## DMI ENGINEERING COLLEGE ARALVOIMOZHI DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING IBM NALAIYA THIRAN ASSIGNMENT-4

TEAM LEADER : MUTHULEKSHMI P
TEAM MEMBER : VINI SHALINI M

SARAL N ANNS A

Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send "Alert" to ibm cloud and display in device recent events.

## 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
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 centimeters, it alerts.

```
WOKWI - SAVE - SHARE
                                                                                                                                                                                                                          Docs
  hc-sr04.ino diagram json ● Library Manager ▼
1 // Pins
                                                                                                                          Simulation
                                                                                                                                                                                                                  ₾00:00.466 @
            // Pins
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;
                                                                                                                         5 🕡 🕞
            // 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
pinwode(TRIG_PIN, OUTPUT);
digitalmette(TRIG_PIN, LOW);
                                                                                                                                                      BRARRE (Pun -) E
                                                                                                                                                         OO UNO ...
      13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
              //Set Echo pin as input to measure the duration of
//pulses coming back from the distance sensor
pinMode(ECHO_PIN, IMPUT);
            // We'll use the serial monitor to view the sensor output
Serial.begin(9600);
}
                                                                                                                                                          PONTS AMELING TO
            void loop() {
              unsigned long t1;
unsigned long t2;
unsigned long pulse_width;
float cm;
float inches;
                                                                                                                      The Measured Distance in cm : 84.14
                                                                                                                      Alert!!
                                                                                                                      M II
               // Hold the trigger pin high for at least 10 us
```

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

```
WOKWI B SAVE
                                                                                                                                                             Docs
 hc-sr04.ino diagram json ● Library Manager ▼
                                                                                        Simulation
                                                                                                                                                        ₫00:00.599 (
        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);
                                                                                                                OO UNO ..
   13
          //Set Echo pin as input to measure the duration of
   15
16
          //pulses coming back from the distance sensor
pinMode(ECHO_PIN, INPUT);
          // We'll use the serial monitor to view the sensor output
   19
          Serial.begin(9600);
                                                                                                               5012885 144514
   21
        void loop() {
          unsigned long t1;
                                                                                     ************
           unsigned long t2;
                                                                                     The Measured Distance in cm : 227.10
           unsigned long pulse_width;
           float cm;
                                                                                                                                      Activate Windows
          float inches;
                                                                                                                                      Go to Settings to activate Windows
```