Assignment -1

Assignment Date	19 September 2022
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Student Roll Number	820419104033
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);
```

```arduino
}
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
```
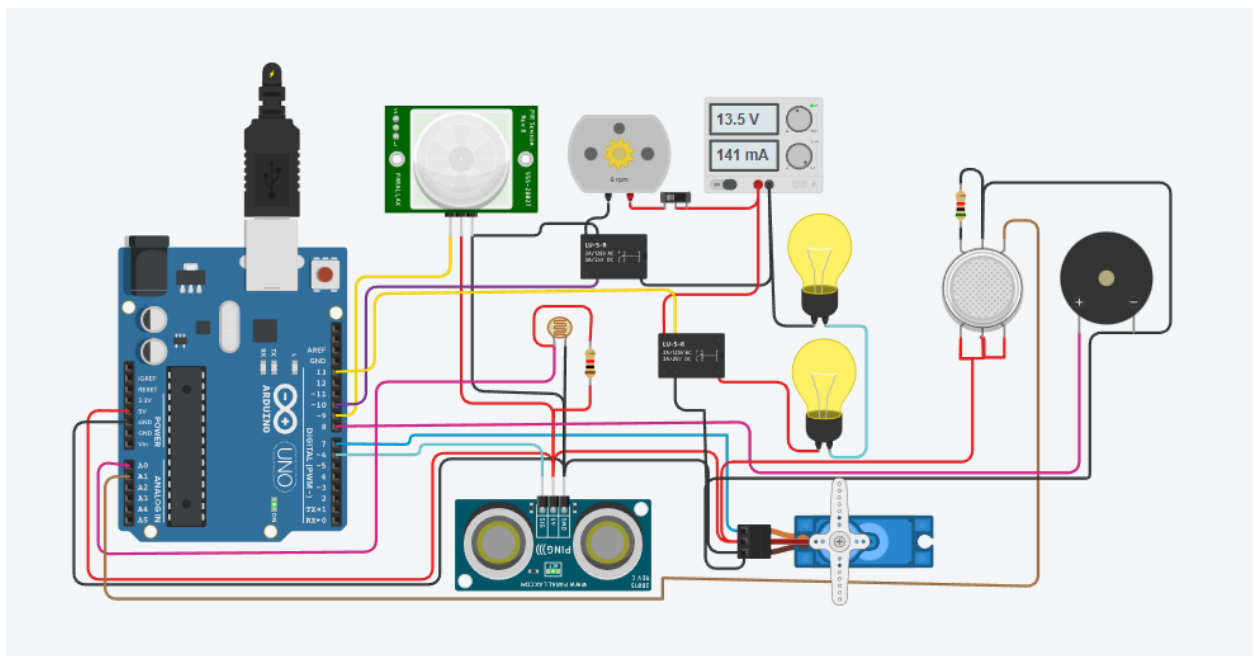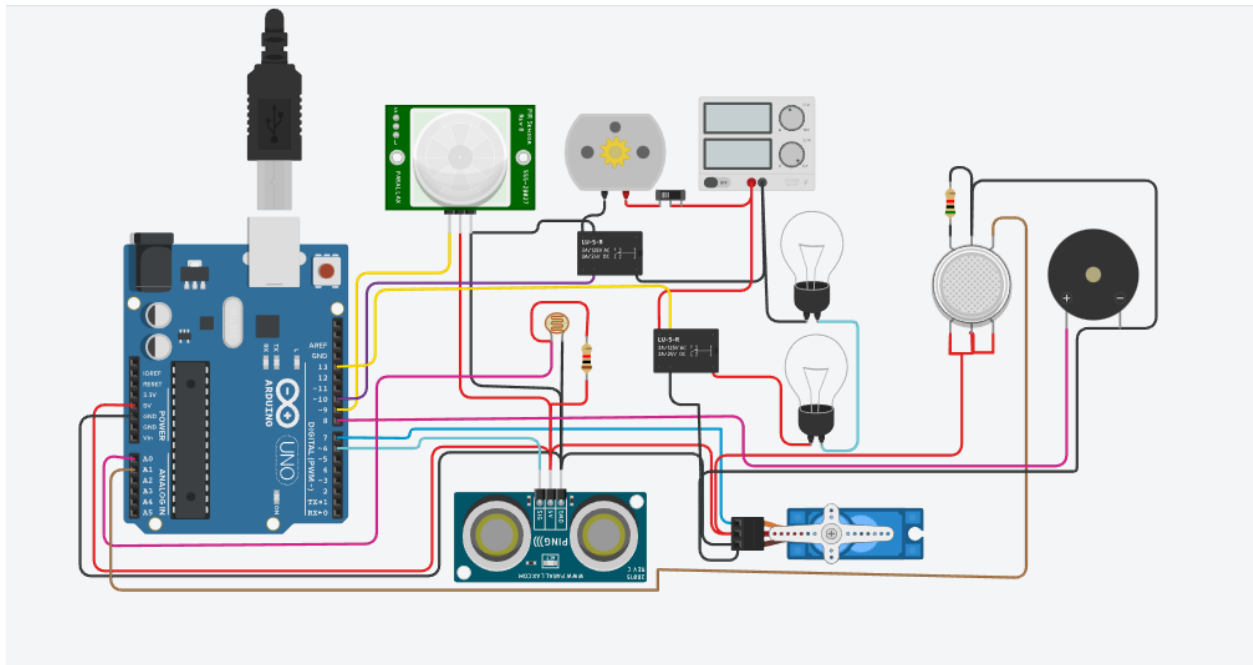
Output:


```
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
```