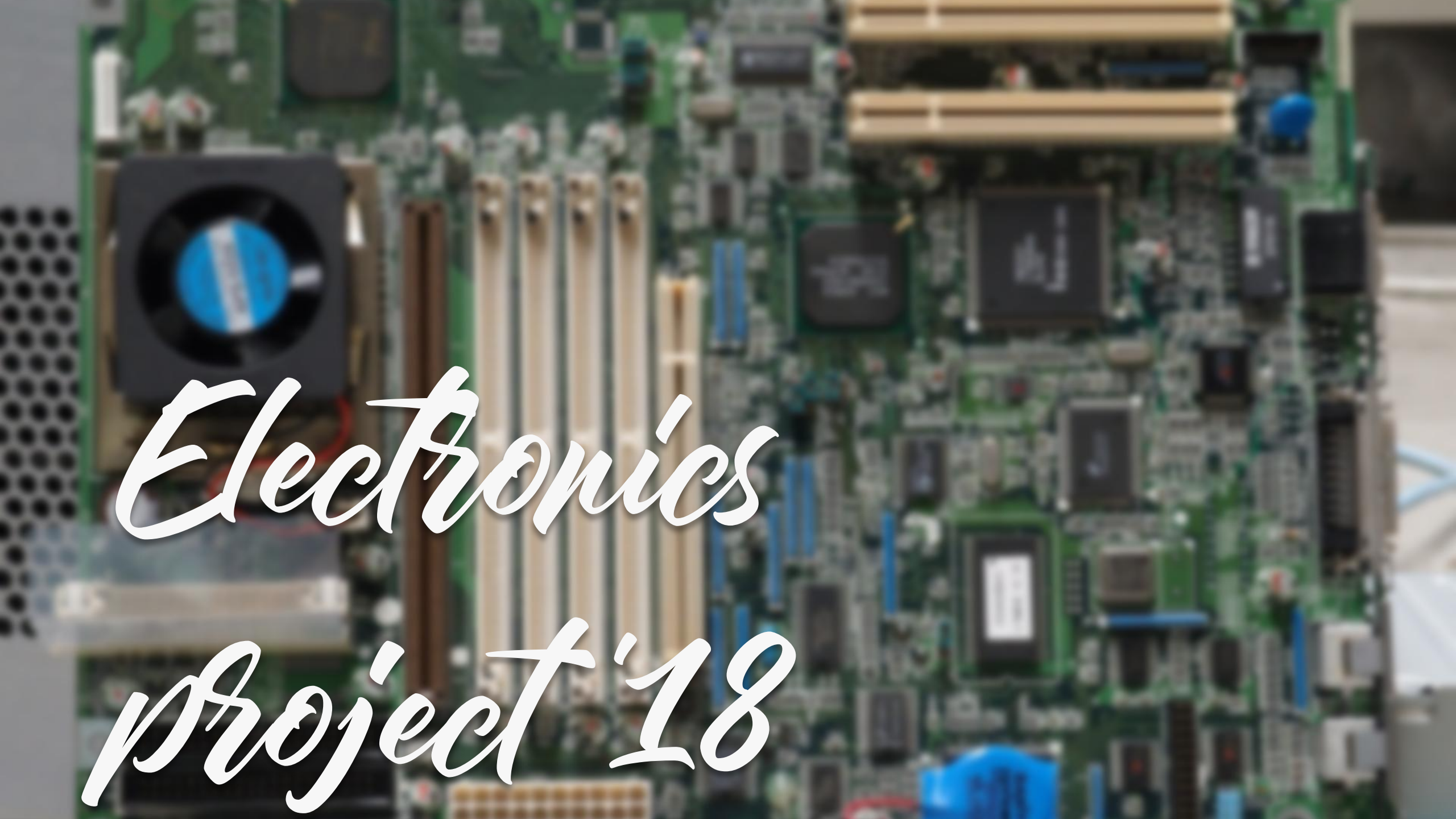

Electronics
Project '18

Our Idea

A mini project on:
Bi-Directional digital visitor counter gate and automatic room light controller.

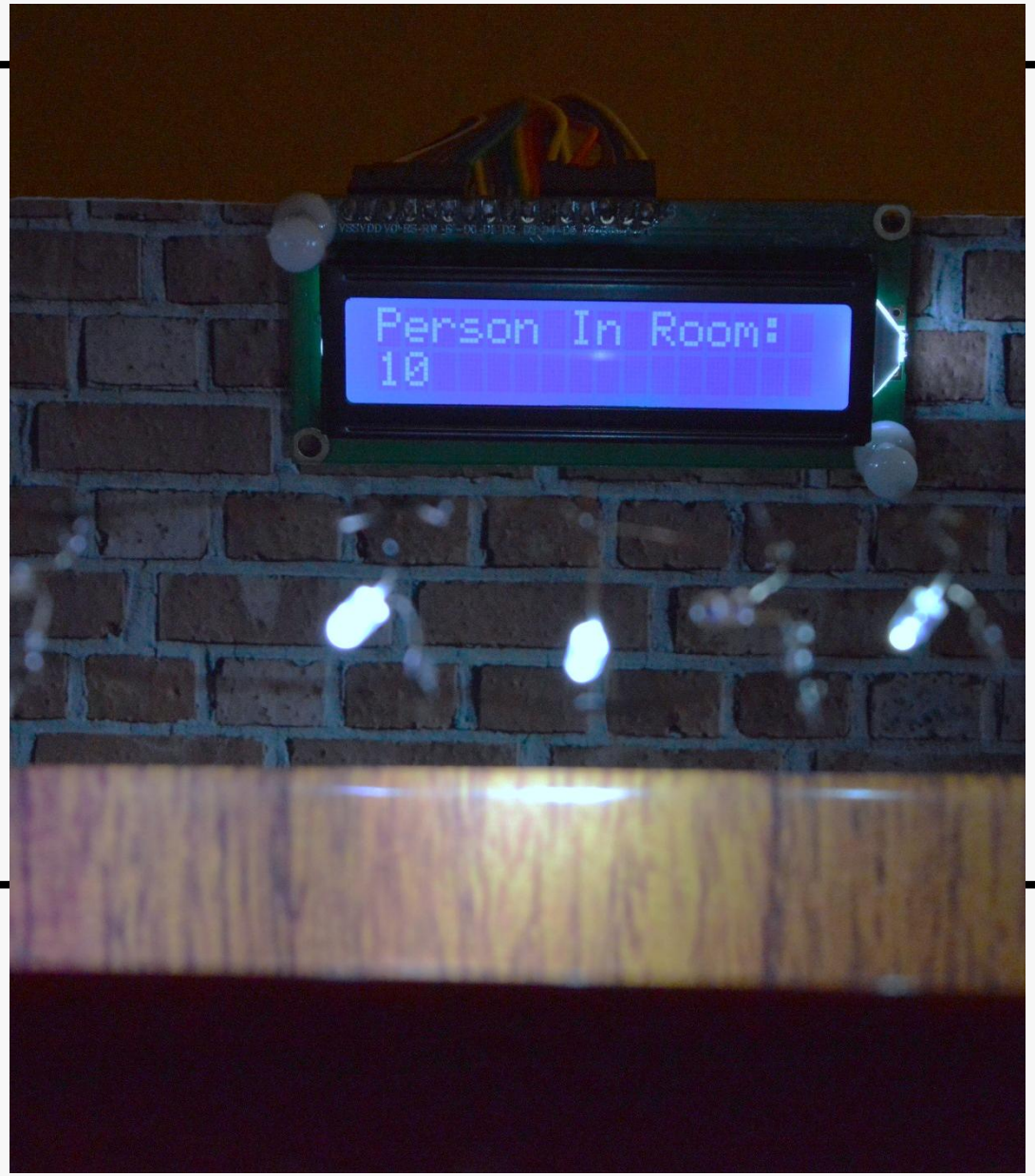
Introduction

In today’s world, there is a continuous need for automatic appliances.

The objective of this project is to make a controller based model to count number of persons present in a particular room and accordingly light up the room automatically (with different levels).

Here we are using 2 IR sensors and “Arduino Uno” controller to count the number of persons in the room and display it on LCD.

If there is at least **1 person** in the room, The LED row will glow, else it will remain off.



Aim of the Project

- The aim of our project is to make a controller based model which **can sense if any person enters the room, it lights up the room automatically** (with different levels) and also counts how many person are actually in the room.

- It is made **to prevent electric power waste** in schools, colleges, offices and houses. This whole process is operated automatically by sensors.

Hardware components

Arduino UNO

Resistors

IR Sensor x2

module

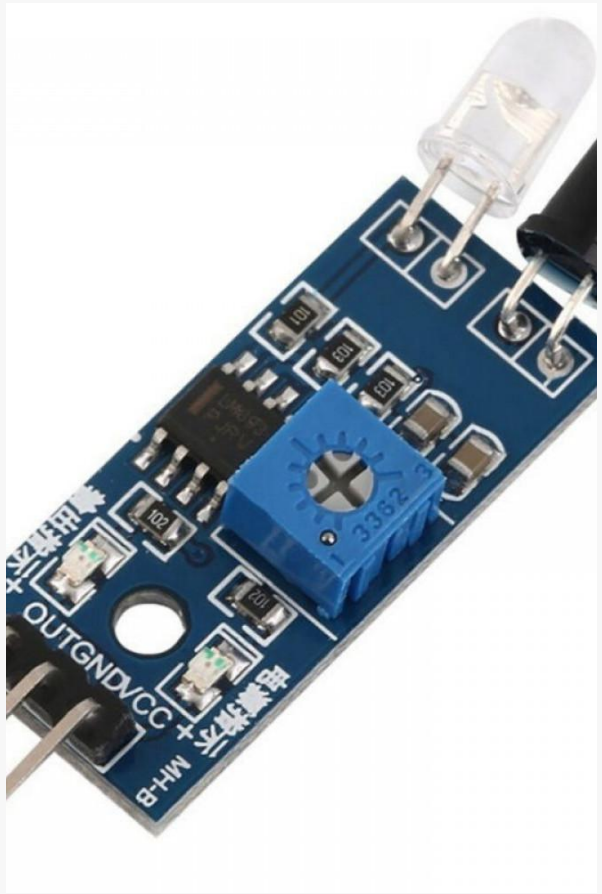
16x2 LCD

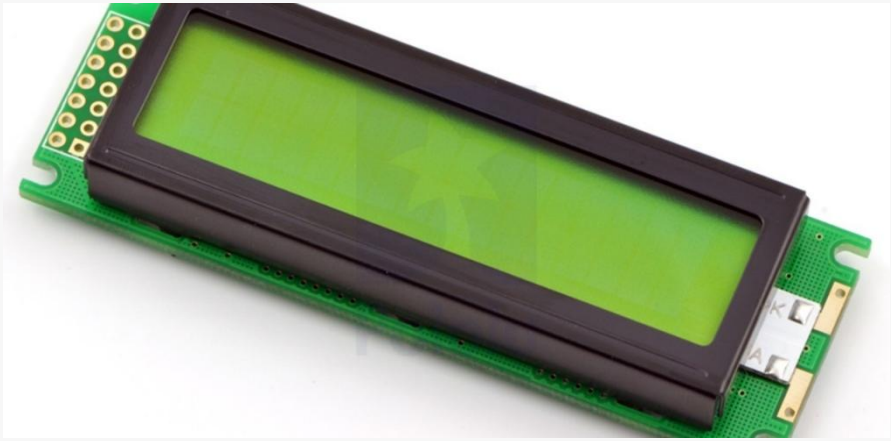
display

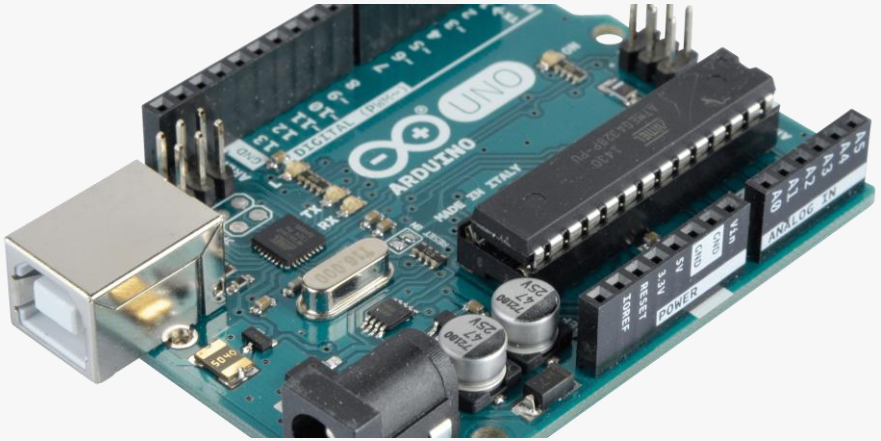
Bread Board

Jump wires

LEDs

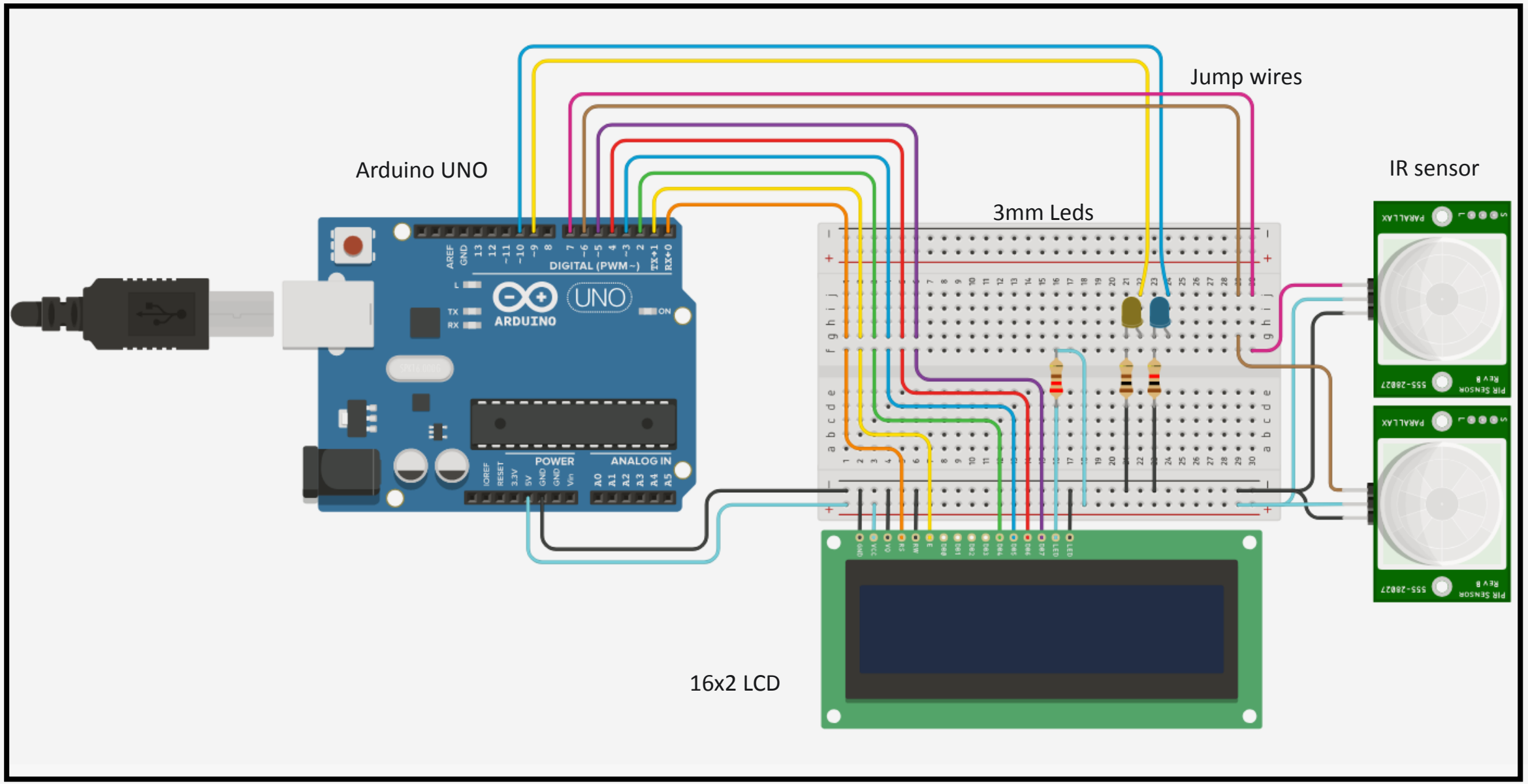






Circuits.io

Simulation diagram



<Arduino C Code>

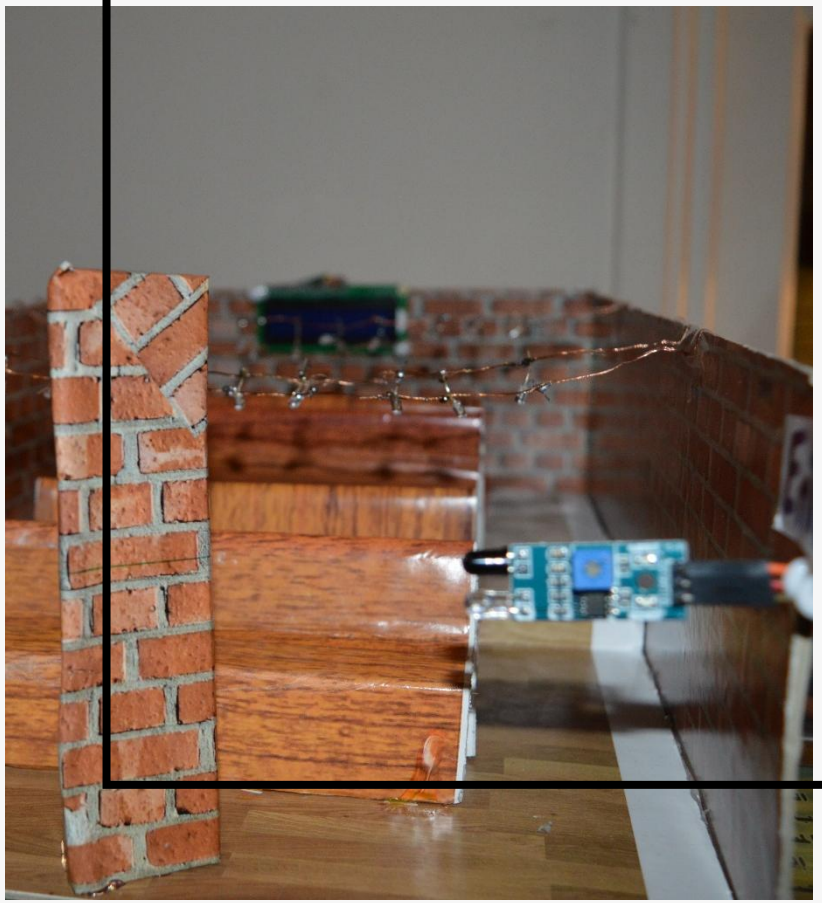
```
// include the lcd library code:
#include <LiquidCrystal.h>

// INITIALIZE THE LCD LIBRARY WITH THE
NUMBERS OF THE PINS:
LiquidCrystal lcd(0, 1, 2, 3, 4, 5);
//INITIALIZE SENSORS PINS;
int in   = 6;
int out = 7;
//INITIALIZE LED PINS:
int led001Pin   = 8;
int led01Pin    = 9;
int led1Pin     = 10;
int led2Pin     = 13;
//INITIALIZE COUNTER :
int count       = 0;

void setup(){
//LCD SETTINGS:
 lcd.begin(16,2);
 lcd.print("Visitor Counter");
 delay(2000);
//DECLARE SENSORS AS INPUT:
 pinMode(in  , INPUT);
 pinMode(out , INPUT);
//DECLARE LED AS OUTPUT:
 pinMode(led001Pin, OUTPUT);
 pinMode(led01Pin  , OUTPUT);
 pinMode(led1Pin   , OUTPUT);
 pinMode(led2Pin   , OUTPUT);
}
```

```
void loop(){
 //SENSORS READING:
 if(digitalRead(in)){
  count++;
  }
 if(digitalRead(out)){
  count--;
  }
 //LCD DISPLAY :
 lcd.clear();
 lcd.print("Person In Room:");
 lcd.setCursor(0,1);
 lcd.print(count);
 delay (1000);
 //LED LIGHT OFF/ON:
 if(count<=0){
   lcd.clear();
   digitalWrite(led001Pin , LOW);
   digitalWrite(led01Pin  , LOW);
   digitalWrite(led1Pin   , LOW);
   lcd.clear();
   lcd.print("Nobody In Room");
   lcd.setCursor(0,1);
   lcd.print("Light Is Off");
   delay(1000);
 }
 if(count >= 1 && count <= 5){
   digitalWrite(led001Pin , HIGH);
   digitalWrite(led01Pin  , HIGH);
   digitalWrite(led1Pin   , HIGH);
   digitalWrite(led2Pin   , LOW);
   }
 if(count > 5 && count <= 10){
   digitalWrite(led001Pin , HIGH);
   digitalWrite(led01Pin  , HIGH);
   digitalWrite(led1Pin   , HIGH);
   digitalWrite(led2Pin   , HIGH);
   }
}
```

Conditions

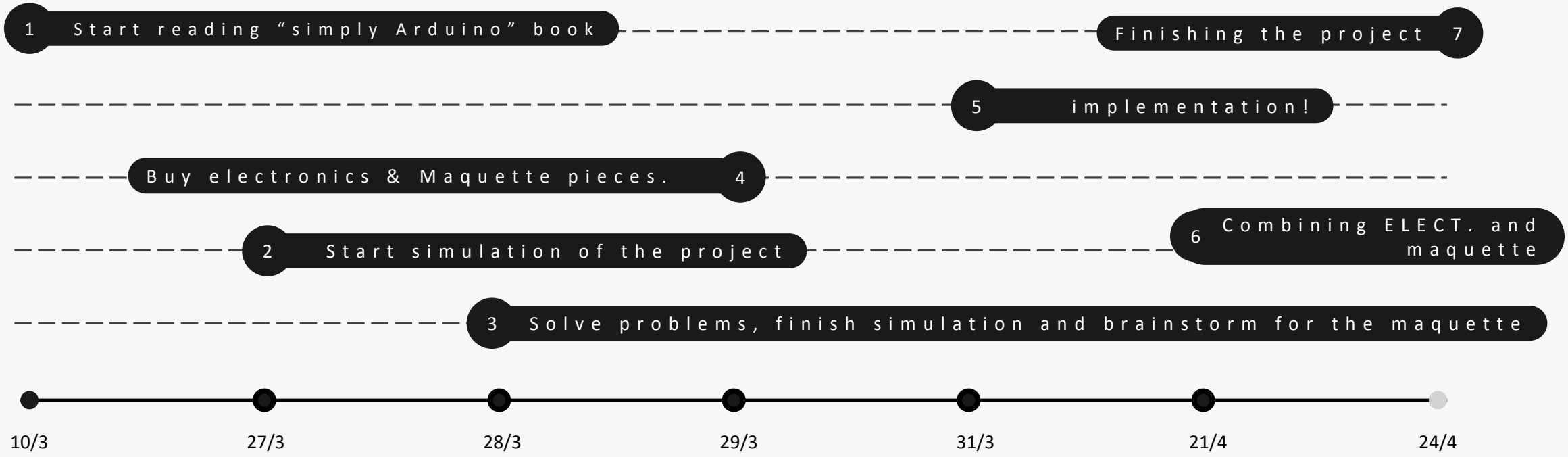
If there is at least **1 person** in the room, **The first LED row will glow**, if more than **5 persons** are in it the **second row will also glow**, else it will remain off.

```
//LED LIGHT OFF/ON:
 if(count<=0){
   lcd.clear();
   digitalWrite(led001Pin  , LOW);
   digitalWrite(led01Pin   , LOW);
   digitalWrite(led1Pin    , LOW);
   lcd.clear();
   lcd.print("Nobody In Room");
   lcd.setCursor(0,1);
   lcd.print("Light Is Off");
   delay(1000);
 }
 if(count >= 1 && count <= 5){
   digitalWrite(led001Pin  , HIGH);
   digitalWrite(led01Pin   , HIGH);
   digitalWrite(led1Pin    , HIGH);
   digitalWrite(led2Pin    , LOW);
   }
 if(count > 5 && count <= 10){
   digitalWrite(led001Pin, HIGH);
   digitalWrite(led01Pin   , HIGH);
   digitalWrite(led1Pin    , HIGH);
   digitalWrite(led2Pin    , HIGH);
   }
}
```



Our project's timeline.

It was really a great, passionate, unique and benefitful journey.



Application

Our idea can be applied effectively at:

- Offices
- Public Places
- Restrooms (at railway stations)
- Meeting rooms
- Education halls

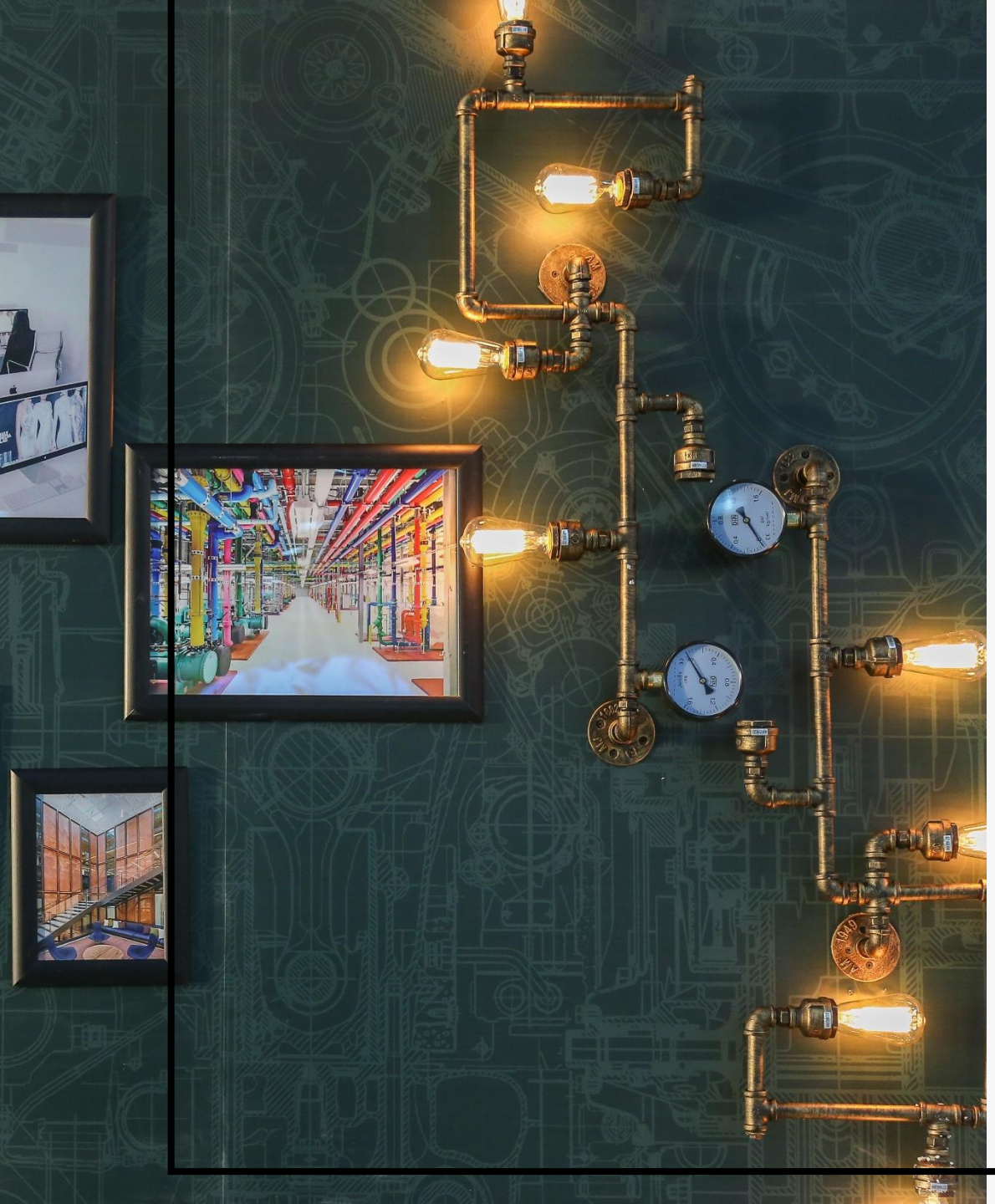
SaveToday.SurviveTomorrow.

Advantages

- Completely Automatic System
- No need of human interference.
- Can work 24x7 without any problem.
- Low cost and very easy to implement.
- Power Saving

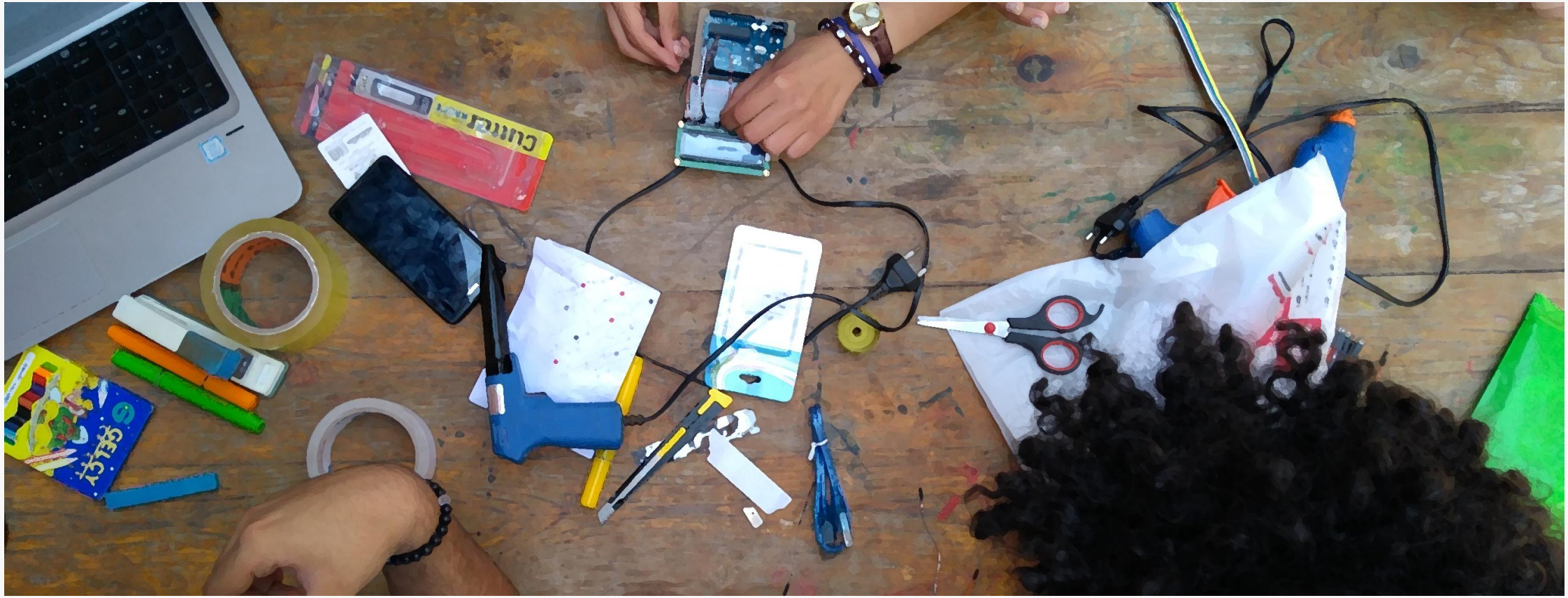
Disadvantages

- If there are multiple (enter/exit) doors for the same room, the project becomes quite complex.
- IR sensor cannot detect if lots of people are entering at one time.
- IR sensors don’t work well in presence of sunlight.



Future Scope

- Multiple devices can be turned ON/OFF instead of just lights.
- We can check the ambient light intensity and then decide if the light needs to be turned ON or not.



Save energy,

Save money.

We can help you get started.

Thanks Dr. Eslam, Dr. Noha,

our beloved T.A.s and Robotech team.

Thank you for your efforts, passion, and support.

It was really a great journey.

MonicaAdel **Section: 19**

MonicaAtef **Section: 19**

MichalineMedhat **Section: 19**

MinaOssama **Section: 19**

YoussefRafaat **Section: 22**

MichaelSafwat **Section: 13**