

## 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**

|               |  |
|---------------|--|
| Date          | 01Nov2022  |
| Team ID       | PNT2022TMID49297                                     |
| Project Name  | SMART FARMER – IoT ENABLED SMART FARMING APPLICATION |
| Maximum Marks | 4 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

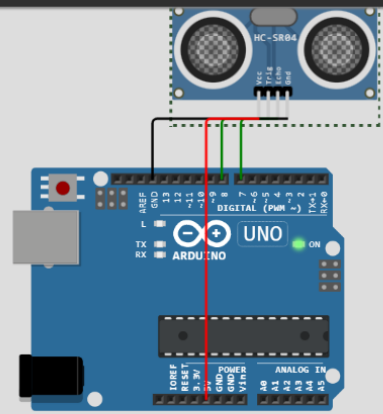
```
1
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3
4
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7 const int ECHO_PIN = 8;
8
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10 const unsigned int max_dist = 23200;
11
12 void setup() {
13
14     // The Trigger pin will tell the 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 !!

WOKWI

SAVE

SHARE

DocsSIGN IN

sketch.ino

diagram.json

Library Manager

```
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2
3
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28     unsigned long t2;
29     unsigned long pulse_width;
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31     float inches;
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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  
\*\*\*\*\*  
Distance Measured in cm : 271.72  
\*\*\*\*\*  
Distance Measured in cm : 271.72  
\*\*\*\*\*  
Distance Measured in cm : 271.79

**Project Link :** <https://wokwi.com/projects/346290927428436563>