

CLAP SWITCH DETECTOR USING 555 TIMER IC (LIC MID TERM PROJECT)

SUBMITTED TO:

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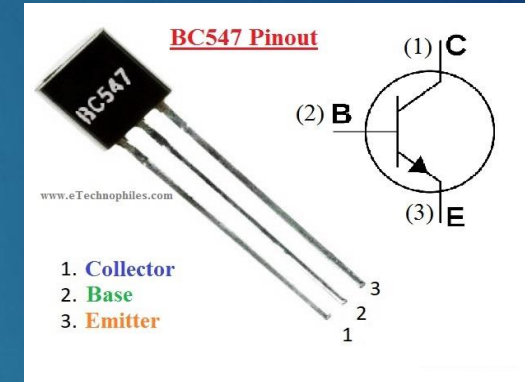
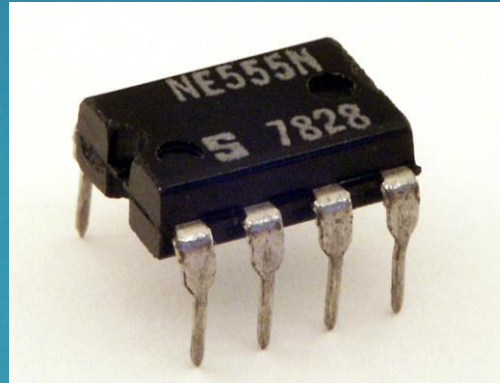
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INTRODUCTION

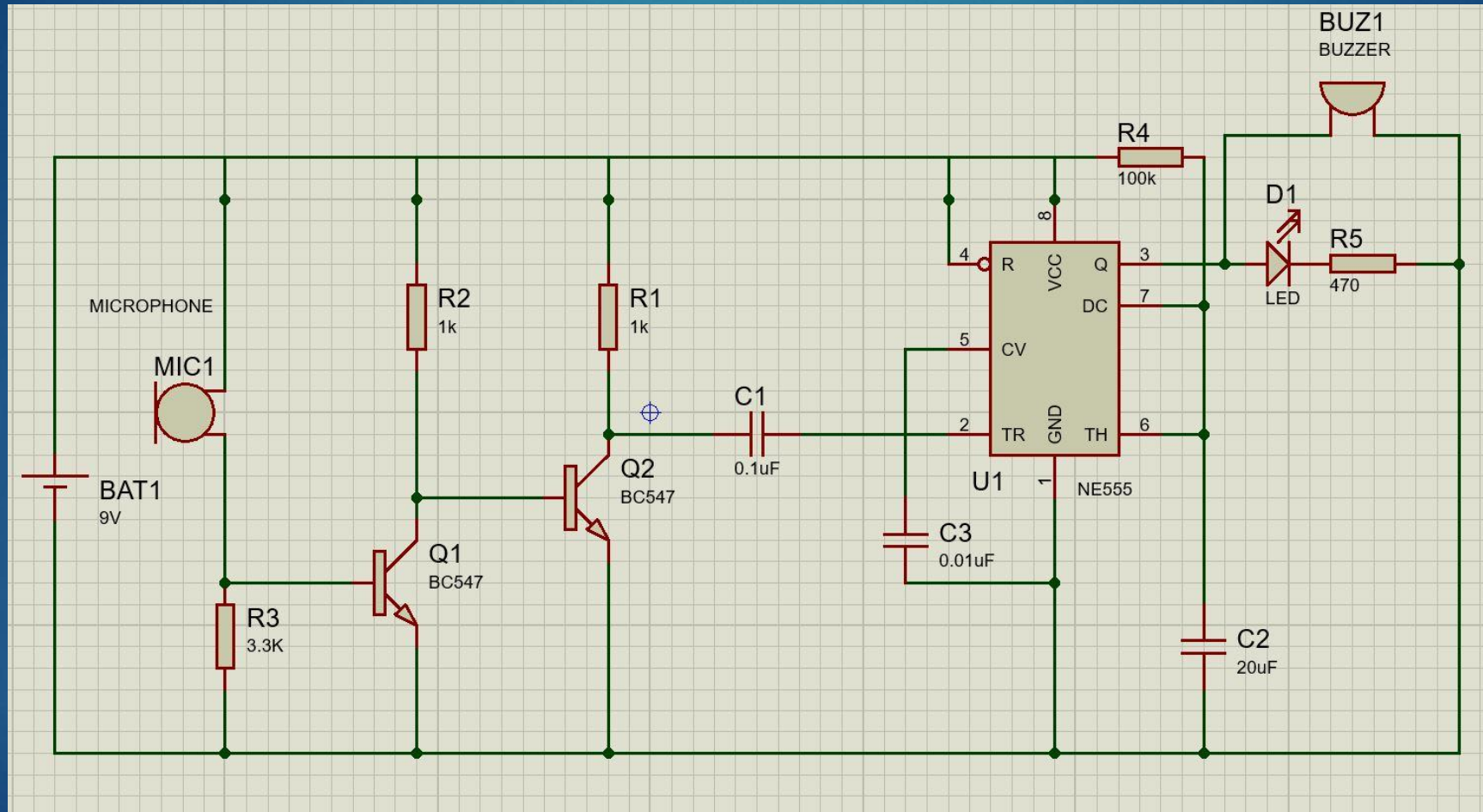
In this project we are making a hardware model of a clap detection circuit using 555 timer and BC547 transistors which can detect sound and turn on a buzzer and LED for a time interval which can be controlled by us.

CIRCUIT COMPONENTS

- NE 555
- BC 547
- RESISTORS
(1K Ω , 100K Ω , 3.3K Ω , 470 Ω)
- CAPACITORS
(20 μ F, 0.1 μ F, 0.01 μ F)
- ELECTRET CONDENSOR MICROPHONE
- LED
- BUZZER
- 9V ZINC CHLORIDE BATTERY



CIRCUIT DIAGRAM



HARDWARE MODEL



WORKING

- ▶ In this circuit we are using the condenser microphone to create drop in voltage at the node connecting condenser and 3.3K Ω resistor. Now we amplify this response by using a npn BC547 transistor with a 1K Ω resistor acting as a dummy load to keep our transistor in active mode. We add another BC547 transistor in the same configuration to amplify our response because previously it is not able to detect the claps. Now if we clap there is a voltage drop for a moment, so to convert this momentary change into a considerable time interval by using 555 timer in monostable mode configured using a resistor of 100k Ω between pin 7 and 8, also a capacitor of 20 μ F across pin 6 and ground terminal. To detect this pulse generated by 555 timer we use a buzzer and a LED.
- ▶ The time interval of the voltage pulse generated at pin 3 of 555 IC can be calculated using the formula:

$$\text{Time period} = (R_4)(C_2)\ln(3)$$

For this case, time period = 2.2sec.



THANK YOU