

ECE3161 Project Proposal: Clapping Switch.

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Project Description:

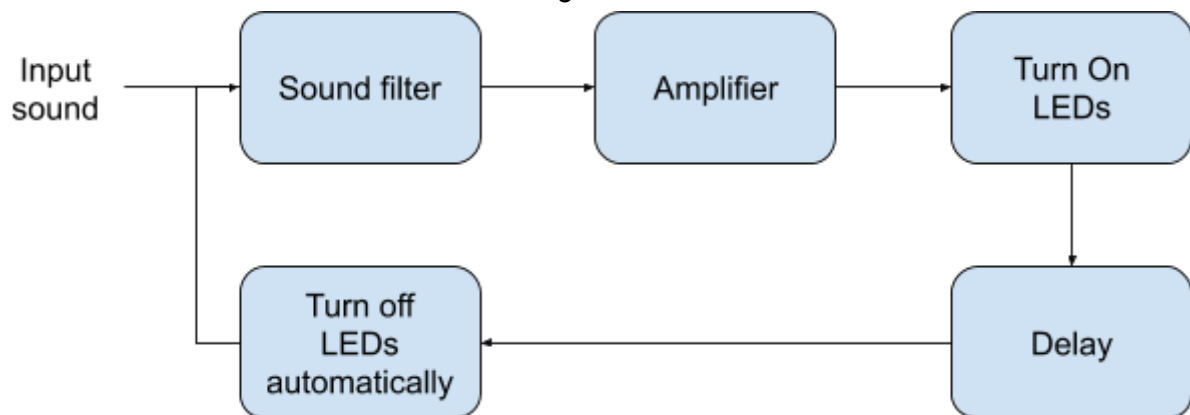
The project is to design a circuit which turns on/off the lights with a clap sound. The circuit will switch on the lights for a few seconds whenever the mic detects a sound. The pitch of the sound has to be high enough in order to trigger the circuit and turn on the lights.

The main components of this circuit would be:

- Condenser Mic
- LEDs
- Transistors
- Amplifiers
- Inductors
- Capacitors
- Resistors
- DC power supply

Overall circuit design:

The circuit would be built on this overall design:



Plan:

- Research:
 - Fundamental circuit
 - Circuit Optimisation
- Design:
 - Fundamental circuit
 - Circuit Optimisation
- Report writing:
 - Circuit design and explanation
 - Circuit analysis and explanation

- Consider practical creation (how to build/test the circuit in practical circumstances e.g. The process of how to optimise the frequency filters etc.)
- Presentation preparation:
 - Highlight key points

Work Distribution:

Planned work segments	Who
Broad research: Circuit inspiration	Ba Dung Nguyen
Specific research: Specific design requirements/optimisation	Ba Dung Nguyen & Max How Li
LTSpice: circuit design sound filter and amplifier	Ba Dung Nguyen
LTSpice: circuit design delay and LED function	Max How Li
LTSpice: circuit analysis	Ba Dung Nguyen & Max How Li
Report: Skeleton	Max How Li
Report: Circuit design details - Sound filter and amplifier	Ba Dung Nguyen
Report: Circuit design details - Delay and LED function	Max How Li
Report: Circuit analysis results - Graphs for sound filter and amplifier	Ba Dung Nguyen
Report: Circuit analysis results - Graphs for delay & LED function	Max How Li
Report: Circuit analysis results - Explanation for sound filter and amplifier	Ba Dung Nguyen
Report: Circuit analysis results - Explanation for delay and LED function	Max How Li
Report: Review	Ba Dung Nguyen & Max How Li

Reference:

<https://www.homemade-circuits.com/make-simple-electronic-clap-switch/>
<https://www.instructables.com/id/Simple-illustrated-Clap-Switch/>