BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Department of Electrical and Electronic Engineering

Course No: EEE202(H)

Course Title: Electronic Circuits I Laboratory **Section : C2**

Lab Group: 3

A PROJECT REPORT

On

"Thief- Alarm"

Group Member's Name and ID:

Md. Toky Tazwar (1906174)

Md. Nayem Hasan (1906175)

Tanvir Rahman (1906176)

Ameer Hamja Ibne Jamal (1906177)

Fahim Shahriar Anim (1906178)

Introduction:

The title of the project is “Thief-Alarm”. Need of security is the basic necessity of any individual. Ensuring safety to our home and office from stealing is very important. Any system that protects our house from thieves is very useful. Thief alarm is a useful tool to ensure safety in our house. The core objective of this project is to make a Thief-Alarm which will create sound when the light is off and door is open in a house. In order to do this, we created a logic system so that when the door is open and light is off the buzzer will make sound and for other combinations the buzzer will remain off. Here using diode and switch we created a logic AND gate system to design ON Off condition for the door and light. We also designed a logic OR gate system to create the proper situations for the buzzer to make sound. It sounds alarm when the door is open and light is off. For all logic conditions we have tested the Thief-Alarm system and we get the desired result. In this project our intention is to create an effective, efficient and low-cost Thief-Alarm system for security purposes. We hope this project will ensure an anti-thief system for real life application.

Components:

The components required to implement the project are the followings:

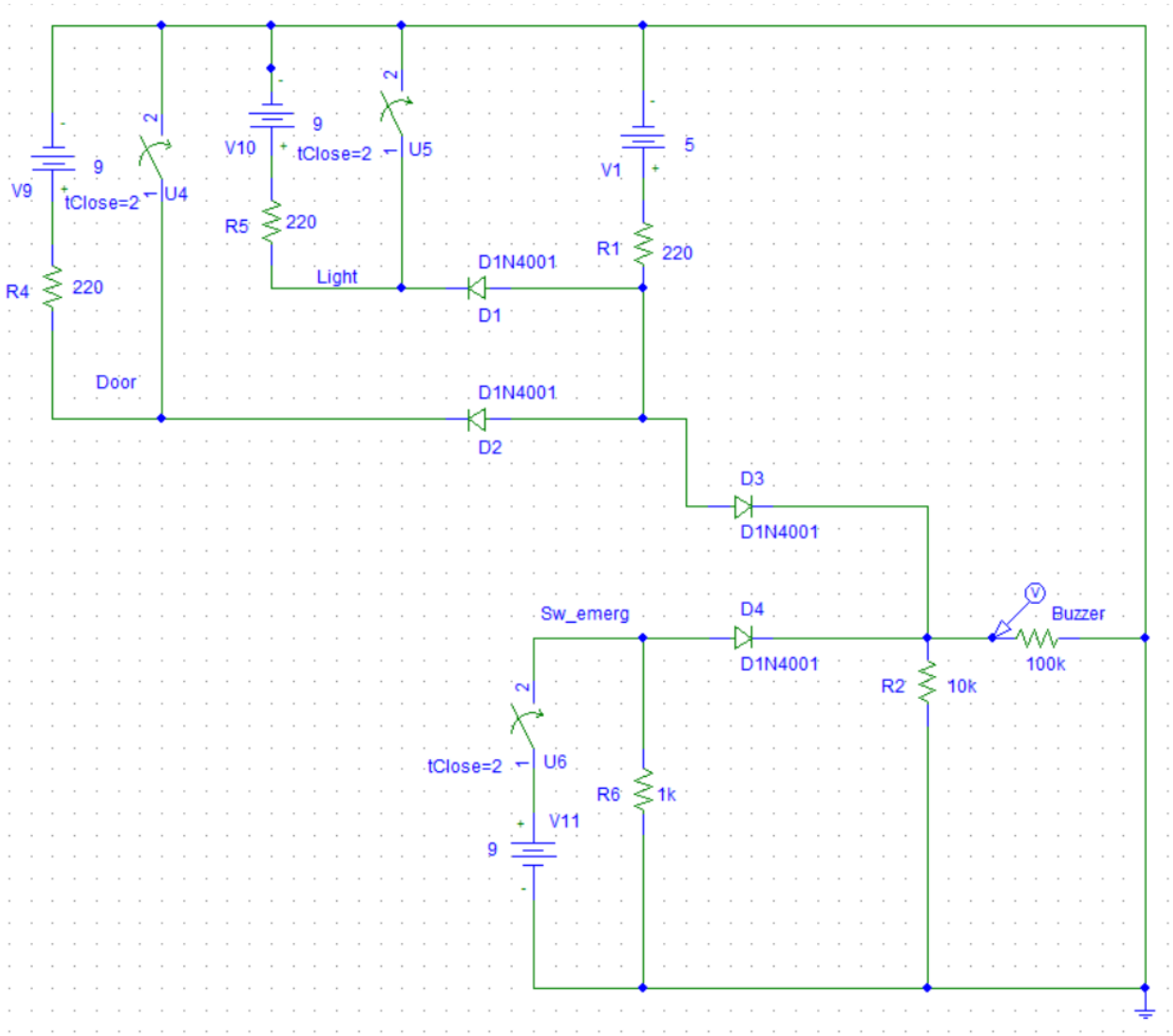
SL.NO	NAME	SPECIFICATION	QUANTITY
1	Battery	9V	1
2	Diode	D1N4001	4
3	Resistor	220Ω	3
		1KΩ	1
		10KΩ	1
		100KΩ	1
4	Bread Board	-----	3
5	Switch	Small push button switch	3
6	Connecting wire	-----	26
7	Buzzer	-----	1
8	LED (Red)	3mm	1

Costing:

The total cost to implement the project is given in the following table:

SL.NO	NAME	SPECIFICATION	PER UNIT PRICE(Taka)	QUANTITY	COST (Taka)
1	Battery	9V	38	1	38
2	Diode	D1N4001	3	4	12
3	Resistor	220Ω 1KΩ 10KΩ 100KΩ	1 2 2 2	3 1 1 1	9
4	Bread Board	6.5'' X 2.2''	135	3	405
5	Switch	Small push button switch	3	3	9
6	Connecting wire	-----	1.5	26	39
7	Buzzer	------	80	1	80
8	LED(Red)	3mm	2	1	2
					Total Cost=594

Circuit Diagram—



Theory—

We are about to implement an alarm circuit which can be used for catching thief. Here the condition is that when the door is opened & room is dark or the emergency switch is on. Then the alarm will be ringing.

Here an AND gate (IC 7408) is used and we will get the output only for when the light is off & the door is open. Here we can replace the IC with two diodes. Then this output and the emergency switch will be the input of the OR gate(IC 7432) .

Workflow—

And first we have to ensure the input with some conditions that when the door is opened input voltage will be passed that means 1 in AND gate input. If closed ,input will be 0. And also for light, when it is on ,input is 0 and when off ,the input will be 1. We can use thermistor or LDR for light sensing. But in here we show this using pushbutton for simplicity.

When switch U4 and U5 is on then the parallel wire by the door and light part will be shorted & the diode D1, D2 will be forward biased .Then the whole current is passed from V1(5V) to the negative through the resistor R1 .D3 will not get any voltage .

When U4 is on but U5 is off, then D1 will be reverse biased as V10>V1. When reversed, D1 will be opened .And so the current will be passed through D2 as it is forward biased. Same thing will be occurred for U4 off and U5 on. And D3 will not get voltage.

When the two switch is off, then D1, D2 both will be reverse biased. And in the circuit between R1& R4, R1&R5, diode will be opened, Then the whole current will be passed through the diode D3.

This is the workflow of the AND gate.

And for the OR gate input, there is added an emergency switch circuit with pushbutton. At last ,a buzzer will be added with the OR gate output and the neutral side.

When D3 gets voltage, the current will be passed through R2 and the buzzer whatever the emergency switch is active or not. Also when D3 gets no voltage but U6 is on that means D4 will be forward biased. And buzzer will be rung.

If U6 is off and also D3 will not forward biased then no current will be passed through the buzzer.

This is the workflow of the OR gate.

Description—

Following the above schematics, we have been able to implement the project successfully. Here the inside of the circuit as well as the gates can be expressed by the truth table.

So by con convention, voltage above 5V is considered as logic 1 , and below 5V is considered as logic 0 .

And Gate--

Door	Light	Y
1	0	0
1	**1**	**1**
0	0	0
0	1	0

Here the italic input is for light off & door open.

Or Gate—

Y	Emergency switch	Buzzer
0	0	0
0	***1***	***1***
1	***0***	***1***
1	***1***	***1***

Here for the italic input, alarm will be rang.

Discussion:

In this project we have designed the Thief- Alarm system efficient and effective as much as possible. The design of the system circuit is very simple. The logic we developed here for the system is correct and very easy to understand. The cost required to make this system is also very low. Our one of the main objectives was to make an affordable Thief-Alarm system and we have done this successfully. So

far, we could not find any error in the result of this project. The buzzer of the system makes sound for all the appropriate logic conditions. Thief-Alarm system will provide us the security against thief in our day-to-day life. Therefore, people can install it in their home in order to stay safe, secure and sound.