**ASSIGNMENT 4**

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QUESTION

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the 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

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 (- 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**



