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!!");
   //}
}
//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;
                                                                                                                  5 🕦 🕞
           // Anything over 400 cm (23200 us pulse) is "out of range" const unsigned int MAX_DIST \star 23200;
            void setup() {
              // 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(9600);
}
                                                                                                                                                  POMER AMALOG IN
           void loop() {
             unsigned long t1;
unsigned long t2;
unsigned long pulse_width;
float cm;
float inches;
                                                                                                               The Measured Distance in cm : 84.14
                                                                                                               Alert!!
                                                                                                                                                                                                            W II 0
              // 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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                                                                                         Simulation
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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
                                                                                                             BERTT BIETTAL (PAR -) E
           pinMode(TRIG_PIN, OUTPUT);
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          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);
   17
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           // We'll use the serial monitor to view the sensor output
          Serial.begin(9600);
                                                                                                                 NO POWER ANALOG I
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   21
        void loop() {
   23
           unsigned long t1;
           unsigned long t2;
                                                                                      The Measured Distance in cm : 227.10
           unsigned long pulse_width;
                                                                                      ******************
                                                                                                                                       Activate Windows
           float inches;
                                                                                                                                       Go to Settings to activate Windo
```

3. Simulation and code execution





