

Assignment- 4

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1 Write Code and connections in wckwi for ultrasonic sensor. whatever distance is less than 100 cm send "Alert" to Blynk cloud and display in device recent events

Solution:

```
// 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 cm, it alerts

WOKWI

SAVE SHARE

Docs

hc-sr04.ino

```
1 // Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4
5 // Anything over 400 cm (23200 us pulse) is "out of range"
6 const unsigned int MAX_DIST = 23200;
7
8 void setup() {
9
10 // The Trigger pin will tell 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 void loop() {
23
24 unsigned long t1;
25 unsigned long t2;
26 unsigned long pulse_width;
27 float cm;
28 float inches;
29
30 // Hold the trigger pin high for at least 10 us
```

Simulation

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Editing Ultrasonic Distance Sensor

Distance: 83cm

The Measured Distance in cm : 84.14

Alert!!

Activate Windows
Go to Settings to activate Windows.

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

WOKWI

SAVE SHARE

Docs

hc-sr04.ino

```
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12 digitalWrite(TRIG_PIN, LOW);
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14 //Set Echo pin as input to measure the duration of
15 //pulses coming back from the distance sensor
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18 // We'll use the serial monitor to view the sensor output
19 Serial.begin(9600);
20 }
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22 void loop() {
23
24 unsigned long t1;
25 unsigned long t2;
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27 float cm;
28 float inches;
29
30 // Hold the trigger pin high for at least 10 us
```

Simulation

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The Measured Distance in cm : 227.10

Activate Windows
Go to Settings to activate Windows.

3. Simulation and code execution

