

## 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 2 sensors 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
}
```

