IBM ASSIGNMENT – 4

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1.Write Code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cm send "Alert" to ibm cloud and display in device recent events.
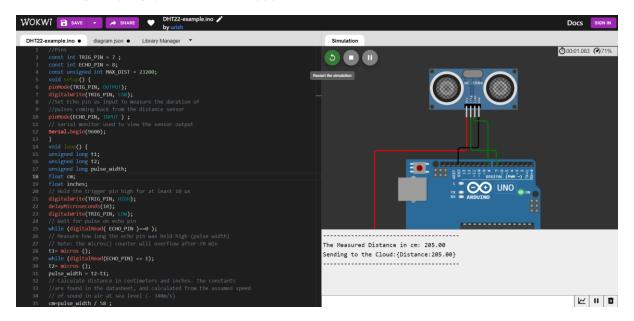
CODE:

```cpp
//Pins
const int TRIG_PIN = 7 ;
const int ECHO_PIN = 8;
const unsigned int MAX_DIST = 23200;
void setup() {
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 ) ;
// serial monitor used 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 )
Serial.println("Alert!!");
Serial.print("Sending to the Cloud:{Distance:");
Serial.print(cm);
Serial.println("}");
Serial.println("-------------------------------------");
}
//wait at least 1000ms before next measurement
delay(1000);
}
```

OUTPUT:

1.WHEN DISTANCE IS GREATER THAN 100cm:

2.WHEN DISTANCE IS LESSER THAN 100 cm (Alert is given and data is sent to the cloud):


```
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const int TRIG_PIN = 7 ;
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const unsigned int MAX_DIST = 23200;
void setup() {
pinMode(TRIG_PIN, OUTPUT);
digitalWrite(TRIG_PIN, LOW);
//Set Echo pin as input to measure the duration of
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pinMode(ECHO_PIN, INPUT ) ;
// serial monitor used to view the sensor output
Serial.begin(9600);
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void loop() {
unsigned long t1;
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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 ;
```

Editing Ultrasonic Distance Sensor
Distance: 68cm

```
--------------------------------------
The Measured Distance in cm: 68.00
Alert!!
Sending to the Cloud:{Distance:68.00}
--------------------------------------
--------------------------
```