

IBM ASSIGNMENT- 4

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

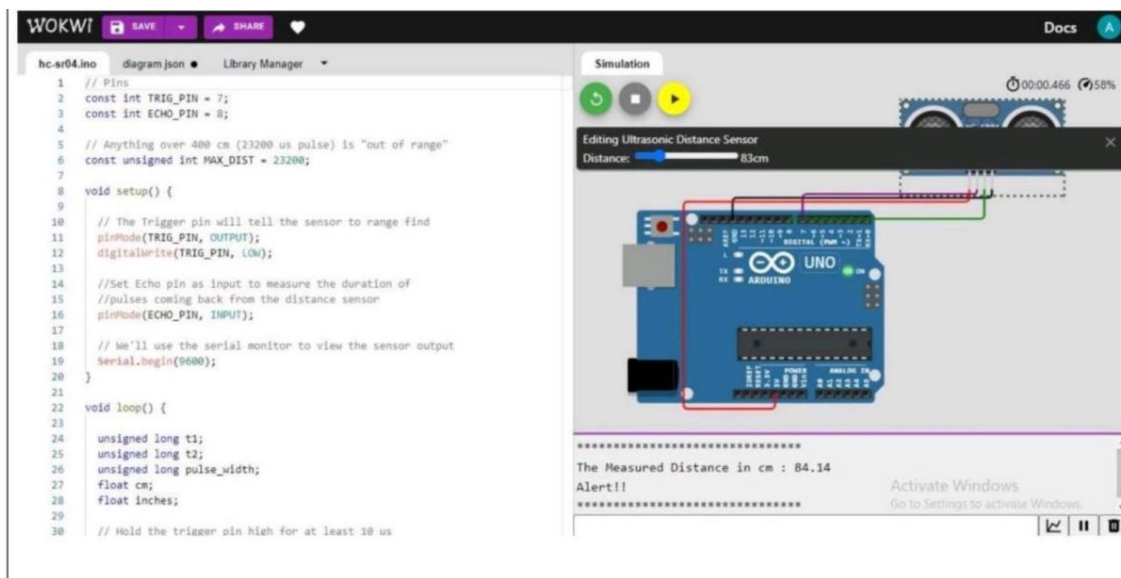
Delay(1000);

}

```

Output:

1.If the distance is less than 100 cms ,it alerts.



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

WOKWI

SAVE

SHARE

Docs

hc-sr04.ino

diagram.json

Library Manager

```
1 // Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4
5 // Anything over 400 cm (23200 us pulse) is "out of range"
6 const unsigned int MAX_DIST = 23200;
7
8 void setup() {
9
10 // The Trigger pin will tell the sensor to range find
11 pinMode(TRIG_PIN, OUTPUT);
12 digitalWrite(TRIG_PIN, LOW);
13
14 //Set Echo pin as input to measure the duration of
15 //pulses coming back from the distance sensor
16 pinMode(ECHO_PIN, INPUT);
17
18 // We'll use the serial monitor to view the sensor output
19 Serial.begin(9600);
20 }
21
22 void loop() {
23
24 unsigned long t1;
25 unsigned long t2;
26 unsigned long pulse_width;
27 float cm;
28 float inches;
```

Simulation

00:00.599 62%

The Measured Distance in cm : 227.10

Activate Windows
Go to Settings to activate Windows.

3.Simulation and code execution

