

Assignment -1
Tinkercad

Assignment Date	14 October 2022
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Maximum Marks	2 Marks

Question-1:

Make a home automation with tinkercad, add 2-3 sensors, led, buzzers and make a common code and circuit. Multiple detections and alarms should be given

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
```

```
}
```



