

# Assignment -1

## Tinkercad

Assignment date	16.9.2022
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Maximum mark	2 marks

### Question-1:

Write the code and make smart home with atleast 2sensors and LED,BUZZER.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

}

