

**BANNARI AMMAN INSTITUTE OF TECHNOLOGY,**  
**SATHYAMANGALAM**

Department of Computer Science and Engineering

IOT Assignment

**Topic : Write a code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms "send" alert to IBM Cloud and display in device recent events.**

**Name:** Sathyasri G

**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
    pinMode(TRIG_PIN, OUTPUT);
    digitalWrite(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 (~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.print(cm);
    Serial.print(" cm \t");
    Serial.print(inches);
    Serial.println(" in");
}

// Wait at least 60ms before next measurement
delay(60);
}

```

## OUTPUT:

WOKWI

hc-ur04.lno diagram.json Library Manager

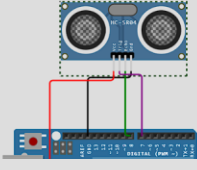
```
42 Serial.begin(9600);
43 }
44
45 void loop() {
46
47   unsigned long t1;
48   unsigned long t2;
49   unsigned long pulse_width;
50   float cm;
51   float inches;
52
53   // Hold the trigger pin high for at least 10 us
54   digitalWrite(TRIG_PIN, HIGH);
55   delayMicroseconds(10);
56   digitalWrite(TRIG_PIN, LOW);
57
58   // Wait for pulse on echo pin
59   while ( digitalRead(ECHO_PIN) == 0 );
60
61   // Measure how long the echo pin was held high (pulse width)
62   // Note: the micros() counter will overflow after ~70 min
63   t1 = micros();
64   while ( digitalRead(ECHO_PIN) == 1){
65     t2 = micros();
66     pulse_width = t2 - t1;
67
68     // Calculate distance in centimeters and inches. The constants
69     // are found in the datasheet, and calculated from the assumed speed
70     // of sound in air at sea level (~340 m/s).
71     cm = pulse_width / 58.0;
72     inches = pulse_width / 148.0;
73
74     // Print out results
75     if ( pulse_width > MAX_DIST ) {
76       Serial.println("Out of range");
77     } else {
78       Serial.print(cm);
79       Serial.print(" cm ");
80       Serial.print(inches);
81       Serial.println(" in");
82     }
83
84     // Wait at least 60ms before next measurement
85     delay(60);
86   }
```

Simulation

00:08:266 100%

Editing Ultrasonic Distance Sensor

Distance: 312cm



\*\*\*\*\*  
The Measured Distance in cm : 201.79  
\*\*\*\*\*

316.41 cm	124.00 in
316.41 cm	124.00 in
316.48 cm	124.03 in
316.41 cm	124.00 in
316.41 cm	124.00 in
316.41 cm	124.00 in
316.41 cm	124.00 in

Type here to search

10:18 AM 14-Nov-22