

## V.S.B ENGINEERING COLLEGE,KARUR-639111

### ASSIGNMENT-4

**Name:** KALPANA D

**Project Title:** Smart Farmer- IoT Enabled Smart Farming Application

**Project Domain:** Internet of Things

**1. Write Code and connections in wok Wi for ultrasonic sensor. whatever distance is less than 100 CMS send "Alert" to IBM 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 CMS ,it alert

WOKWI

SAVE

SHARE

Docs

hc-sr04.ino

diagram.json

Library Manager

```

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

```

Simulation

00:00.599 62%

\*\*\*\*\*

The Measured Distance in cm : 227.10

\*\*\*\*\*

Activate Windows

Go to Settings to activate Windows.

## 2.Simulation and code execution:

WOKWI

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Simulation

Code

Simulation

Code

```

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
31 digitalWrite(TRIG_PIN, HIGH);
32 delayMicroseconds(10);
33 digitalWrite(TRIG_PIN, LOW);
34
35 // Wait for pulse on echo pin
36 while (digitalRead(ECHO_PIN) == 0) {}
37
38 // Measure how long the echo pin was held high (pulse width)
39 // Note: the maximum timeout will overflow after ~18 ms
40 t1 = micros();
41 while (digitalRead(ECHO_PIN) == HIGH) {}
42 t2 = micros();
43 pulse_width = t2 - t1;
44
45 // Calculate distance in centimeters and inches. The unitary
46 // for time in the equations, and calculated from the assumed speed
47 // of sound is not at sea level (1000 m/s).
48 cm = pulse_width / 58.0;
49 inches = pulse_width / 148.0;
50
51 // Print out results
52 if (pulse_width < MAX_DIST) {
53 Serial.println("Out of range");
54 } else {
55 Serial.println("The Measured Distance in cm : ");
56 Serial.println(cm);
57
58 // Print out results
59 Serial.println("The Measured Distance in inches : ");
60 Serial.println(inches);
61 }
62
63 // Wait at least 100ms before next measurement
64 delay(100);
65 }
66

```

