

## Assignment-4

**Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cm send "alert" to IBM cloud and display in device recent events**

AssignmentDate	18 NOVEMBER 2022
StudentName	SURUTHIKA M
StudentRollNumber	512219104019
MaximumMarks	2Marks

### PROGRAM:

```
//ARDUINO PINS (TRIGGER PIN, ECHO PIN)
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;

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

void setup() {

    //The Trigger pin will tell the sensor
    pinMode(TRIG_PIN, OUTPUT);
    digitalWrite(TRIG_PIN, LOW);

    //Set Echo pin as input to measure the time duration of pulse returning 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; un
```

```
    signed long t2;
```

```
    unsigned long pulse_width; fl
```

```
    oat cm;
```

```
    float inches;
```

```
    // Hold the trigger pin high for at least
```

```
    10  $\mu$ s digitalWrite(TRIG_PIN, HIGH); delayMicrosecon
```

```
    ds(10);
```

```
    digitalWrite(TRIG_PIN, LOW);
```

```
    // Wait for pulse one chip in
```

```
    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 data sheet, and calculated from the assumed speed
```

```
    // of sound in air at sea level (~340 m/s). cm =
```

```
    pulse_width / 58.0;
```

```
    inches = pulse_width / 148.0;
```

```
    // Print out results
```

```
if(pulse_width>max_dist) {
  Serial.println("Outofrange");
}else
{Serial.println("*****")
;Serial.print("DistanceMeasured incm:");
Serial.println(cm);

if(cm<100){
  //while(true){
    Serial.println("Alert!!");
  //}
}

Serial.print("*****");
}

//Waitatleast1000msbefore
nextmeasurementdelay(1000);
}
```

## OUTPUT:

WOKWI SAVE SHARE Docs SIGN IN

sketch.ino • diagram.json • Library Manager

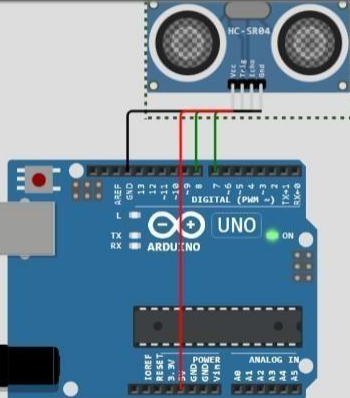
```
1
2
3
4
5 // ARDUINO PINS (TRIGGER PIN, ECHO PIN)
6 const int TRIG_PIN = 7;
7 const int ECHO_PIN = 8;
8
9 // Anything over 400 cm (23200 us pulse) is "out of range"
10 const unsigned int max_dist = 23200;
11
12 void setup() {
13
14     // The Trigger pin will tell the sensor to range find
15     pinMode(TRIG_PIN, OUTPUT);
16     digitalWrite(TRIG_PIN, LOW);
17
18     //Set Echo pin as input to measure the time duration of pulse returning back from the d
19     pinMode(ECHO_PIN, INPUT);
20
21     // We'll use the serial monitor to view the sensor output
22     Serial.begin(9600);
23 }
24
25 void loop() {
26
27     unsigned long t1;
28     unsigned long t2;
29     unsigned long pulse_width;
30     float cm;
31     float inches;
32
33     // Hold the trigger pin high for at least 10 us
34     digitalWrite(TRIG_PIN, HIGH);
```

Simulation

01:27.258 99%

Editing Ultrasonic Distance Sensor

Distance:  2cm



Distance Measured in cm : 2.07  
Alert !!

Distance Measured in cm : 2.00  
Alert !!

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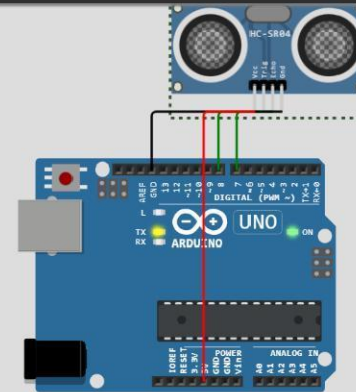
```
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12 void setup() {
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14   // The Trigger pin will tell the sensor to range find
15   pinMode(TRIG_PIN, OUTPUT);
16   digitalWrite(TRIG_PIN, LOW);
17
18   //Set Echo pin as input to measure the time duration of pulse returning back from the d
19   pinMode(ECHO_PIN, INPUT);
20
21   // We'll use the serial monitor to view the sensor output
22   Serial.begin(9600);
23 }
24
25 void loop() {
26
27   unsigned long t1;
28   unsigned long t2;
29   unsigned long pulse_width;
30   float cm;
31   float inches;
32
33   // Hold the trigger pin high for at least 10 us
34   digitalWrite(TRIG_PIN, HIGH);
```

Simulation

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Editing Ultrasonic Distance Sensor

Distance: 268cm



Distance Measured in cm : 271.79

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Distance Measured in cm : 271.72

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Distance Measured in cm : 271.72

\*\*\*\*\*

Distance Measured in cm : 271.79

