

**Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send "Alert" to ibm cloud aand display in device recent events.**

### **Code**

```
//Pins

const int TRIG_PIN = 7 ; const
int ECHO_PIN = 8;

//Anything over 400 cm (23200 us pulse) is "out of range" const
unsigned int MAX_DIST = 23200;

void setup() {

// The Trigger pin will tell the sensor to range find
Pin Mode(TRIG_PIN, OUTPUT); digital
Write(TRIG_PIN, LOW);

//Set Echo pin as input to measure the duration of
//pulses coming back from the distance sensor
pinMode(ECHO_PIN, INPUT ) ;

// We'll use the serial monitor to view the sensor output
Serial.begin(9600);
}

void loop() { unsigned
long t1; unsigned
```

```

long t2; unsigned
long pulse_width;
float cm; float
inches;

// Hold the trigger pin high for at least 10 us
digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);

// Wait for pulse on echo pin while
(digitalRead( ECHO_PIN )==0 );

// Measure how long the echo pin was held high (pulse width)
// Note: the micros() counter will overflow after-70 min  t1=
micros ();
while (digitalRead(ECHO_PIN) == 1);
t2= micros ();  pulse_width = t2-t1;

// Calculate distance in centimeters and inches. The constants
//are found in the datasheet, and calculated from the assumed speed
// of sound in air at sea level (- 340m/s)
cm=pulse_Width / 58 ;  inches =
pulse_width/148.0;

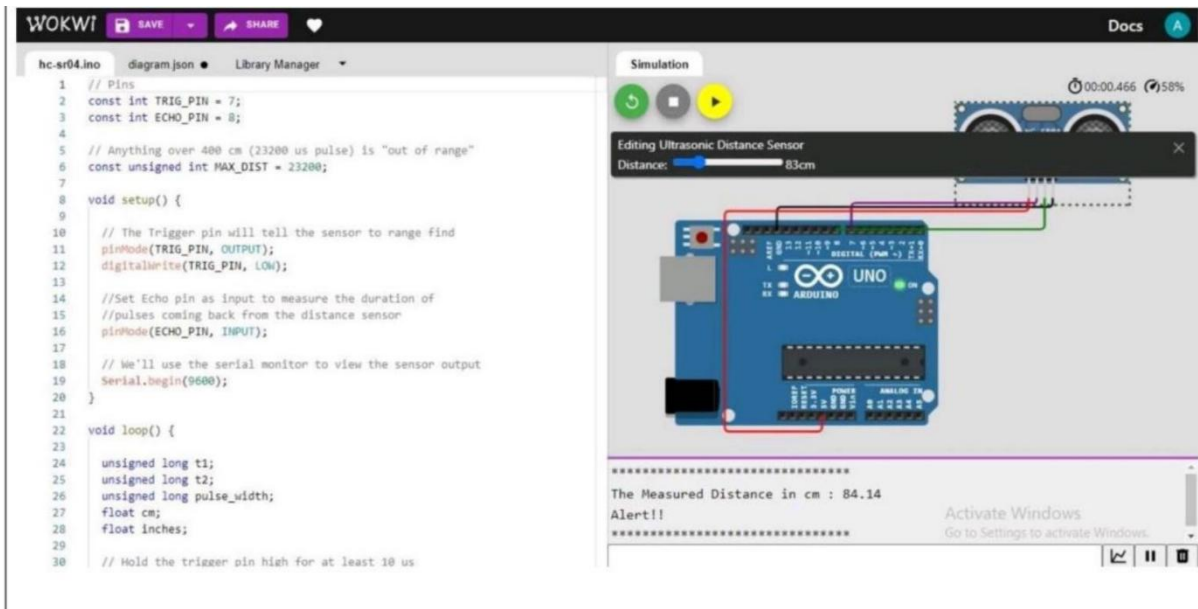
//  Print  out  results  if
(pulse_width >MAX _ DIST ){

```

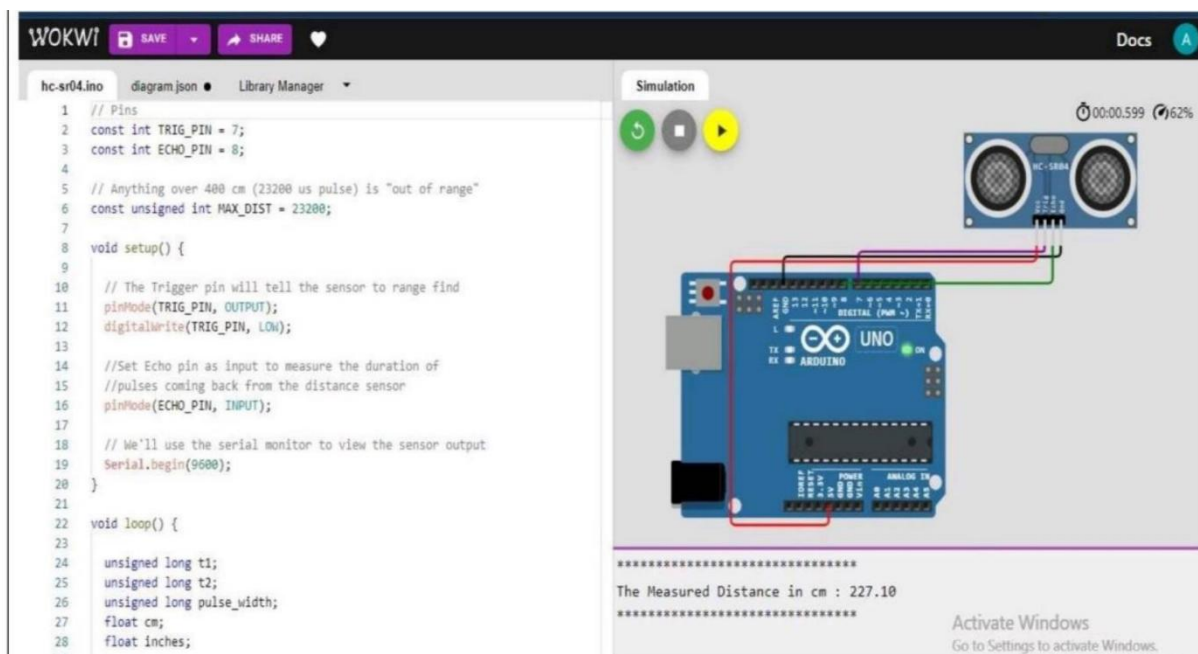
```
Serial.println("Out of range");  
  
} else {  
  
Serial.println("*****");  
  
Serial.print("The Measured Distance in cm: ");  
  
Serial.println(cm);  
  
  
  
if( cm < 100 ){  
    //while(true){  
        Serial.println("Alert!!");  
        //}  
}  
  
Serial.print("*****");  
  
}  
  
//wait at least 1000ms before next measurement  
Delay(1000);  
  
}
```

## Output:

1.If the distance is less than 100 centimeters,it alerts.



2.If the distance is more than 100 centimeters,it won't alert



3.Simulation and Code execution



```

1 // Trig
2 const int TRIG_PIN = 12;
3 const int ECHO_PIN = 11;
4
5 // Anything over 400 cm (1200 us pulse) is "out of range"
6 const unsigned int MAX_DIST = 2200;
7
8 void setup() {
9
10 // The Trigger pin will send the sensor to range find
11 pinMode(TRIG_PIN, OUTPUT);
12 digitalWrite(TRIG_PIN, LOW);
13
14 // Set Echo pin as input to measure the duration of
15 // pulses coming back from the distance sensor
16 pinMode(ECHO_PIN, INPUT);
17
18 // We'll use the serial monitor to view the sensor output
19 Serial.begin(9600);
20
21 }
22
23 void loop() {
24
25   unsigned long t1;
26   unsigned long t2;
27   unsigned long pulse_width;
28   float cm;
29   float inches;
30
31 // Hold the trigger pin high for at least 10 us
32 digitalWrite(TRIG_PIN, HIGH);
33 delayMicroseconds(10);
34 digitalWrite(TRIG_PIN, LOW);
35
36 // Wait for pulse on echo pin
37 while (digitalRead(ECHO_PIN) == 0 {});
38
39 // Measure how long the echo pin was held high (pulse width)
40 // Note: the correct number will overflow after ~10 min
41 t1 = micros();
42 while (digitalRead(ECHO_PIN) == HIGH);
43 t2 = micros();
44 pulse_width = t2 - t1;
45
46 // Calculate distance in centimeters and inches. The constants
47 // are found in the datasheet, and calculated from the assumed speed
48 // of sound in air at sea level (~340 m/s).
49 cm = pulse_width / 58.0;
50 inches = pulse_width / 148.0;
51
52 // Print our results
53 if ( pulse_width > MAX_DIST ) {
54   Serial.println("Out of range!");
55 } else {
56   Serial.print("~~~~~");
57   Serial.print("The Measured Distance is cm : ");
58   Serial.print(cm);
59
60   if(cm > 100) {
61     Serial.print(" (feet of 11)");
62   }
63
64   Serial.print("~~~~~");
65 }
66
67 // Wait at least 100ms before next measurement
68 delay(100);
69 }

```

