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**Project Title**

Clap Switch

**Team Members**

21k-4592 Aisha Motan

21k-3969 Ali Zain

21l-5081 Daniyal Haider

DLD  
Project Report

# CLAP Switch circuit

## Project Background and Description

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| --- | --- |
|  | This circuit can be used to control AC loads such as lights, fans, etc. through sound. With a proper [sound-activated switch](https://circuits-diy.com/clap-switch-circuit-homemade-diy/), dynamic control by sound becomes very useful, not just on robotic systems but also for home automation. |

## Project Scope

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|  | Here, the audio input is taken from the electret microphone. Here a 120nF capacitor blocks the DC component of the audio, allowing only AC to flow to the transistor (2N4401). Now, this signal acts as a control signal to the base of the 2N4401 transistor  The 2N4401 transistor amplifies the sound signal received by the electret microphone. The amplified signal is then fed to the LM393N voltage comparator IC and a further amplified signal is received at the output pin 8 of the IC. A 2N4403 PNP transistor is used at the output of the IC to drive an SPDT relay switch. |

## Hardware Components

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|  | | **S.No** | **Component** | **Value** | **Qty** | | --- | --- | --- | --- | | 1) | Comparator IC | [LM393N](https://amzn.to/2SIUNhy) | 1 | | 2) | [SPDT Relay](https://amzn.to/2rERaQd) | 9V/5V | 1 | | 3) | [Electret Microphone](https://amzn.to/2uDDkz2) | – | 1 | | 4) | NPN Transistor | [2N4401](https://amzn.to/2wdmmYt) | 1 | | 5) | PNP Transistor | [2N4403](https://amzn.to/2HYWbYj) | 1 | | 6) | Voltage regulator IC | [LM7805](https://amzn.to/360KN8V) | 1 | | 7) | [Potentiometer](https://amzn.to/39YZL1q) | 20KΩ, 10KΩ | 2 | | 8) | Diode | [1N4007](https://amzn.to/36kCgxF) | 1 | | 9) | [Ceramic Capacitor](https://amzn.to/2sXlFAU) | 120nF | 1 | | 10) | [Resistors](https://amzn.to/2FdyBFR) | 100KΩ, 10KΩ | 3 | | 11) | [Battery](https://amzn.to/2riiKlZ) | 9V | 1 | | 12) | [Battery Clips](https://amzn.to/36XVhpw) | – | 1 | | 13) | [Breadboard](https://amzn.to/34NUWUSf) | – | 1 | | 14) | Connecting Wires | – | As per need | |

## Circuit Diagram

Diagram, schematic

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Diagram

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## Working Explanation

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|  | The heart of this circuit is an LM393N comparator IC. In this circuit, we have used only one out of the two comparators. First, the audio input is taken from the electret microphone. Here a 120nF capacitor blocks the DC component of the audio, allowing only AC to flow to the transistor (2N4401). Now, this signal acts as a control signal to the base of the 2N4401 transistor, whose voltage level is controlled by a voltage divider pair. |