PROJECT PROPOSAL

(CLAP SWITCH USING ARDUINO UNO)

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EQUIPMENTS THAT CAN BE USED IN MAKING A CLAP SWITCH :

- Sound sensor
- Arduino UNO
- 5V Relay Module
- Jumper wires (Male, Female)
- Arduino data cable with OTG
- Cutter
- 2 Wires (Positive and Negative)
- Cartoon (To build a small house)
- Bulb
- Scissor
- Plug Wire
- Stick Glue

Guideline for the documentation of our final project:

Introduction:

- Project Context
- Purpose and Description of the project
- Objectives of the Project

Technical Background:

- Technicality of the project
- Details of the technologies to be used
- How the project will work
- Circuit diagram of the project

Methodology:

- Data and Process Modeling
- Context Diagram
- Data Flow Diagram
- System Flowchart
- Program Flowchart
- System Architecture
- Network Topology
- Parts and equipment needed
- Software specification
- Installation process
- Building the circuits

Testing:

- System testing
- Users guide

CODE:

```
const int Sensor = 7;
const int relay = 13;

int x = 0;
int y = 0;

void setup() {

pinMode(relay, OUTPUT);

pinMode(Sensor, INPUT);
}

void loop(){

x = digitalRead(Sensor);
y = digitalRead(relay);

if (y == HIGH && x == LOW) {
delay(250);
digitalWrite(relay, LOW);
}
if (y == LOW && x == LOW) {
delay(250);
digitalWrite(relay, HIGH);
}
}
```

CHAPTER 1

INTRODUCTION

In this project we are going to make a clap switch using Arduino Uno. The clap switch is used in a wide range of electronic projects, to control devices by clapping or making a specific sound. The clap switch consists of a Sound Sensor module connected to a microcontroller, or to an Arduino board. And through a software code, the audio signal can be converted into a key to turn on and off electronic devices or electronic circuits. Clap switch circuit can detect noises to turn the bulb on. A clap switch circuit can be used in homes and businesses to turn on things such as: lights, TVs, or whatever it is set up to the clap switch. In many cases you can snap your fingers, clap your hands, or even speak to it.

Technicality of the Project :

This is a project on CLAP SWITCH which can switch on/off any electrical circuit by the sound of the clap A clap switch is an electronic device that works based on clapping action, it converts sound energy into electrical pulses and proved these electrical pulses as input to the control circuit for controlling the light appliances. The main advantage of this technology is that it is very much helpful for a mobility-impaired person.

Details of the technologies to be used :

The Clap switch using Arduino Uno is integrated with some hardware components such as Arduino Uno, Sound Sensor, Jumper Wires, 5V Relay Module, Arduino data cable with OTG, Bulb, Plug Wires(Male, Female) etc.

- **Arduino UNO** is a low-cost flexible and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects This board can be interfaced with other Arduino boards Arduino shields Raspberry Pi boards and can control relays LEDs servos and motors as an output
- The **sound sensor** is a module that monitors and detects the sound signals like voice claps snaps knocks etc It is also known as an

acoustic sensor or sound detector Used in various applications such as security systems monitoring systems radios telephones mobile phones computers home automation systems consumer electronic appliances etc

- A 5V **relay module** is a single or multi-channel relay module that works with a low-level trigger voltage of V DC The input voltage can be from any microcontroller or logic chip that outputs a digital signal
- **Arduino data cable with OTG** This cable is used to interface any of the Arduino board with your computer you can also connect your USB printer scanner and more to your computer These cables Transmits data at high speeds with the error-free high-performance transmission
- **Jumper wires** typically come in three versions: male-to-male male-to-female and female-to-female The difference between each is in the end point of the wire Male ends have a pin protruding and can plug into things while female ends do not and are used to plug things into
- A **light-emitting diode** is a semiconductor device 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 is determined by the energy required for electrons to cross the band gap of the semiconductor
- **Bulb-** An electronic bulb is a small and simple light source that uses a wire filament to glow on the application of electricity. The structure of incandescent light bulbs is shown in the figure below. The light bulb consists of three key parts. The filament. The glass bulb.

How the project will work :

The project will work using by Arduino Uno, Sound Sensor, Jumper Wires, 5Vs relay, Arduino data cable with OTG, Adapter, LED, all the equipments needed to the project and Also the code that we used. The most important project will work if the group members will co-operate each one of us, planning the work of the project.

Circuit Diagram of the project :

The Microphone Sound Sensor

The microphone sound sensor, as the name says, detects sound. It gives a measurement of how loud a sound is.There are a wide variety of these sensors. In the figure below you can see the most common used with the Arduino.

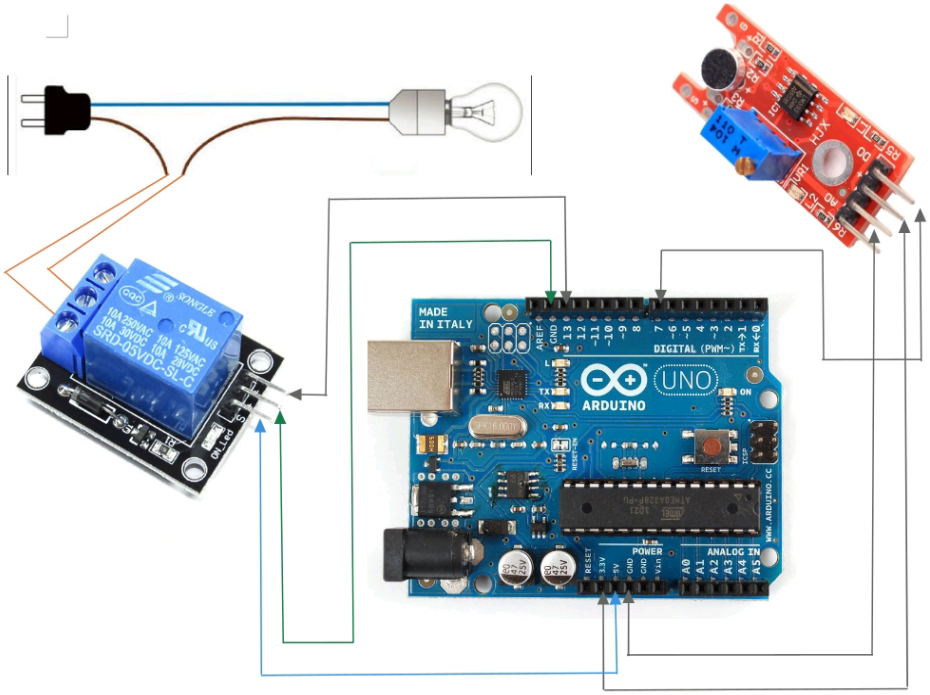
Arduino is a microcontroller based prototyping board that runs on small DC power. A Relay is a device that helps microcontrollers (or microcontroller based boards) like Arduino to switch on or off different household appliances like motors, lights, water heaters, television and fans etc.

Today, Arduino is being used for a wide range of applications like controlling LEDs, monitoring temperature, logging data and turning on motors etc. Another important task that can be accomplished by the Arduino is controlling a 5V Relay to operate high voltage AC appliances and devices.

Arduino UNO can be programmed to control a simple 5V relay example switch it on or off on the event by clapping. In this project, we will see a simple circuit where an Arduino UNO will control a 5V relay, which in turn will a lamp.

Circuit Diagram

Let us see the circuit diagram for the project. Even though we have used a 5V Relay Module, the connections in this circuit diagram will be describe the complete setup.


MADE IN ITALY
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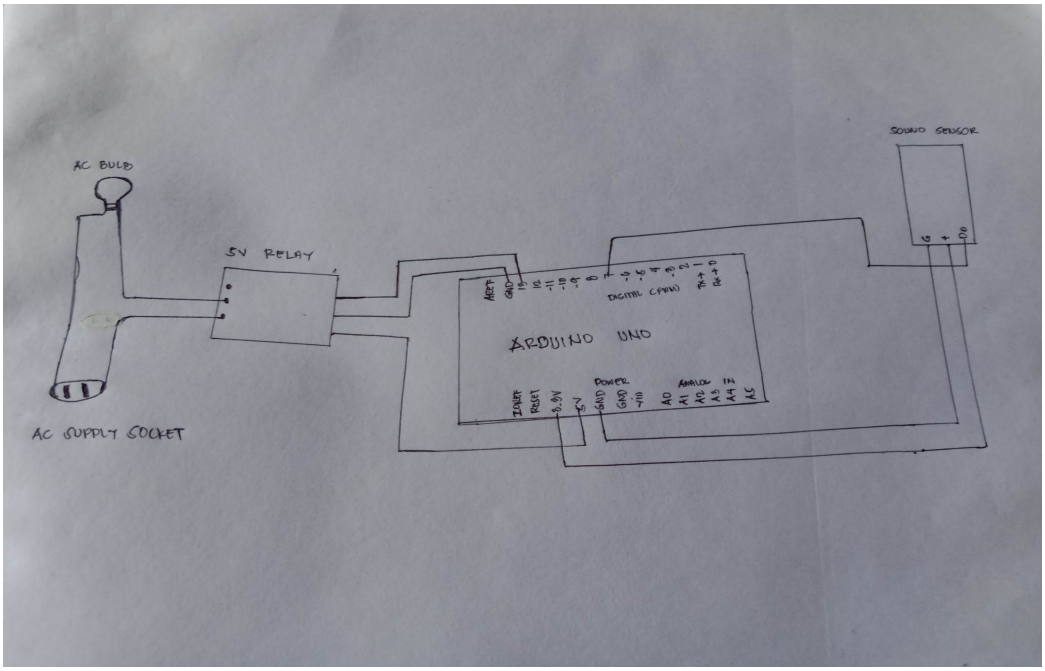
AC BULB
5V RELAY
SOUND SENSOR
ARDUINO UNO
AC SUPPLY SOCKET

CHAPTER 2

METHODOLOGY

Data and Process Modeling :

Context Diagram :

Data Flow Diagram :

System Flowchart :

Program Flowchart :

System Architecture :

Network Topology :

Parts and equipment needed :

Software specification :

DOCUMENTATION