Assignment -1

Assignment Date	19 September 2022
Student Name	G.Akshaya
Student Roll Number	820419104005
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 --------//
//---------------------------------------------------------------
```

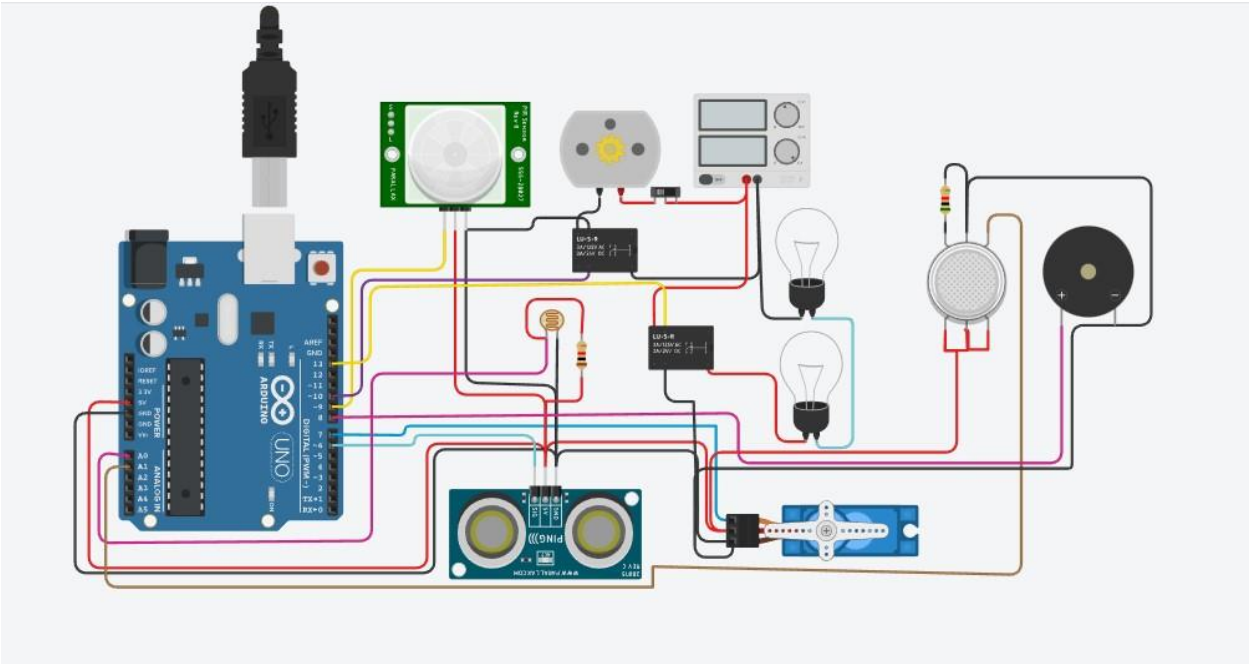
```
  sen2Value = digitalRead(9);
  if (sen2Value == 0)
{
digitalWrite(10, LOW); //npn as switch OFF digitalWrite(4, HIGH);
// Red LED ON,indicating no motion digitalWrite(3, LOW);
//Green LED OFF, since no Motion detected
  Serial.print("     || NO Motion Detected    " );
} if (sen2Value ==
1)
{
digitalWrite(10, 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);
//-------------------------------------------------------------
```

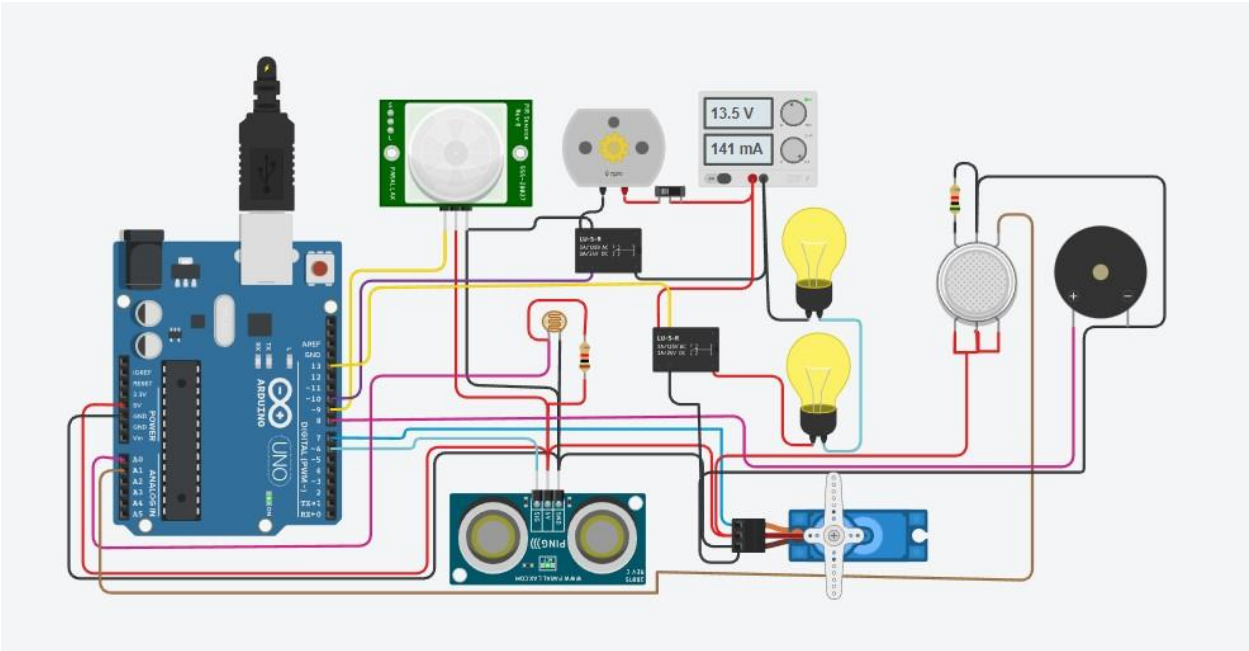
```
    //-------  servo motor  ---------//
//-------------------------------------------------------------
sen1Value = 0.01723 * readUltrasonicDistance(6, 6);
if (sen1Value < 100)
            {
            servo_7.write(90);
   Serial.print("    || Door Open!  ; Distance = ");
   Serial.print(sen1Value);
  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!
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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
```