## **IBM ASSIGNMENT-4**

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Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send "Alert" to ibm cloud aand 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 alerts.

```
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            const int TRIG_PIN = 7;
const int ECHO_PIN = 8;
                                                                                                                   3 🗖 🕞
            // Anything over 400 cm (23200 us pulse) is "out of range" const unsigned int MAX_DIST = 23200;
              // The Trigger pin will tell the sensor to range find
pinMode(TRIG_PIN, OUTPUT);
digitalWrite(TRIG_PIN, LOW);
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              //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(9680);
}
                                                                                                                                                   PONTS AMALON IN
            void loop() {
               unsigned long t1;
               unsigned long t2;
unsigned long pulse_width;
float cm;
float inches;
                                                                                                                The Measured Distance in cm : 84.14
                                                                                                                ******************************
                                                                                                                                                                                                             // Hold the trigger pin high for at least 10 us
```

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

```
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                                                     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;
                                                               // The Trigger pin will tell the sensor to range find
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SETTION PROPERTY.
                                                             pinMode(TRIG_PIN, OUTPUT);
digitalWrite(TRIG_PIN, LOW);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OW UNO
                                                               //Set Echo pin as input to measure the duration of //pulses coming back from the distance sensor
                                                               pinMode(ECHO_PIN, INPUT);
                     17
                                                            // We'll use the serial monitor to view the sensor output Serial.begin(9500); \label{eq:serial} % \[ \frac{1}{2} \left( \frac{1}{2} \right) \left( 
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                                                     void loop() {
                                                               unsigned long t1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ************
                                                               unsigned long t2;
unsigned long pulse_width;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The Measured Distance in cm : 227.10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ************************
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Activate Windows
                                                               float inches:
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```

## 3. Simulation and code execution





