

# BUILD A SMART HOME WITH USING AT LEAST 2 SENSORS, LED AND BUZZER IN A CIRCUIT WITH SINGLE CODE

## SIMULATION

```
#include <LiquidCrystal.h>
```

```
#include <Servo.h>
```

```
#include <IRremote.h>
```

```
//remote control : press ( |<< ) to open the door and press (>>|) to close the door
```

```
//press power button to turn ON/OFF
```

```
LiquidCrystal lcd(12,11,7,6,5,4); //this is pin numbers connect with lcd respectively
```

```
int pinSpeaker = 13;
```

```
int val;
```

```
int tempPin = 1;
```

```
int const PINO_SGAS = A0;
```

```
int ldr = A2;
```

```
int rled = 3;
```

```
const int disPin = 10;
```

```
int v1 = 0;
```

```
int lightvalue = 0;
```

```
int v5;
```

```
Servo myservo ;
```

```
int RECV_PIN = 0;
```

```
int light = 9;
```

```
int Switch ;
```

```
IRrecv irrecv(RECV_PIN);
```

```
decode_results results;
```

```
void setup()
```

```
{  
  Serial.begin(9600);  
  lcd.begin(16,2);  
  pinMode(8,INPUT);//assign pin as input  
  pinMode(pinSpeaker, OUTPUT);  
  pinMode(rled, OUTPUT);  
  pinMode(PINO_SGAS , INPUT);  
  pinMode(ldr , INPUT);  
  myservo.attach(2);  
  irrecv.enableIRIn();//set to recieve the input from remote  
  myservo.write(0);// initialize its turned 0  
  pinMode(light , OUTPUT);  
  
}
```

```
void loop()
```

```
{  
  
  lcd.setCursor(3,0);  
  lcd.print("SMART HOME");
```

```
long duration, cm;

pinMode(disPin, OUTPUT);
digitalWrite(disPin, LOW);
delayMicroseconds(2);
digitalWrite(disPin, HIGH);
delayMicroseconds(5);
digitalWrite(disPin, LOW);
pinMode(disPin, INPUT);

duration = pulseIn(disPin, HIGH); // read ultrasonic distance meter
cm = microsecondsToCentimeters(duration); // transfer the microsecond to centimeter

if(cm <= 25){

    lcd.setCursor(0,1);
    lcd.print("CLOSED ");
}
else{

    lcd.setCursor(1,0);
    lcd.print("  ALERT  ");
    lcd.setCursor(1,1);
    lcd.print(" DOOR OPEN  ");
    playTone(100,500);
    delay(500);
    lcd.clear();
}
```

```
val = analogRead(tempPin); // read the temperature sensor
float mv = ( val/1024.0)*5000; // transfer the volt value t o celcius
float cel = mv/10; //transfer the volt value t o celcius
float farh = (cel*9)/5 + 32;
```

```
if(cel > 40)
{
    lcd.clear();
    playTone(100,500);
    lcd.setCursor(0, 0);
    lcd.print(" TEMPERATURE ");
    lcd.setCursor(0, 1);
    lcd.print(" ALERT : HIGH ");
    delay(1000);
    lcd.clear();
```

```
}
else
{
    lcd.setCursor(8, 1);
    lcd.print(cel);
    lcd.print("CEL");
}
```

```
int a = digitalRead(8); // read pir sensor
```

```
Serial.println(a);
```

```
if(a>0)
```

```
{
```

```
  lcd.clear();
```

```
  playTone(100,500);
```

```
  lcd.setCursor(1,0);
```

```
  lcd.print("MOTION DETECTED");
```

```
  lcd.setCursor(5,1);
```

```
  lcd.print("IN HOME");
```

```
  delay(1000);
```

```
  lcd.clear();
```

```
}
```

```
int value = analogRead(PINO_SGAS); // read the gas sensor value
```

```
if(value > 100)
```

```
{
```

```
  lcd.clear();
```

```
  playTone(100,500);
```

```
  lcd.setCursor(1,0);
```

```
  lcd.print("  ALERT  ");
```

```
  lcd.setCursor(0,1);
```

```
  lcd.print("  DANGER GAS  ");
```

```
  delay(1000);
```

```

    lcd.clear();
}

lightvalue = analogRead(ldr);
lightvalue = map(lightvalue,6,679,255,0);//mapping the photoressistor input value for light brightness
Serial.println(lightvalue);
v1 = lightvalue;
analogWrite(rled,v1);

if (irrecv.decode(&results)) {

    Serial.println(results.value, HEX);
    irrecv.resume();//restart for next input value
} //it will return 0 if no data recieve

if (results.value==0xFD00FF && Switch == 0){

    Switch = 1;
    Serial.println(Switch);
    digitalWrite(light, HIGH);
    lcd.clear();
    lcd.setCursor(1,0);
    lcd.print(" LIGHT ON");
    delay(1000);
    lcd.clear();
    results.value = 0;

}

```

```
if (results.value== 0xFD00FF && Switch == 1){  
    Switch = 0;  
    Serial.println(Switch);  
    digitalWrite(light, LOW);  
    lcd.clear();  
    lcd.setCursor(1,0);  
    lcd.print(" LIGHT OFF");  
    delay(1000);  
    results.value = 0;  
}
```

```
if (results.value==0xFD20DF){  
    myservo.write(165);  
    lcd.clear();  
    lcd.setCursor(1,0);  
    lcd.print("DOOR OPENING");  
    playTone(100,500);  
    delay(1500);  
  
    lcd.clear();  
    lcd.setCursor(1,0);  
    lcd.print("  ALERT  ");  
    lcd.setCursor(1,1);  
    lcd.print(" DOOR OPEN  ");  
    playTone(100,500);  
    delay(1500);  
    lcd.clear();  
    results.value = 0;
```

```

    }

    if (results.value==0xFD609F){

        myservo.write(0);
        lcd.clear();
        lcd.setCursor(1,0);
        lcd.print("DOOR CLOSING");
        playTone(100,500);
        delay(1500);
        lcd.clear();
        results.value = 0;

    }

}

void playTone(long duration, int freq) {
    duration *= 500; // we can take any value
    int period = (1.0 / freq) * 100000; //we change the frequent to milli second
    long elapsed_time = 0;

    while (elapsed_time < duration) {

        digitalWrite(13, HIGH); //for ring piezo
        digitalWrite(pinSpeaker,HIGH);
        delayMicroseconds(period / 2);
        digitalWrite(13, LOW);
    }
}

```



```

digitalWrite(pinSpeaker, LOW);

delayMicroseconds(period / 2);

elapsed_time += (period);
}

}

long microsecondsToCentimeters(long microseconds) {

return microseconds / 29 / 2;//sound travels in micro second per centimeter

}

```

## CIRCUIT DIAGRAM

