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School of Engineering

A Project Report on

"CLAP SWITCH WITH AURDINO USING KY038 SENSOR"

Submitted in partial fulfillment of the requirement for the course

Innovative Project - Arduino using embedded C (**CSE 1002**)

Submitted by
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Abstract

In this project we are going to make Clap switch circuit using the concept of ADC (Analog to Digital Conversion) in ARDUINO UNO. We are going to use a MIC and Uno to sense the sound and trigger a response. This Clap ON Clap OFF switch basically turns ON or OFF the device, by using the clap sound, as switch.

On clapping there will be a peak signal at the MIC which is much higher than normal, this signal is fed to the amplifier, though a High Pass Filter. This amplified voltage signal is fed to ADC, which converts this high voltage into a number. So there will be a peak in the ADC reading of the UNO. On this peak detection we will toggle an LED on the board, on each clap.

This project will be able to help people who are naturally born dumb and physically handicapped to be able to be able to use thier home automation without the help of others.

• Components Required—

•Arduino UNO
• KY-038 sound sensor
• Red LED• 220-ohm
• Components Required
• Arduino UNO
• KY-038 sound sensor
• Red LED• 220-ohm resistor
• Single-channel relay module
• AC bulb
• Jumper wires modul
• AC bulb
• Jumper wires

Software used–

ARDUINO IDE 1.8.19:

The Arduino Integrated Development Environment - or Arduino software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino hardware to upload programs and communicate with them.

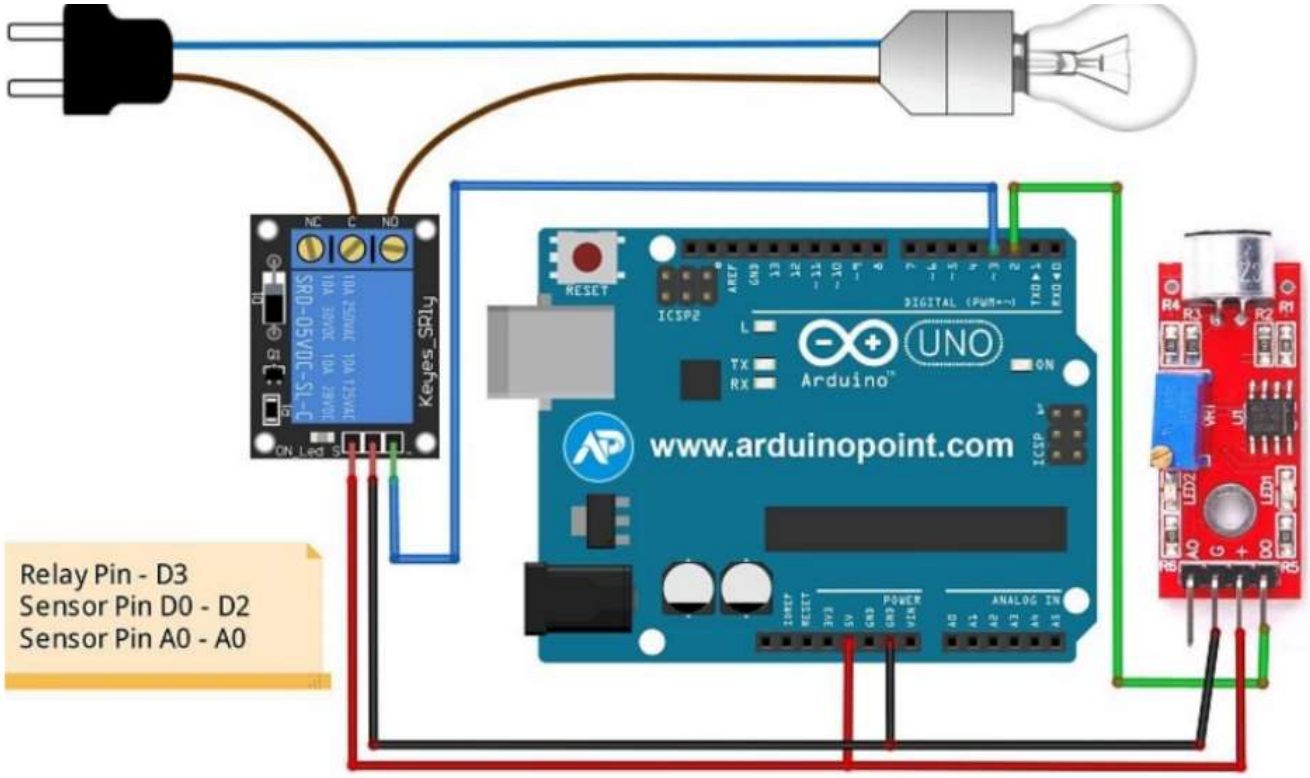
This software can be used with any Arduino board.

ARDUINO CLOUD:

Arduino IoT Cloud is an application that helps makers build connected objects in a quick, easy and secure way. You can connect multiple devices

to each other and allow them to exchange real-time data. You can also monitor them from anywhere using a simple user interface.

Block diagram–



Description–

KY-038 Sound Sensor with Arduino–

In this article, we will discuss about the sound detection microphone module known as KY-038. These microphone based sound sensor modules are small, easy to setup and very useful. I will explain in detail how to use the KY-038 Sound Sensor with the Arduino and without the arduino to control a robot. Someone who has difficulty in an alarm it can be used as an alarm to flash an LED. You could also use it as a presence detector to monitor sound levels or maybe to turn on some lights. You can also link it wirelessly to send notifications at a

distance.The KY-38 sound sensor is very basic sound level detector module which features an electric condenser microphone. This module has integrated onboard one microphone, one potentiometer, one microchip, six resistors, and two LEDs.

Red LED --

Run one wire (red) to the 5V socket on the Arduino. Run the other wire (black) to one of the GND sockets on the Arduino. The colors aren't essential but they will help you remember what the wires are connected to! Plug in the Arduino, you should see the LED light up

To turn on an LED, the Arduino needs to send a HIGH signal to one of it's pins. To turn off the LED, it needs to send a LOW signal to the pin. You can make the LED flash by changing the length of the HIGH and LOW states. Controlling by push button..

Single channel relay module--

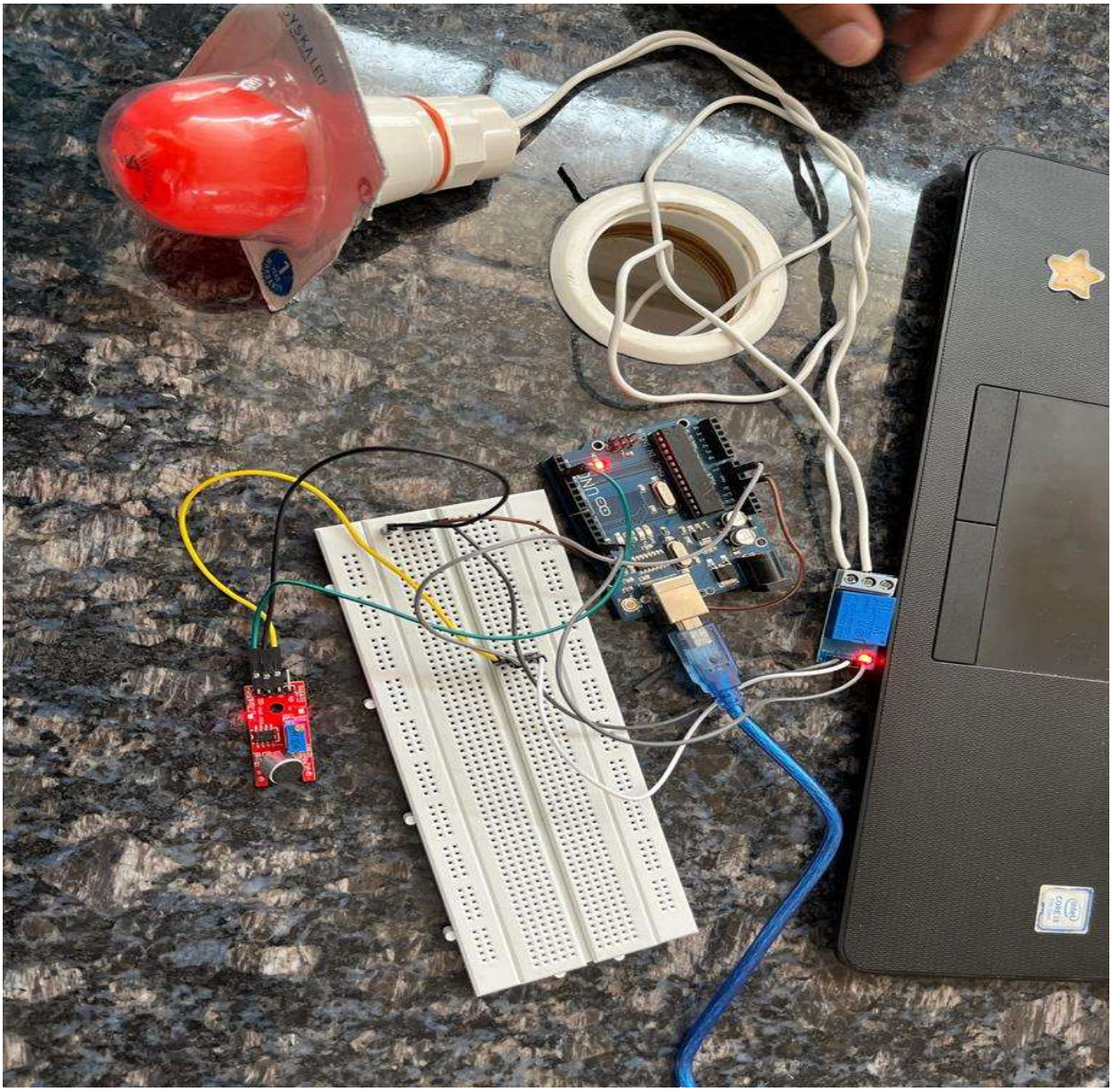
A relay is an electrically operated switch that can be turned on or off, letting the current go through or not, and can be controlled with low voltages, like the 5V provided by the Arduino pins.

Jumper wires ---

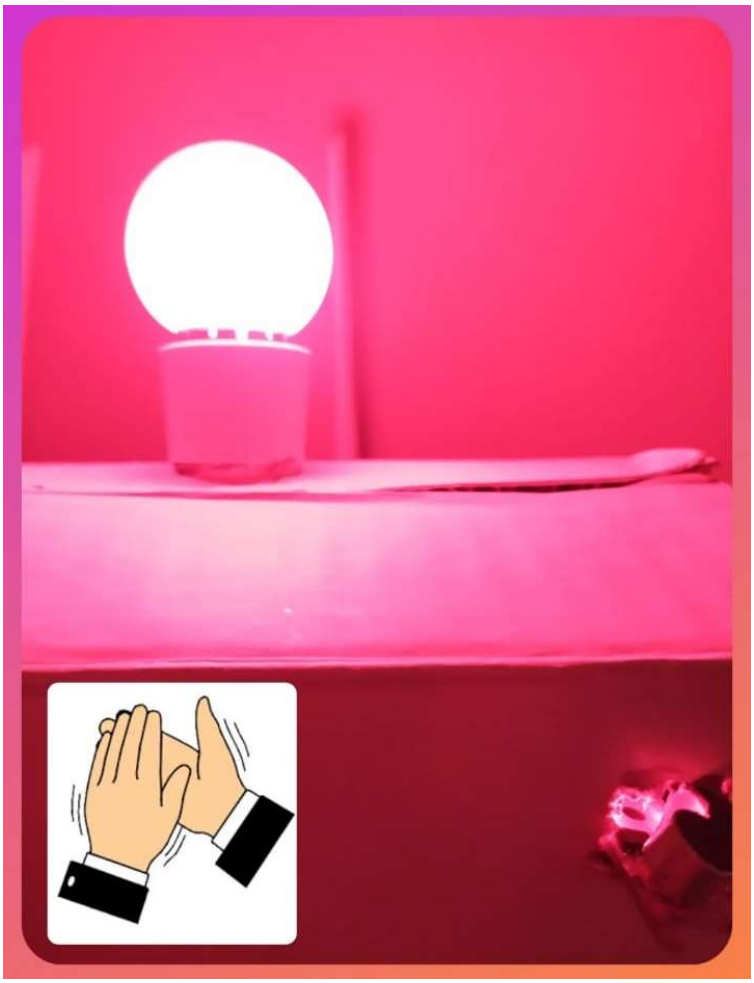
Is an electric wire that connects remote electric circuits used for printed circuit boards. By attaching a jumper wire on the circuit, it can be short-circuited and short-cut (jump) to the electric circuit.

Results–

previous image



after image



The sound sensor allows to detect when the sound has exceeded a set point . The sound orthe sensitivity is detected via a microphone which is already inbuilt in the sensor . Thesensitivity level can be adjusted via a potentiometer .Relay is used in this circuit to control the current .It controls the high current using a lowcurrent signal .When the sensitivity exceeds the set point ,the bulb connected will turn on ,the

output is sentlow .Once again if the sound exceeds ,the bulb is turned off and the output is sent high.This project will be able to help people who are naturally born dumb and physicallyhandicapped to be able to use their home lighting systems without the help of others.

Challenges Faced in Project

• Since the interaction was limited to online ,the communication was not efficient leading to delay in the selection of the project . Even the selected project at first was selected by another group causing further delay.

• The project timeline was rigid due to late commencement of class for the batch3 group members.•

•The Sensitivity levels have to be tweaked continuously in order for the microphone to not pick up any undesired sounds to trigger the potentiometer.

•As we are very new to tinkercad and all , we felt little difficulty in constructing the circuit at first .

•Setting clear goals and objectives.

•misconcepted about the components required.

•Resources to learn more about this Internet Of Things.

•As there are few unknown headerfiles in tinkercad code which we have less idea about it.

•challenges faced in selection of hardwares, troubleshooting the circuit,software

(libraries not available), project time management or any specific challenges faced by the team

Conclusion--

Assemble the circuit on a general-purpose PCB and enclose it in a suitable box. This circuit is very useful in field of electronic circuits. By using some modification it area of application can be extended in various fields. It can be used to raised alarm in security system with a noise, and also used at the place where silence needed.

This project gives us a great deal of knowledge about the

555 timer chips, working of clocks and the relay. This type of device provides us with the working of NE555 timer chips and the relay. The relay is a type of switch which provides a conducting path only when current flows it. In this project as soon as the 2nd timer triggers the relay a conducting path is established between terminals of the load and hence the device is turned on. The time interval between the claps is judged with the time constant

This switch is very low cost and is very useful to the elderly and physically challenged people

Energy efficient

Low cost and reliable circuit.

Complete elimination of manpower.

High Accuracy.

The major advantage of a clap switch is that you can turn something (e.g a lamp) on and off from any location in the room (e.g while lying in bed) simply by clapping your hands.

The primary application involves an elderly or mobility- impaired person. A clap switch is generally used for a light, television, radio or similar electronic device that the person will want to turn on/off from bed.

thank you