

ASSIGNMENT – 1

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SMART HOME USING ARDUINO

Code:

```
// C++ code //
```

```
#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);  
    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-----// Change
//-----
int val1 = analogRead(LDR);
if (val1 > 500)
{
digitalWrite(13, HIGH);
Serial.print("Bulb ON = ");
Serial.print(val1);
}
else
{
digitalWrite(13, LOW);
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(3000);
digitalWrite(4, LOW); // RED LED OFF
digitalWrite(3, HIGH);//GREEN LED ON , indicating motion detected
Serial.print(" || Motion Detected! " );
}
delay(300);
```

```
//-----
```

```
    // ----- 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  
}
```

Output:

