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A Mini Project Report

DOOR BELL CUM LIGHT

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BONAFIDE CERTIFICATE

This is to certify that this project report entitled “**DOOR BELL CUM LIGHT**” is being submitted by **K.KRISHNA TRINADH 19ME1A0428, P.JYOTHI 19ME1AO455, V.SAMATHA 19ME1A0465, A.JASWNTHI 19ME1A0470** in **BACHELOR OF TECHNOLOGY, ELECTRONICS AND COMMUNICATION ENGINEERING** is a bonafide work carried out under my guidance and supervision during the academic year 2021-2022 and it has been found worthy of acceptance according to the requirement of the university.

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ABSTRACT

Many times, it happens when somebody comes home in night and press the door bell, We search for the porch light switch. To identify that the visitor who as press the door bell is known or unknown person before opening the door. This circuit will help you to solve the problem.

When a **visitor presses the doorbell switch it will automatically on the porch light** after sometime so that when you reach near the door you don't have to search for light switch.

In day time you can off the light with the help of switch S3. Doorbell cum light has inbuilt doorbell so you do not require to purchase a door bell. You can connect a bulb through a relay which can be operated with help of AC.

This simple circuit is built around a commonly known IC CD4060, melody generator IC **UM66** and few more components. IC CD4060 is 14 stage ripple carry binary counter, divider and an oscillator. Its built in oscillator is main feature of this IC that's why it can be used in numerous application like flasher, clock generator in timer circuits.

Hear IC1 CD4060 is working as frequency dividing circuit. Its inbuilt oscillator is based on three inverters. The basic frequency of the internal oscillator is determined by the value of the capacitor connected to its pin 9 and the resistor connected to pin 10. By increasing or decreasing the value of capacitor and resistor we can change the time delay for the period of on and off. Internally the oscillator signal is applied to the first bistable which drives the second bistable and so on. Since each bistable divides its input signal by two, a total of fifteen signals are available, each of half the frequency of the previous one. Output Qn is the nth stage of the counter, representing 2^n , for example Q4 is $2^4 = 16$ ($1/16$ of clock frequency) and Q14 is $2^{14} = 16384$ ($1/16384$ of clock frequency). Note that Q1-3 and Q11 are not available. Pin configuration of is shown below-

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CHAPTER-1

INTRODUCTION

—> Many times, it happens when somebody comes home in night and press the door bell, we search for the porch light switch. To identify that the visitor who as press the door bell is known or unknown person before opening the door. This circuit will help you to solve the problem.

—> **When** a visitor presses the doorbell switch it will automatically on the porch light **after sometime so that when you reach near the door you don't have to search for light switch.**

—> **This** circuit will automatically off the light **after some time.**

—> This **bell with automatic light circuit** also has the facility to on the porch light from inside the use.

—> In day time you can off the light with the help of switch S3.

—> Doorbell cum light has inbuilt doorbell so you do not require to purchase a door bell.

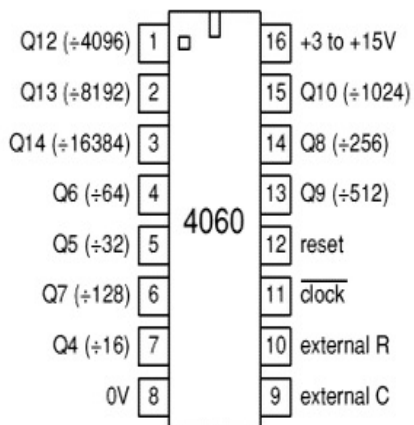
—> You can connect a bulb through a relay which can be operated with help of AC.

CHAPTER-2

RELATED WORK

This simple circuit is built around a commonly known IC CD4060, melody generator IC **UM66** and few more components.

IC CD4060 is 14 stage ripple carry binary counter, divider and an oscillator. Its built in oscillator is main feature of this IC that's why it can be used in numerous application like flasher, clock generator in timer circuits.



IC1 CD4060 is working as frequency dividing circuit. Its inbuilt oscillator is based on three inverters. The basic frequency of the internal oscillator is determined by the value of the capacitor connected to its pin 9 and the resistor connected to pin 10.

By increasing or decreasing the value of capacitor and resistor we can change the time delay for the period of on and off. Internally the oscillator signal is applied to the first bistable which drives the second bistable and so on. Since each bistable divides its input signal by two, a total of fifteen signals are available, each of half the frequency of the previous one.

Output Q_n is the nth stage of the counter, representing 2^n , for example Q₄ is $2^4 = 16$ ($1/16$ of clock frequency) and Q₁₄ is $2^{14} = 16384$ ($1/16384$ of clock frequency). Note that Q₁₋₃ and Q₁₁ are not available.

CHAPTER 3

EXISTING SYSTEM

Before understanding the working first of all understand the use of three switches-

1.Switch S1 – It is used to on the porch light from inside the home. Install the switch S1 inside the home near to the door.

2. Switch S2 – It is used to on the porch light and doorbell by the visitor. Install the switch S2 outside the door.

3. Switch S3 – It is used to on and off the light. In day time off the switch S3 so that bulb will not glow and in night on the switch S3 so that bulb will glow to light the porch.

CHAPTER 4

PROPOSED WORK

When a visitor comes and presses the switch S2, it will bring the transistor T2 into conduction and the bell starts sounding for a specific period of time. When switch S2 is released, it will reset the pin 12. When this pin goes high, it will start the counter and first output Q4 pin 7 goes high (refer pin diagram) for a specific period of time. Time period is set with the help of R3 and C1, then pin 5 output goes high similarly all outputs go high, and when Q13 pin 1 goes high, it will bring the transistor T1 into conduction and relay connected to it will energize and on the bulb (we have connected LED in our circuit) for 15 sec approx. You can connect bulb at any of the outputs according to your requirement.

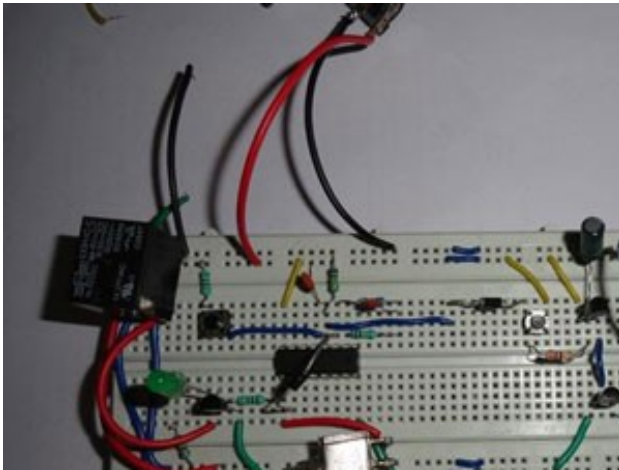
From the circuit diagram, you can see that we have connected the pin 2 of IC1 to pin 11 with the help of a diode so that when 2 goes high, it will disable the counter until reset pin 12 again goes high. So that bulb will only glow when a switch is pressed next time.

Now you want to turn on the light from inside, just press switch S1, it will again reset the pin 12 to high and counter starts so that when you reach near the door, light will be on. Note that this will only turn on the light, not the bell. And in day time, you want only doorbell, then off the switch S3.

If you want to increase or decrease the time period for which light remains on, you can do it just by changing the value of resistor and capacitor connected at pin 10 and pin 9. When you increase the value of resistor and capacitor, time period will increase and when you decrease the value, time period will decrease.

CHAPTER 5

HARDWARE PRODUCT PICTURE with theory details



CHAPTER 6

COMPONENTS

IC CD4060 – 1
Resistor R1, R4, R5, R8(1k) – 3
R2(10k) – 1
R3(100k) – 1
R6(120k) – 1
R7(27k) – 1
Capacitors 10uf, 1uf – 2
Switches -3
Diodes (In4007) – 2
LED -1
Transistors (BC547) – 3
UM66 – 1
Speaker – 1
Relay - 1

UM66



IC commonly used in calling bell, phone, toys, musical bell in doors, home security alarm systems, burglar alarms etc. It is a three pin IC looks like a transistor. Its first pin is ground, second is VCC and the third is the melody output. Supply voltage that can be given to the IC is in the range of 1.5V- 4.5V. These are CMOS ICs and have very small power consumption. Melody generator will reset when the power is turned on and then the melody begins from the first note.

LED



A light-emitting diode (LED) is a [semiconductor light source](#) that emits light when [current](#) flows through it. [Electrons](#) in the semiconductor recombine with [electron holes](#), releasing energy in the form of [photons](#). The color of the light (corresponding to the energy of the photons) is determined by the energy required for electrons to cross the [band gap](#) of the semiconductor. White light is obtained by using multiple semiconductors or a layer of light-emitting [phosphor](#) on the semiconductor device.

Commented [sv1]:



CHAPTER 7

CONCLUSION

As the technology is advancing every day all are updating in a easy method operations. In this project also we inbuilt light function with the door bell function so,it makes easier compared to old version.

CHAPTER 8

FUTURE SCOPE

The inbuilt function of light according with door bell is the new in this project.

This may helps more compared to old versions or types. Because there are advanced futures and advantages in this project.

And because of inbuilt function there is no need to buy separately and cost also reasonable.

REFERENCES

<https://www.engineersgarage.com/bell-cum-light-controller/>

<https://www.electronicsforu.com/electronics-projects/hardware-div/bell-cum-light-controller>

<https://www.youtube.com/watch?v=C9bJFw9kf6M>