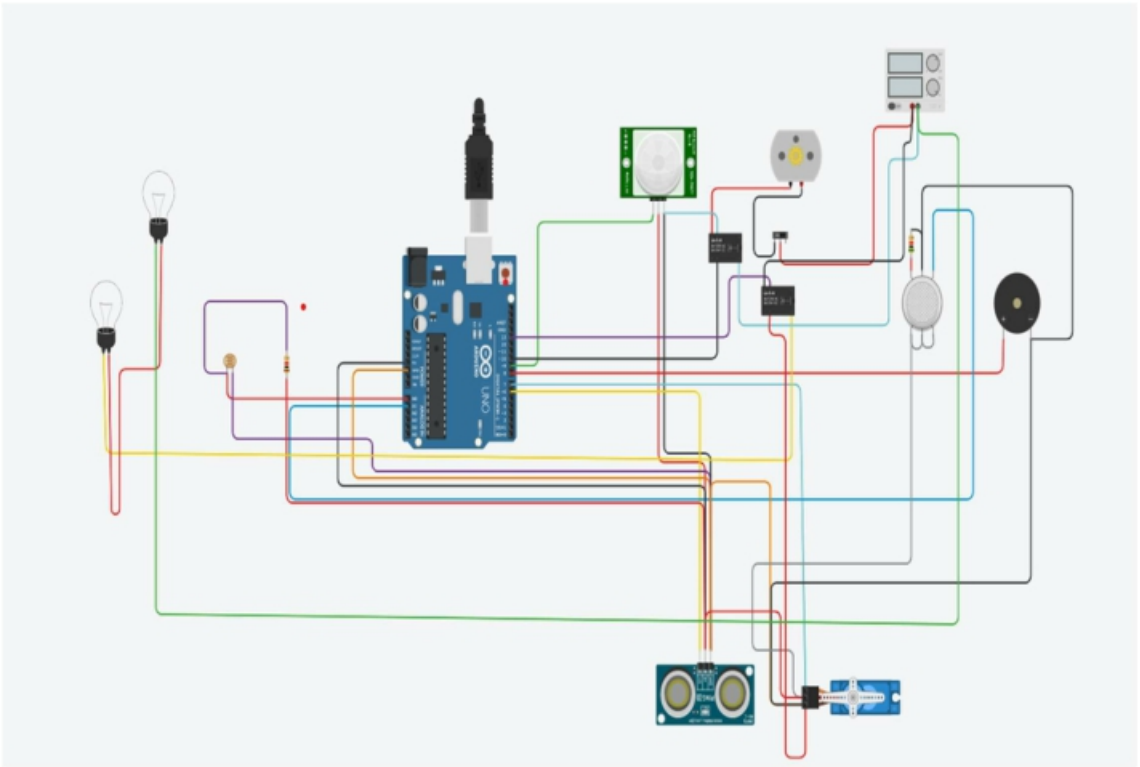
Assignment -1

Assignment Date	19 September 2022
Student Name	Akhilesh Chandra
Student Roll Number	2019504611
Maximum Marks	2 Marks

Question-1:

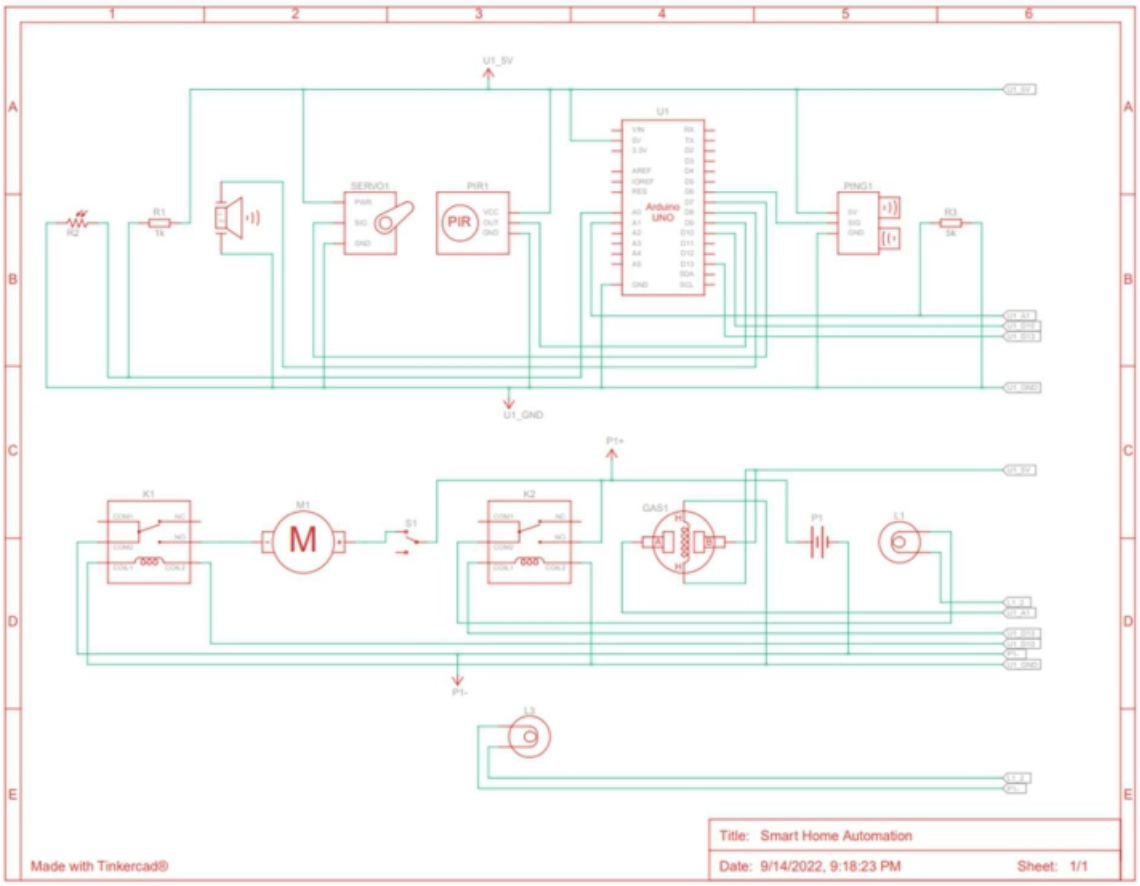
Home Automation using Tinker cad: Design:



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:



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("  II 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("  II Motion Detected!   " );
}
delay(300);


int val = analogRead(gas_sensor);          //read 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("   II Door Open! ; Distance = "); Serial.print(sen1Value);
Serial.print("\n");

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