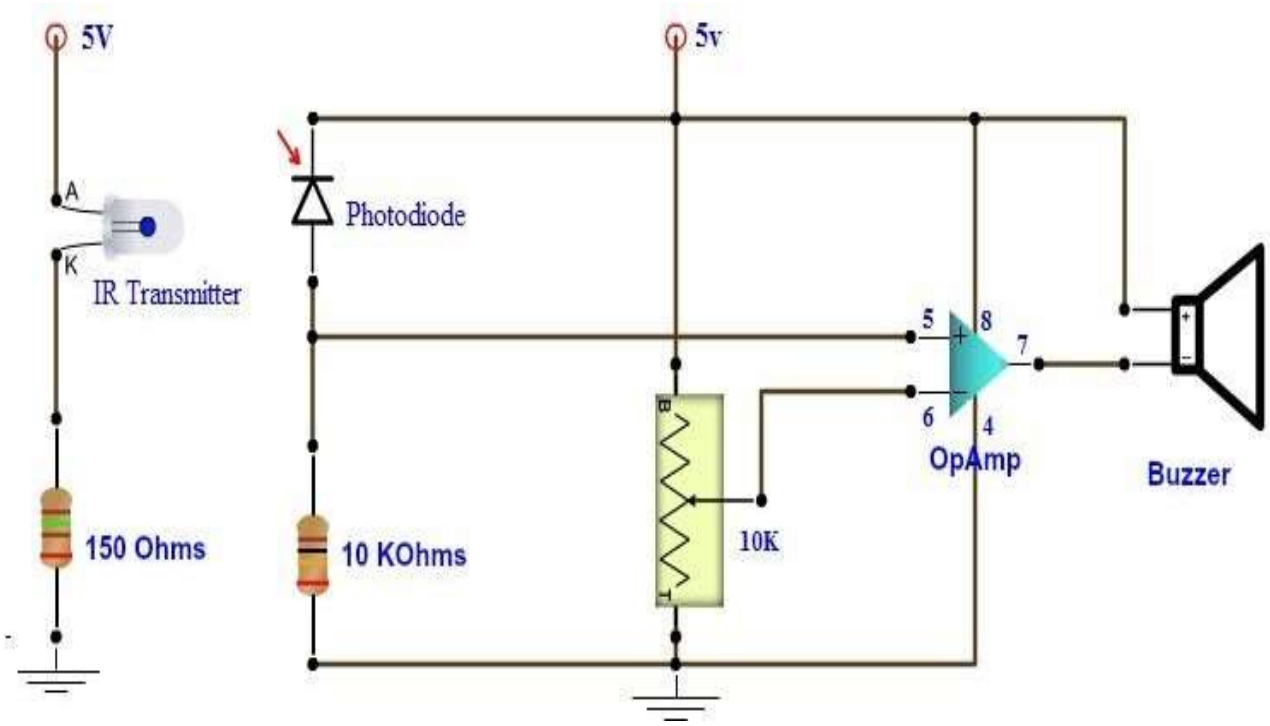
# DEPARTMENT OF ELECTRONICS ENGINEERING

## Content

# OBJECTIVE:

**Design a hardware model for INVISIBLE BURGLAR ALARM.**

# Circuit diagram:



# INTRODUCTION:

Burglar alarm system is an important part of home security systems. This burglar alarm project is based on Lm358, IR transmitter and receiver and Speaker. IR transmitter and receiver used to detect body motion and Buzzer to produce sound after any movement detection.

The IR transmitter or IR LED is connected to a current limiting resistor of 150Ω and connected to supply. It is placed at the maximum possible range from photo diode.

The cathode of the photo diode is connected to supply while anode is connected to 10KΩ resistor. Other end of the resistor is connected to ground. The anode terminal of the photo diode is also connected to pin 5 of LM358 op amp, which is the non-inverting terminal.

Wiper of the 10KΩ POT is connected to the inverting terminal i.e. pin 6 of LM358 while the other two terminals of the POT are connected to Vcc and ground

Pins 8 and 4 of LM358 are supply pins. They are connected to Vcc and ground respectively.

The output of the op amp is taken at pin 7. One terminal of the buzzer is connected to pin 7 of LM358 while the other terminal is connected to Vcc.

# COMPONENTS REQUIRED:

1. **PCB Board**
2. **Lm358**
3. **10k pot**
4. **Buzzer**
5. **Light emitting diode (LED)**
6. **IR transmitter and receiver(IR LED)**
7. **150ohm resistor**
8. **1k ohm resistor**
9. **10k ohm resistor**
10. **Battery**

# Theory:

## LM358:


LM358 can be used as transducer amplifier, DC gain block etc. It has large dc voltage gain of 100dB. This IC can be operated on wide range of power supply from 3V to 32V for single power supply or from ±1.5V to ±16V for dual power supply and it also support large output voltage swing.

## 10K POT(Potentiometer):

A 10k potentiometer (also "pot" or "knob") is an electronic component that can be used to control the flow of electricity through a circuit, much like a faucet regulates the flow of water in your home.

## IR Transmitter and Receiver:

IR Transmitter and IR Receiver are commonly used to control electronic devices wirelessly, mainly through a remote. TV remotes and AC remotes are the best example of IR transmitters. TV generally consists of TSOP1738 as the IR receiver, which senses modulated IR pulses and convert them into electrical signal.

## BUZZER:

Also known as a sounder, audio alarm or audio indicator, a buzzer is a basic audio device that generates a sound from an incoming electrical signal.

## WORKING:

The aim of this project is to implement a simple Burglar Alarm System that can detect an unauthorized entry by a burglar. All the connections are made as per circuit diagram. The working of the circuit is as follows.

LM358 is configured to work as comparator in this project. When the system is powered on, the IR transmitter or IR LED emits infrared light. This light falls on the surface of the photo diode.

As it is connected in reverse bias fashion, when the light falls on it, it conducts and current flows through it. Since it is connected to the non-inverting terminal (pin 5) of the op amp, output of the op amp comparator will be high. As the buzzer is connected between Vcc and output of op amp, no alarm is made.

When an intruder or a burglar enters the gap between the IR transmitter and photo diode, the light falling on the photo diode is interrupted and it doesn't conduct.

As a result, the input at non-inverting terminal (pin 5) is less than the input at inverting terminal (pin 6). Hence, the output of the comparator is low. This will trigger the buzzer and a loud alarm is made.

# CONCLUSION:

**A burglar alarm system is designed to detect an unauthorized entry into a house or area. Burglar alarm systems can be used in residential buildings, commercial buildings, offices, industries and even in military locations.**

**Most of the home security systems are very expensive. With the help of this project, an inexpensive burglar alarm system can be implemented**

# REFERENCES: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