

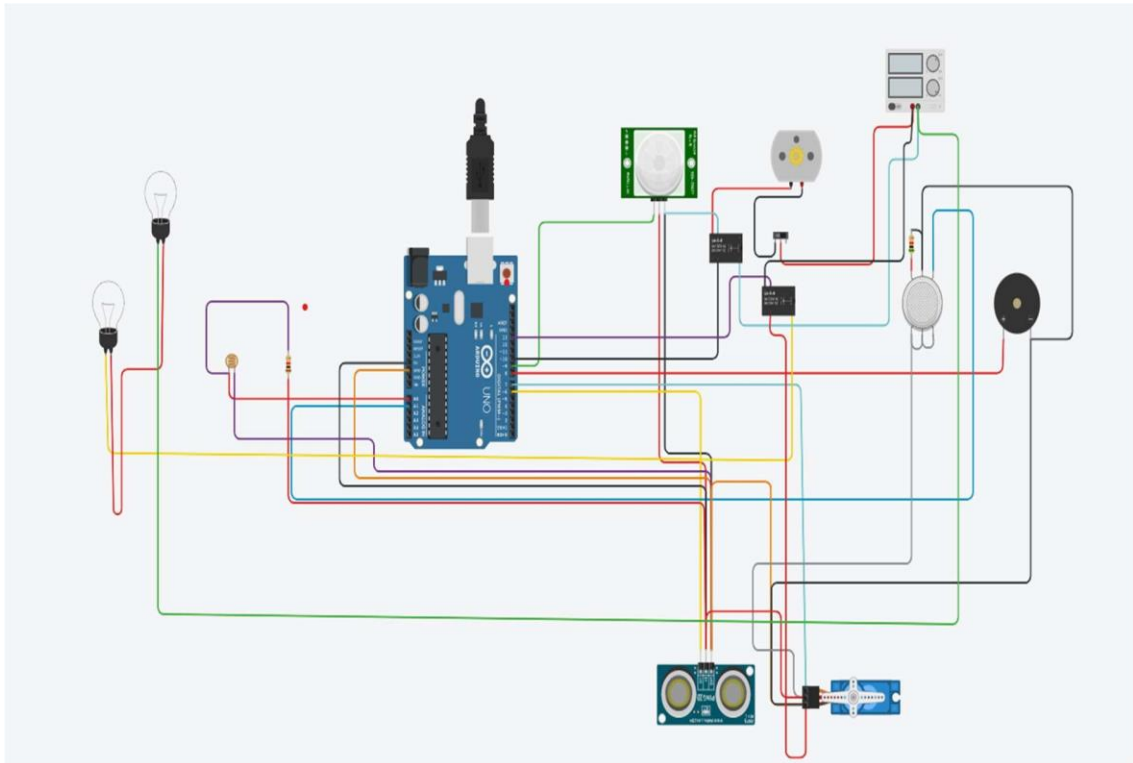
Assignment -1

Assignment Date	19 September 2022
Student Name	E Prakash
Student Roll Number	2019504045
Maximum Marks	2 Marks

Question-1:

Home Automation using Tinker cad:

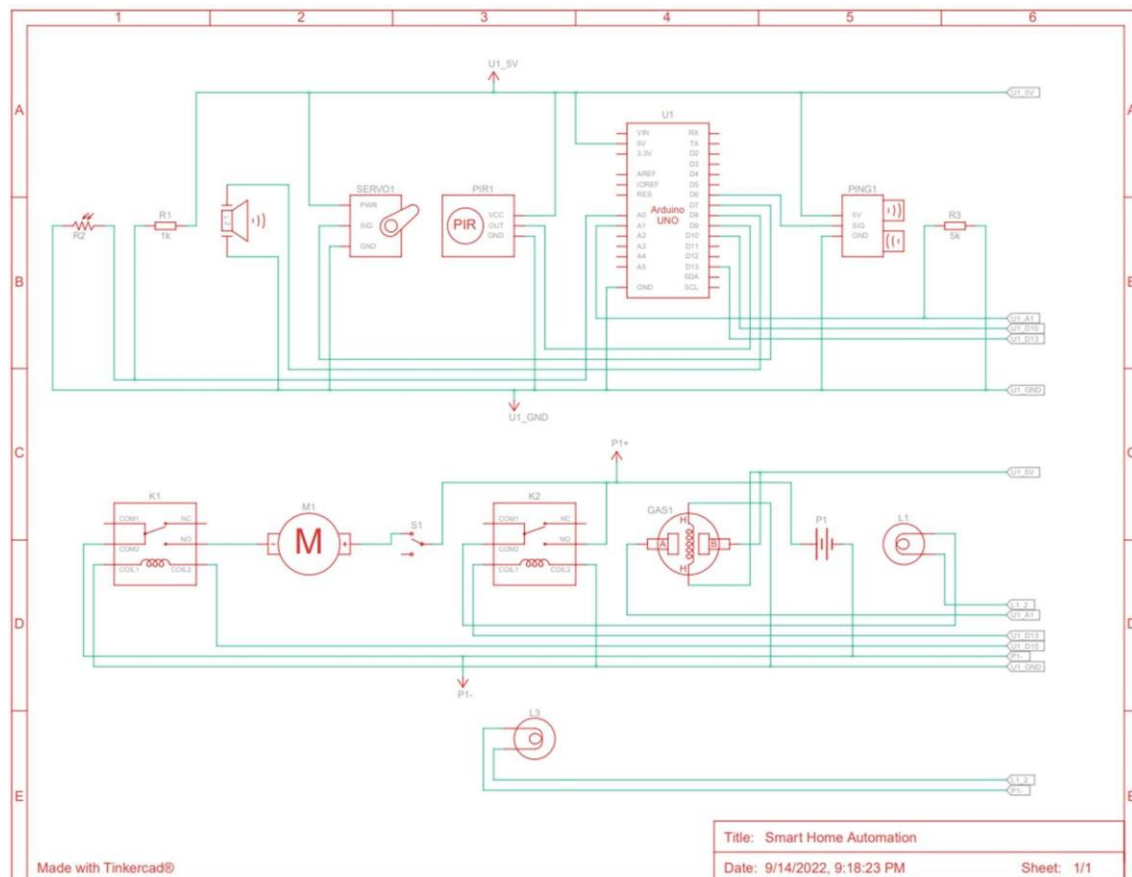
Design:



Components Required:

Name	Quantity	Component
U1	1	Arduino Uno R3
PIR1	1	-17.358178557221777 , -247.4289412888927 , -197.15541335786304 , -230.71302788180571 PIR Sensor
SERVO1	1	Positional Micro Servo
PIEZO1	1	Piezo
GAS1	1	Gas Sensor
M1	1	DC Motor
R1	1	1 kΩ Resistor
R2	1	Photoresistor
K1, K2	2	Relay SPDT
S1	1	Slideswitch
P1	1	20 , 5 Power Supply
PING1	1	Ultrasonic Distance Sensor
R3	1	5 kΩ Resistor
L3, L1	2	Light bulb

Schematic:



Reference:

https://www.tinkercad.com/things/iALvOmx0rCs-smart-home-automation/editel?sharecode=VFGFN0jR2Em9kIPHNAKc7WFop_xODpLJNjg5_UTQw8&sharecode=VFGFN0jR2Em9kIPHNAKc7WFop_xODpLJNjg5_UTQw8

Code:

```
#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); digitalWrite(triggerPin,
  HIGH);
```

```

    delayMicroseconds(10);
    digitalWrite(triggerPin, LOW);
    pinMode(echoPin, INPUT);
    return pulseIn(echoPin, HIGH);
}

Servo servo_7;

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
}

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);
    }

    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);

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);

sen1Value = 0.01723 * readUltrasonicDistance(6, 6);

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

    }
else
    {
        servo_7.write(0);
        Serial.print("    || Door Closed! ; Distance = ");
        Serial.print(sen1Value);
        Serial.print("\n");
    }
    delay(10); // Delay a little bit to improve simulation performance
}

```