Assignment -1 Smart Home Automation

Assignment Date	15 September 2022
Student Name	P. VINAY KUMAR
Student Roll Number	MECR19EC143

Question-1:
Make a smart home with all the sensors you learned in 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
```

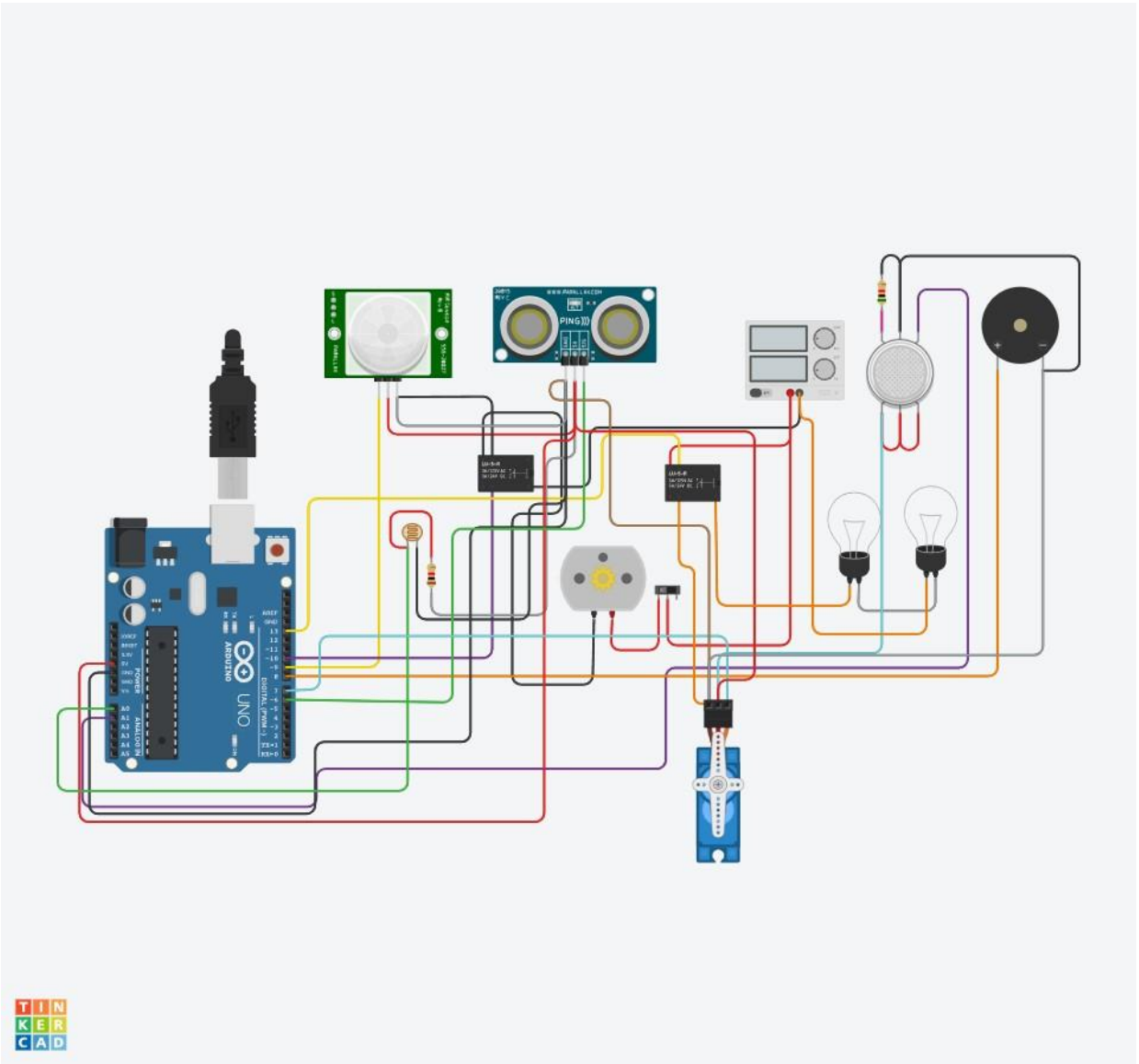
```
  to npn as switch pinMode(4, OUTPUT);  //Red LED pinMode(3,

  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(5,
    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(5, 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
}
```

Reference Link :

https://www.tinkercad.com/things/gfsyrYf2GrN-home-automation/editel?sharecode=Phx6kP0spfAMMnydBiKJO6y5BFHsEUkQU2hAw5U18ac&sharecode=Phx6kP0spfAMMnydBiKJO6y5BFHsEUkQU2hAw5U18ac

For simulation process
Design Architecture :


PING)))
ARDUINO
UNO