Assignment -1

Assignment Date	19 September 2022
Student Name	A.Karthikeyan
Student Roll Number	820419104028
Maximum Marks	2 Marks

Question-1:

1.Smart Home using tinkercad.

Solution: #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);
}

Servo servo_7;
void setup()

{

  Serial.begin(9600); //initialize serial communication

  pinMode(A0, INPUT); //LDR

  pinMode(A1,INPUT); //gas sensor

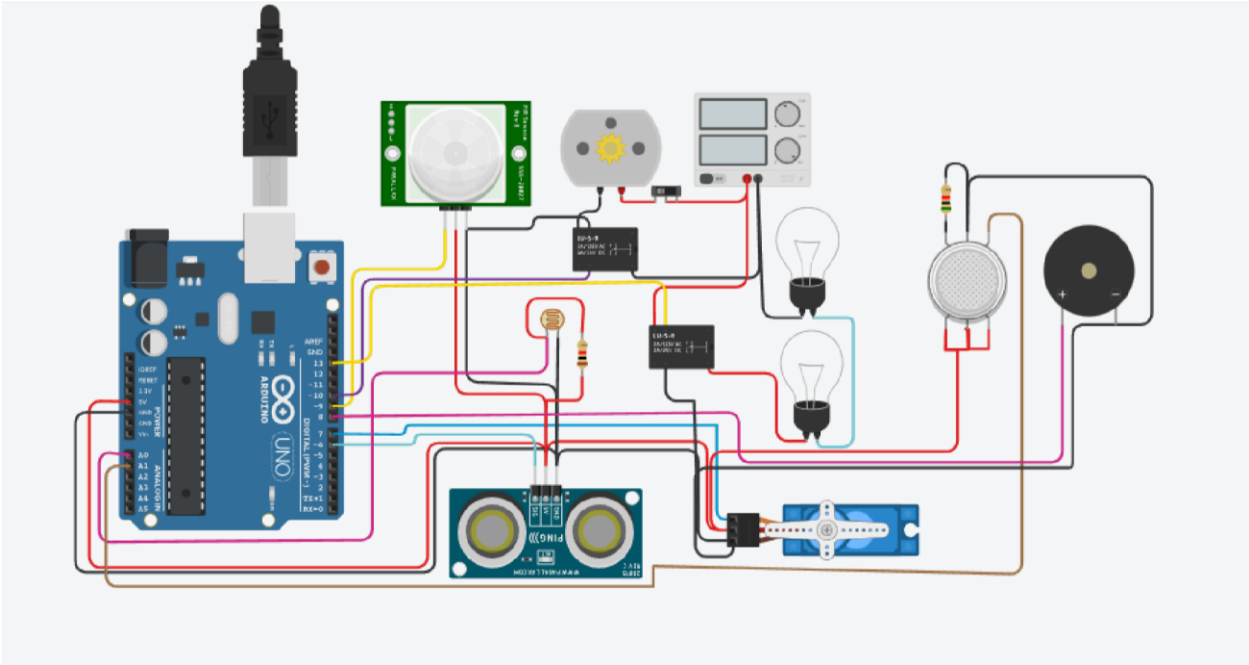
  pinMode(13, OUTPUT); //connected to relay
  servo_7.attach(7, 500, 2500); //servo motor

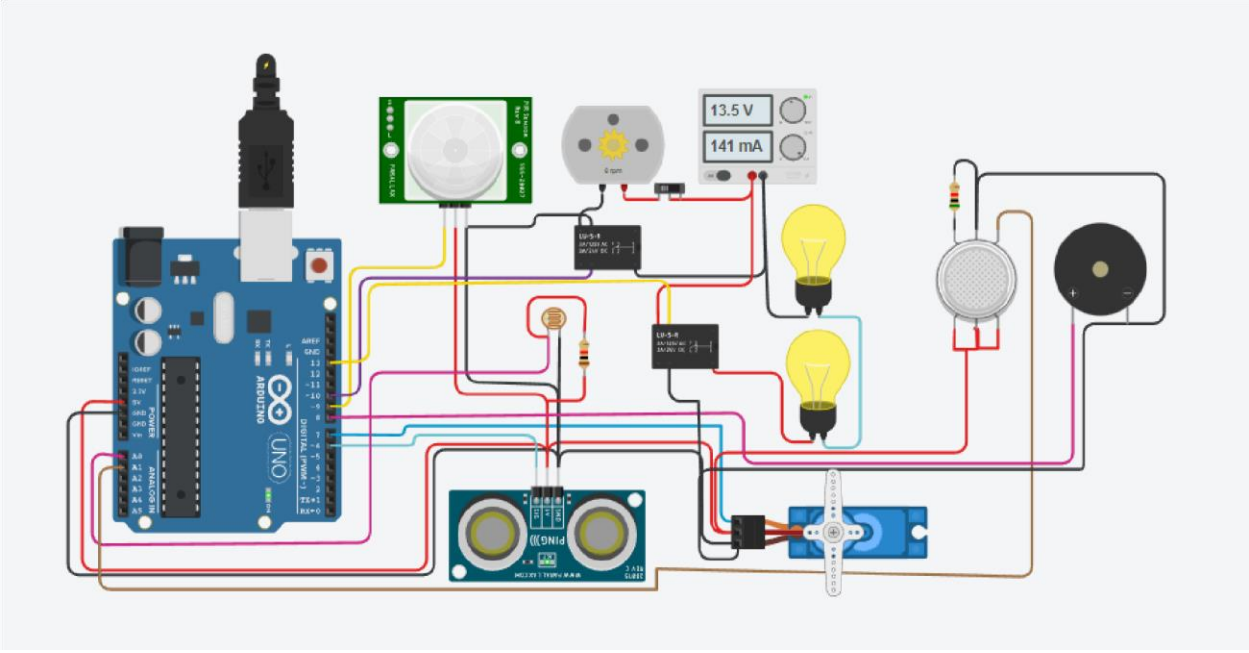
```
  pinMode(8,OUTPUT);              //signal to piezo buzzer
  pinMode(9, INPUT);              //signal to PIR
  pinMode(10, OUTPUT);                    //signal to npn as switch
  pinMode(4, OUTPUT);             //Red LED
  pinMode(3, OUTPUT);             //Green LED
} void
loop()

{

//------light intensity control------//

//---------------------------------------------------------------

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(5000);
digitalWrite(4, LOW); // RED LED OFF digitalWrite(3,
HIGH);//GREEN LED ON , indicating motion detected

  Serial.print("    || Motion Detected!      " );

}

//-----------------------------------------------------------------

// ------- 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");


            }
  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
}
O
```

Output:






```
Bulb ON = 1017      || NO Motion Detected     || Gas Sensor Value = 320      || Door Open!
Bulb ON = 1017      || NO Motion Detected     || Gas Sensor Value = 320      || Door Open!
Bulb ON = 1017      || NO Motion Detected     || Gas Sensor Value = 320      || Door Open!
Bulb ON = 1017      || NO Motion Detected     || Gas Sensor Value = 320      || Door Open!
Bulb ON = 1017      || NO Motion Detected     || Gas Sensor Value = 320      || Door Open!
Bulb ON = 1017      || NO Motion Detected     || Gas Sensor Value = 320      || Door Open!
Bulb ON = 1017      || NO Motion Detected     || Gas Sensor Value = 320
```