V.S.B ENGINEERNG COLLEGE

Electronics and Communication Engineering

IBM Nalaiya Thiran

Assignment 1:

- **Make a Smart Home in Tinkercad, using 2+ sensors, Led, Buzzer in single code and circuit.**

Name: Athena S

DESCRIBTION

- The sensors connected to the microcontroller board are Smoke Detector, PIR, Ultrasonic and LDR sensor. Smoke detector is used to sense the Gas if it leakage .

- The data sensed by the sensors are then if gas is leaked the Alarm circuit is active. The Ultrasonic is used for automatic open the front door if some someone is in front of the door.

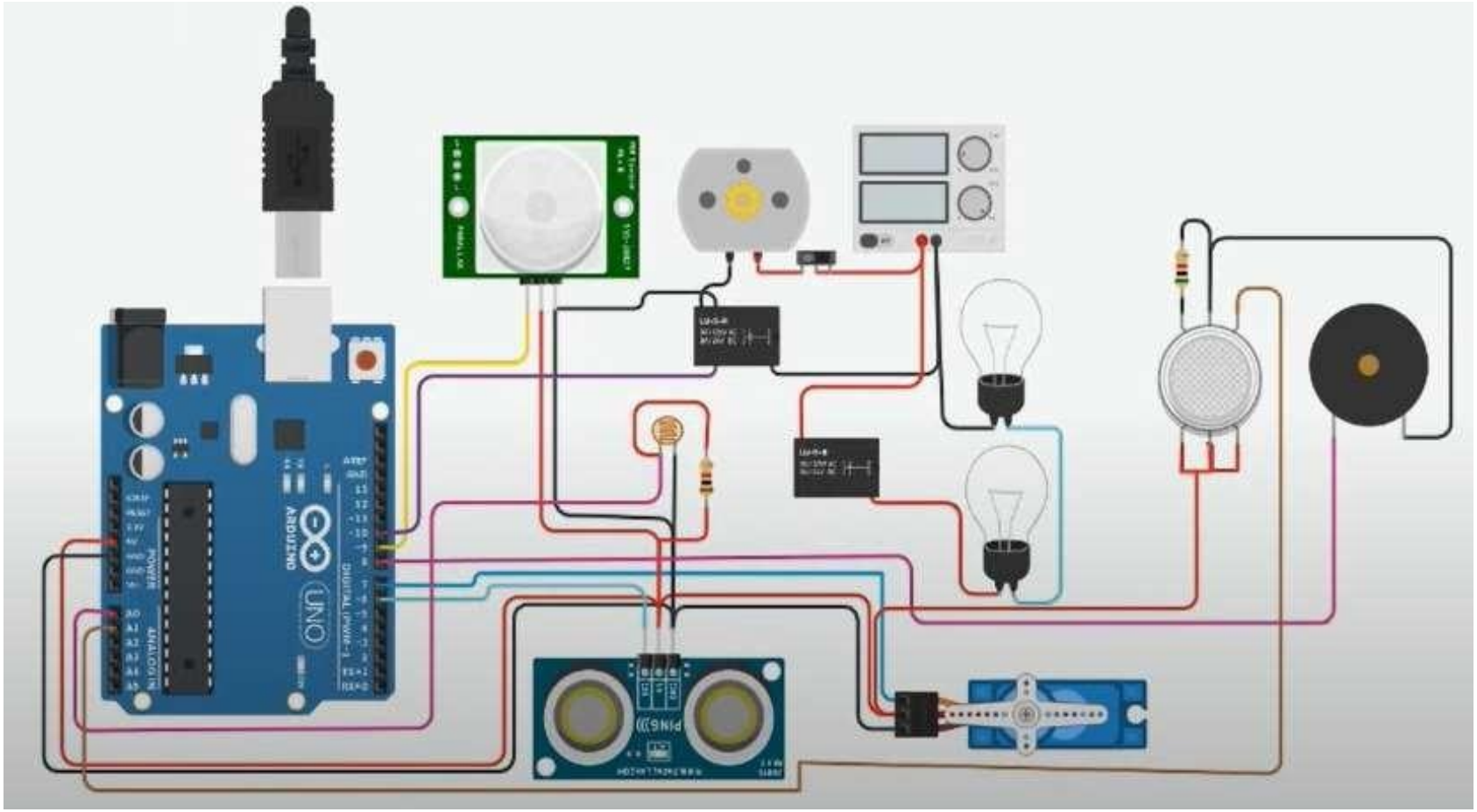
- The PIR is used for detection of human and turn ON the fan. Also the fan is controlled by manually.

- LDR is used for automatic light control in home if someone is in home at night the bulb is automatically turned ON and at day time it automatically turned OFF.

THINGS THAT WE NEED

- ARDUINO
- SMOKE DETECTOR MQ6
- PIR
- LDR
- ULTRASONIC
- DC POWER SOURCE (Any 12v)
- RELAY BOARD OF 2 CHANNEL

CIRCUIT DIAGRAM



CODING

```
#include <Servo.h>
int output1Value = 0;
int sen1Value = 0;
int sen2Value = 0;
int const gas_sensor = A1;
int const LDR = A0;
int limit = 400;
long readUltrasonicDistance(int triggerPin, int echoPin)
{
  pinMode(triggerPin, OUTPUT); // Clear the trigger
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);
// Sets the trigger pin to HIGH state for 10 microseconds
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);
  pinMode(echoPin, INPUT);
  // Reads the echo pin, and returns the sound wave travel time in microseconds
  return pulseIn(echoPin, HIGH);
}
```

```
void setup()
{
   Serial.begin(9600);                  //initialize serial communication
  pinMode(A0, INPUT);                   //LDR
  pinMode(A1,INPUT);                    //gas sensor
  pinMode(13, OUTPUT);                  //connected to relay
  servo_7.attach(7, 500, 2500);  //servo motor

  pinMode(8,OUTPUT);                    //signal to piezo buzzer
  pinMode(9, INPUT);                    //signal to PIR
  pinMode(10, OUTPUT);                  //signal to npn as switch
  pinMode(4, OUTPUT);                   //Red LED
  pinMode(3, OUTPUT);                   //Green LED

}
```

light intensity control

```
void loop()
{
      int val1 = analogRead(LDR);
  if (val1 > 500)
            {
            digitalWrite(13, LOW);
    Serial.print("Bulb ON = ");
    Serial.print(val1);
            }

else
            {
            digitalWrite(13, HIGH);
     Serial.print("Bulb OFF = ");
    Serial.print(val1);
            }
```

light & fan control

```
sen2Value = digitalRead(9);
if (sen2Value == 0)
        {
        digitalWrite(10, LOW); //npn as switch OFF
        digitalWrite(4, HIGH); // Red LED ON,indicating no motion
        digitalWrite(3, LOW); //Green LED OFF, since no Motion detected
  Serial.print("     || NO Motion Detected    " );
        }

if (sen2Value == 1)
        {
        digitalWrite(10, HIGH);//npn as switch ON
  delay(3000);
        digitalWrite(4, LOW); // RED LED OFF
        digitalWrite(3, HIGH);//GREEN LED ON , indicating motion detected
   Serial.print("     || Motion Detected!      " );
        }
delay(300);
```

Gas Sensor

```
int val = analogRead(gas_sensor);      //read sensor value
  Serial.print("|| Gas Sensor Value = ");
  Serial.print(val);                                    //Printing in serial
monitor
//val = map(val, 300, 750, 0, 100);
  if (val > limit)
          {
          tone(8, 650);
          }
          delay(300);
          noTone(8);
```

servo motor

```
sen1Value = 0.01723 * readUltrasonicDistance(6, 6);

if (sen1Value < 100)
        {
        servo_7.write(90);
  Serial.print("     || Door Open!   ; Distance = ");
  Serial.print(sen1Value);
 Serial.print("\n");
```