Visvesvaraya Technological University

Belagavi

A Mini Project Report

on

ELECTRONIC WATCH DOG

Submitted by

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In partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

IN

ELECTRONICS & COMMUNICATION

NEW HORIZON COLLEGE OF ENGINEERING

New Horizon Knowledge Park, Ring Road, Marathalli

Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC

Accredited by NAAC with 'A' Grade, Accredited by NBA

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CERTIFICATE

Certified that the Mini project entitled "ELECTRONIC WATCH DOG" is carried out by Ms. Keerthana P bearing USN: 1NH20EC063, Ms. Kuppam Lakshmi Prasanna bearing USN: 1NH20EC069, Ms. Likitha R bearing USN: 1NH20EC073 and Ms. Monika M bearing USN: 1NH20EC083, bonafide students of NHCE, Bengaluru in partial fulfilment for the award of Bachelor of Engineering in Electronics and Communication of the Visvesvaraya Technological University, Belagavi during the year 2021-22. It is certified that all corrections and suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The mini project report has been approved as it satisfies the academic requirements in respect of the mini project work prescribed for the said degree.

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Plagiarism report

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ABSTRACT

At present everything in world seeks for automation and faster movement of work and try completing the work with less human power and less time consumption. One of the techniques used by automation for Lighting system is ‘Electronic Watch dog using PIR Sensor'**.** This technique helps in detecting vehicle movement at a very short range of distance and glows

When an obstacle approaches nearby or any motion is detected the IR sensor, an alarm is produced and thereby it helps to safeguard the house from any strangers at night.

We analyzed such technique which was cost effective and less human power consumption and developed a circuit diagram for the same and got successful simulation. We have used two PIR sensors, one of either side of the door so that it can detect the motion of any object neat the door. A buzzer is used to produced an alarm to inform about the motion.

PIR sensor is the main component for our project that made our project even easier due to easier detection of motion of objects.We have made a model to bring out the natural effect of how the project exactly works. We explained the working and construction and program description in detail.

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CHAPTER 1

INTRODUCTION

Many people own pet dogs and one of their purposes is to bark whenever a person enters through the door. Our project Electronic Watch Dog also performs the same task by detecting the person at the entrance of the premises. This circuit can also be used as a doorbell or burglar alarm.

Security alarm

Fig.1.1

It becomes difficult to manage pets when you have a busy lifestyle especially when there is no one to take care of them. Owning a dog is a major responsibility and is expensive. In fact, some people are allergic to pets.

The basic purpose of the watchdog is to scare the intruders away from our premises or alert us of threatening situations that might pop up. So people who can't afford pets or are scared to take care of pets can use this watchdog alarm system to serve the purpose of protection. The sole purpose is to provide an environment that is harmless and also protective. Using limited components and simple logic an alarm can be constructed which serves the purpose.

CHAPTER 2

LITERATURE REVIEW

Title of the paper	Author and year of publication	Outcome	Limitations
Electronic Watch Dog	Tapan Kumar Maharana June 20,2017	The transmitter and receiver units are aligned such that the IR beam falls directly on the IR sensor. When anyone interrupts the IR beam falling on the sensor, its output goes high to drive and IC2 gets triggered and its pin 3 goes high to supply 3.3V to melody generator IC3 at its pin 2, which produces a sweet melody through the speaker fitted inside the house. Output pin 3 of IC2 remains high for around 30 seconds. To achieve a high directivity of the IR beam towards the sensor, use a reflector behind the IR LED.	One of the limitations of this project is that even if there is any motion other than human beings like that of birds near the sensor, the sensor detects it and sends an alarm

Table 2.1

In this literature review, they have used transmitter, receiver and IR Sensor. Transmitter is electronic device which is all most used in all the telecommunications and send the data through radio waves. Receiver accepts the signals. IR Sensor is mainly used to detect motion or any movement. Here the infrared sensors which is present in the circuit will alert the house owners about the outsiders. The main limitation of this circuit is that even if there is any motion other than human beings like birds near the Sensor. It detects the motion and sends the alarm everytime which will be disturbing for the house owners.

CHAPTER-3

EXISTING SYSTEM

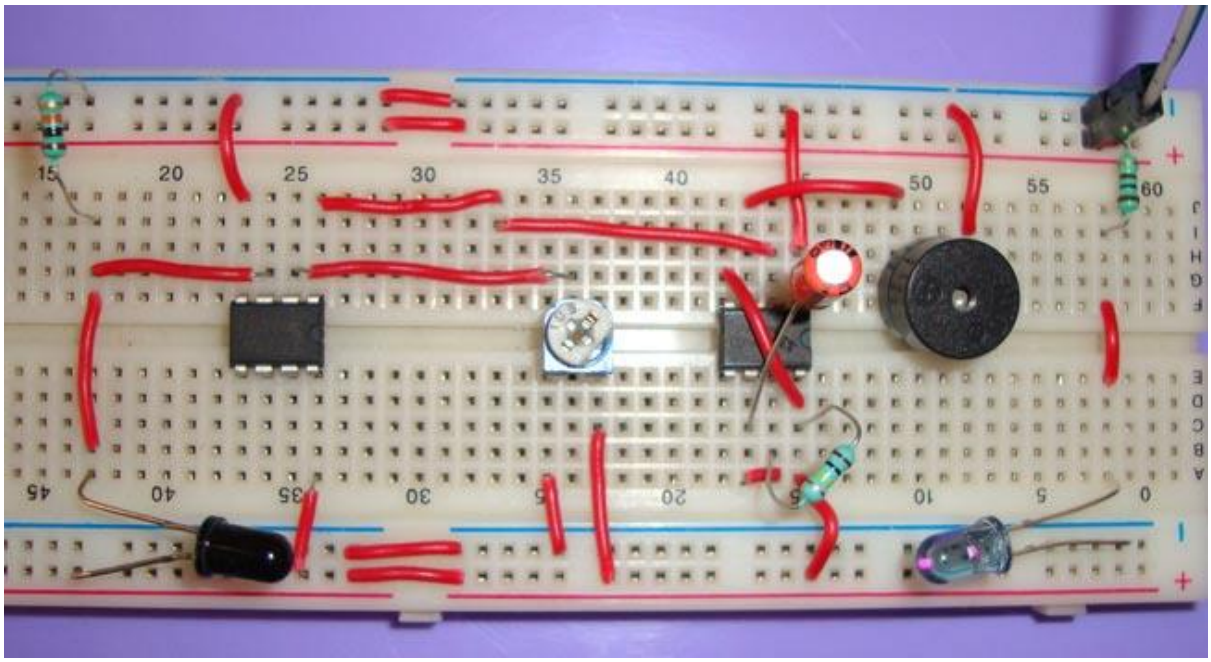

Fig.3.1

Now a days most houses contain security systems which simple and basic enough to alert the house owners about outsiders. However, the time had changed and we need more security precautions and protocols to protect one's home and property

The limitations of this existing system is that it can detect the motion of any object and not just human beings. So the buzzer goes off every time a non-human motion is detected.

CHAPTER-4

PROPOSED SYSTEM

Many individuals have pet dogs stationed at their front doors in the past and even now. The dogs' purpose is to bark anytime someone comes in via the door. Because it accomplishes the same purpose of detecting the presence of a human at a premises' entry, this project is dubbed the Electronic Watch Dog Project. Similarly, this gadget can be deployed anywhere an intruder-proof perimeter is required

BLOCK DIAGRAM

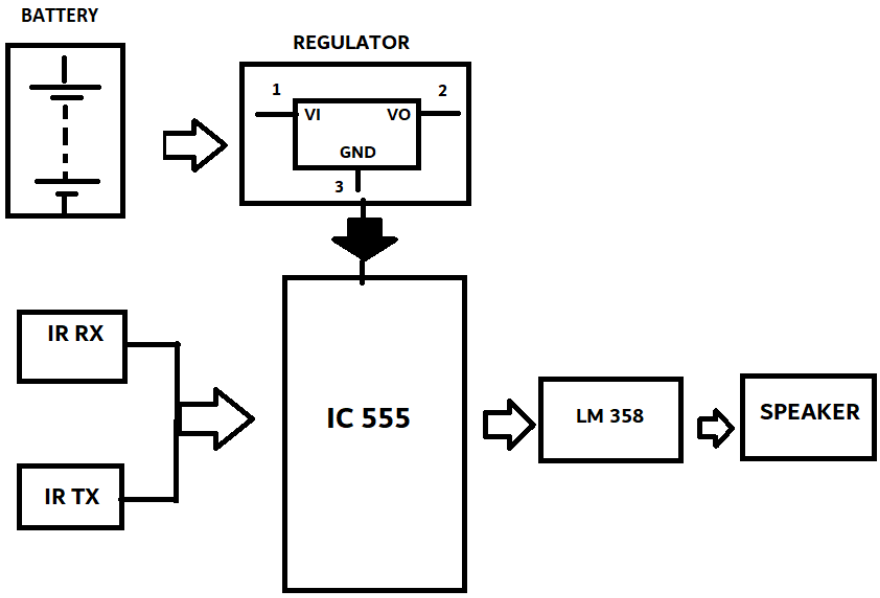

Fig.4.1

CIRCUIT DIAGRAM

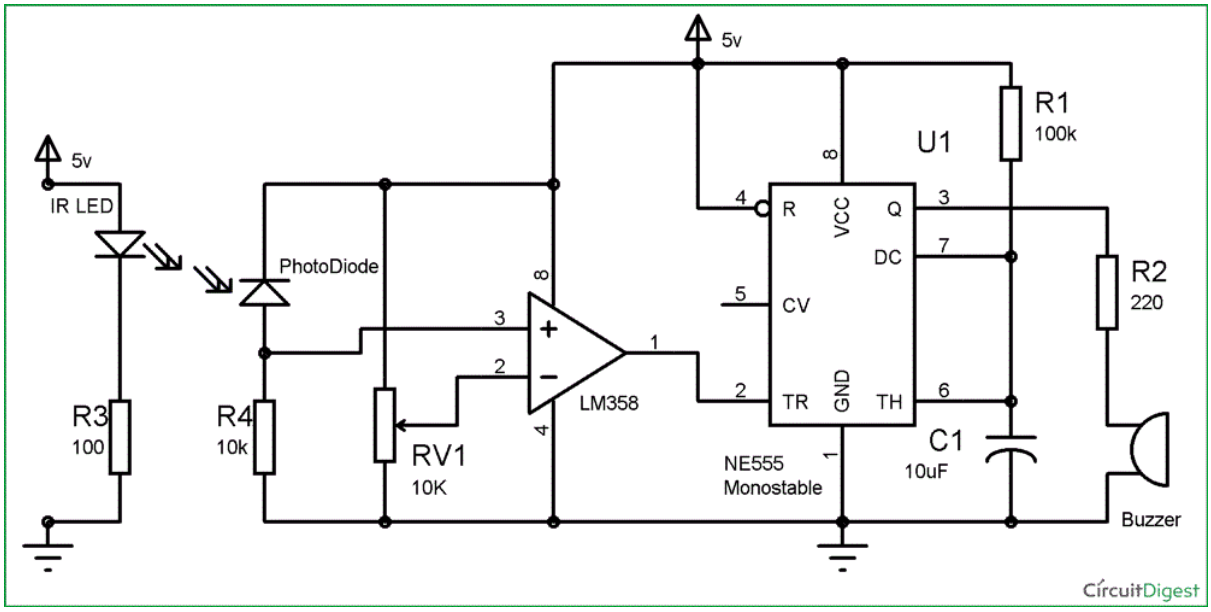

Fig.4.2

FLOWCHART

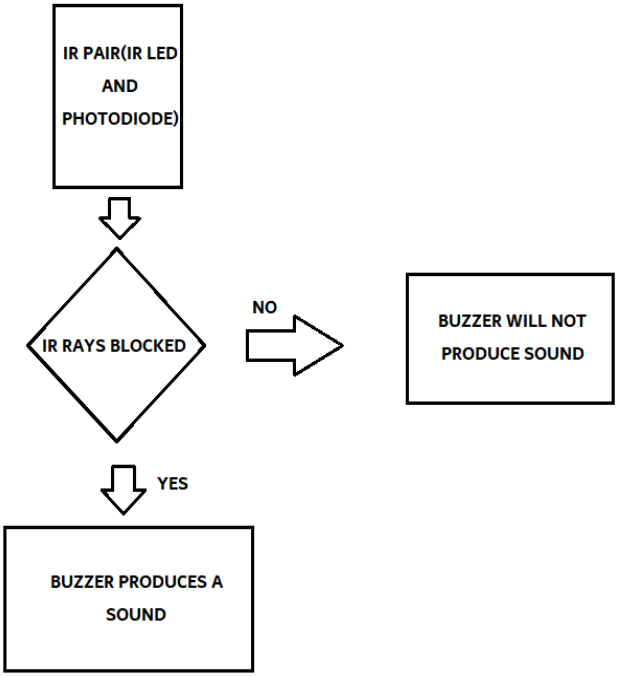

Fig.4.3

WORKING

In this circuit we have used LM358 as op-amp. It has two voltage comparators. We have used one of those comparators here. The pin3(Non-inverting end) is connected to the photodiode and the Pin2(Inverting end) is connected to a variable resistor 10k. The output of the voltage comparator is fed to the 555 IC timer which has been configured in monostable mode.

When the IR radiation falls on the photodiode, the voltage at the non-inverting end is higher than that of the inverting end and therefore the output of the comparator becomes High. Since the output of he comparator is connected to the 555 timer, when the trigger pin 2 is high, the output of 555 is low.

When there is any motion, the IR rays falling on the photodiode gets interrupted and the voltage at the inverting end gets higher than the non-inverting end. Thus the output of the comparator gets low and the output of 555 goes high and the buzzer beeps. The duration of the beep can be increased by changing the value of resistor R1 or capacitor c1.

CHAPTER-5

HARDWARE SPECIFICATIONS:

1. Resistors
2. IC LM358
3. 555 Timer IC
4. Buzzer
5. IR Pair
6. Capacitor
7. Battery
8. Variable Resistor

RESISTORS:

Fig.5.1

Resistors are electronic components that have a specific electrical resistance. The flow of electrons is limited through the circuit by the resistance of the resistor.
They are passive components, i.e, they only consume power (and can't generate it). Resistors are added to circuits to complement active components like op-amps, microcontrollers, and other integrated circuits. Commonly resistors are used to limit current, divide voltages, and pull up input lines.

IC LM 358:

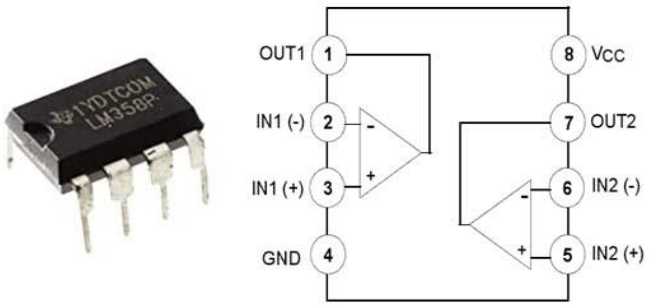

Fig.5.2

It consists of two independent high gain, internally frequency compensated operational amplifiers. They can be operated from a single power supply and also split power supplies.

Some features are :

- It has large DC voltage gain
- Wide power supply range 3V-32V

555 TIMER IC:

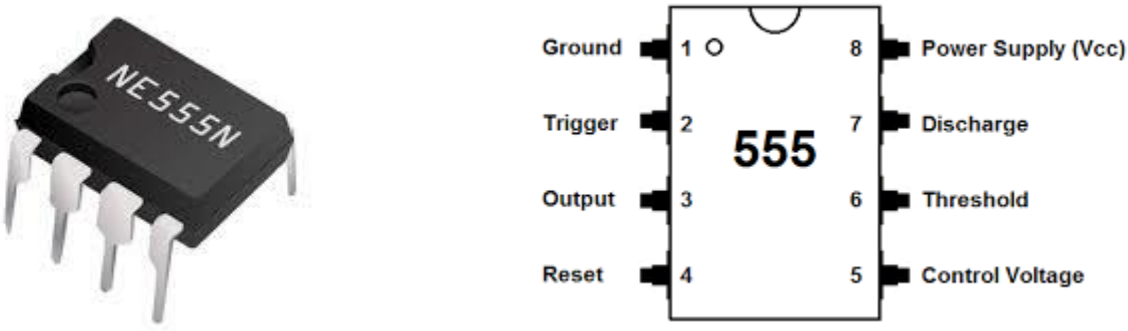

Fig.5.3

It is a highly stable controller capable of producing accurate time delays. The time is controlled by one external resistor and capacitor in the time delay mode of operation.

Some features are:

- it can operate in both astable and monostable modes
- It has a maximum operating frequency greater than 500kHz

BUZZER:

Fig.5.4

It features a serial peripheral interface and software protocol allowing operations on a simple 3-wire bus. clock input, serial data input, and serial output are the three signals. the serial access to the device is enabled by CS. This device provides a sequential read operation on a whole chip.

IR PAIR

Fig.5.5

The main parts in an IR pair are i) Transmitter and ii) Receiver. The infrared rays are transmitted by the transmitter and these radiations are received by the receiver . The range is usually 2 meters. Transmitter is often known as IR led and the Receiver as IR Sensor.

CAPACITOR:

Fig.5.6

The capacitors have polarities which means they have a positive and negative The positive pin is the pin that is long and the negative pin is the pin that is short. They can withstand a maximum of 150 degrees Celsius and have a high range of voltage values starting from 16V to 450V.

Potentiometer

Fig.5.7

A potentiometer is a variable resistor, whose value can be varied over a specified range.it consist of a circular strip which is almost equal to (3/4) th of a ring. A carbon film is deposited on it. a moving arm which is connected to a shaft is mounted in such a manner that

by rotating the shaft any resistance value between zero and maximum can be obtained.
Applications

• Speed control in fan regulators

• Tone control in radio and tv sets

BATTERY

Fig.5.8

9V battery is a commonly used and9v portable battery.it has a high capacity and low-cost solution for many electronic devices. The battery can be used for powering toys, LEDs torch, etc .it is generally connected by using a battery snap connector to breadboard.

Specifications:

Battery type: zinc-carbon battery

Dimensions:26.5mm*48.5mm*17.5mm

System: zinc carbon

Operating temperature range :- 20 to+85

It’s very simple to use this battery in any circuit, some important precautions must be taken while using this battery.

CHAPTER 8

ADVANTAGES AND APPLICATIONS

Advantages

1. Cost sensitive

2. Saves the money and time

3.It resets automatically without human action

4.detects the errors in the program and reboot the system

5. No need to place the employers to monitor the software debugs

6. It increases performance of the system

Applications:

1. Doorbell

This project can also be used as an automatic doorbell. So, When the IR pair senses the motion near the door, It can cause the buzzer to produce a sound. Whenever there is an obstruction in the path of the IR rays, the photodiode will cause the timer to produce an output which is Low and which inturn causes the buzzer to produce a sound.

2. Burglar alarm

This same project can also be used as a burglar alarm. So, When the IR pair senses the motion near the door, It can cause the buzzer to produce a sound. Whenever there is an obstruction in the path of the IR rays, the photodiode will cause the timer to produce an output which is Low and which inturn causes the buzzer to produce a sound. Thereby it informs about any burglars.

Chapter 9

Result and Future Scope

Result

The circuit is completely working and the system is able to sense the motion of any intruders. This project will help in providing security to the user.

Future Scope

1. A LDR can be used instead of IR pair so that it can automatically turn on at night.

2. We can use UM666 to provide a soothing sound instead of a beep sound.

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APPENDIX

DATA SHEET