

Assignment – 4

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send “alert” to ibm cloud and display in device recent events

Assignment Date	22 OCTOBER 2022
Student Name	LAVANYA R
Student Roll Number	411719205025
Maximum Marks	2 Marks

PROGRAM :

```
// ARDUINO PINS (TRIGGER PIN, ECHO PIN)
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
    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;
```

```
    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 (~340 m/s).
```

```
    cm = pulse_width / 58.0;
```

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

```
    // Print out results
```

```
if ( pulse_width > max_dist ) {  
  Serial.println("Out of range");  
} else  
  { Serial.println("*****")  
    ; Serial.print("Distance Measured 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 :

WOKWI SAVE SHARE Docs SIGN IN

sketch.ino • diagram.json • Library Manager

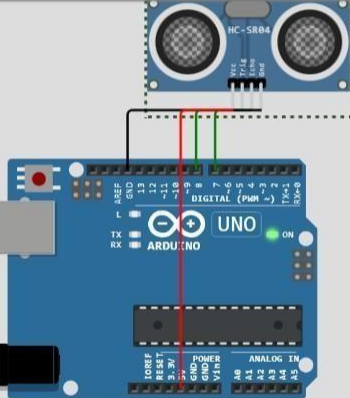
```
1
2
3
4
5 // ARDUINO PINS (TRIGGER PIN, ECHO PIN)
6 const int TRIG_PIN = 7;
7 const int ECHO_PIN = 8;
8
9 // Anything over 400 cm (23200 us pulse) is "out of range"
10 const unsigned int max_dist = 23200;
11
12 void setup() {
13
14     // The Trigger pin will tell the sensor to range find
15     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 !!



sketch.ino • diagram.json • Library Manager ▾

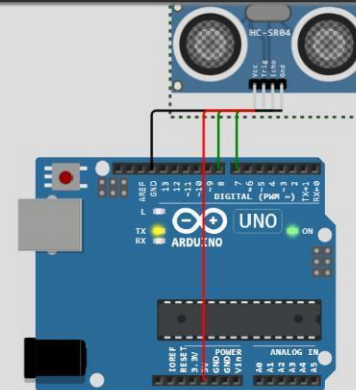
```
1
2
3
4
5 // ARDUINO PINS (TRIGGER PIN, ECHO PIN)
6 const int TRIG_PIN = 7;
7 const int ECHO_PIN = 8;
8
9 // Anything over 400 cm (23200 us pulse) is "out of range"
10 const unsigned int max_dist = 23200;
11
12 void setup() {
13
14     // The Trigger pin will tell the sensor to range find
15     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

00:47.106 100%

Editing Ultrasonic Distance Sensor

Distance: 268cm



Distance Measured in cm : 271.79

Distance Measured in cm : 271.72

Distance Measured in cm : 271.72

Distance Measured in cm : 271.79

