

## 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
```

```
pinMode(TRIG_PIN, OUTPUT); digitalWrite
```

```
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("*****");
}

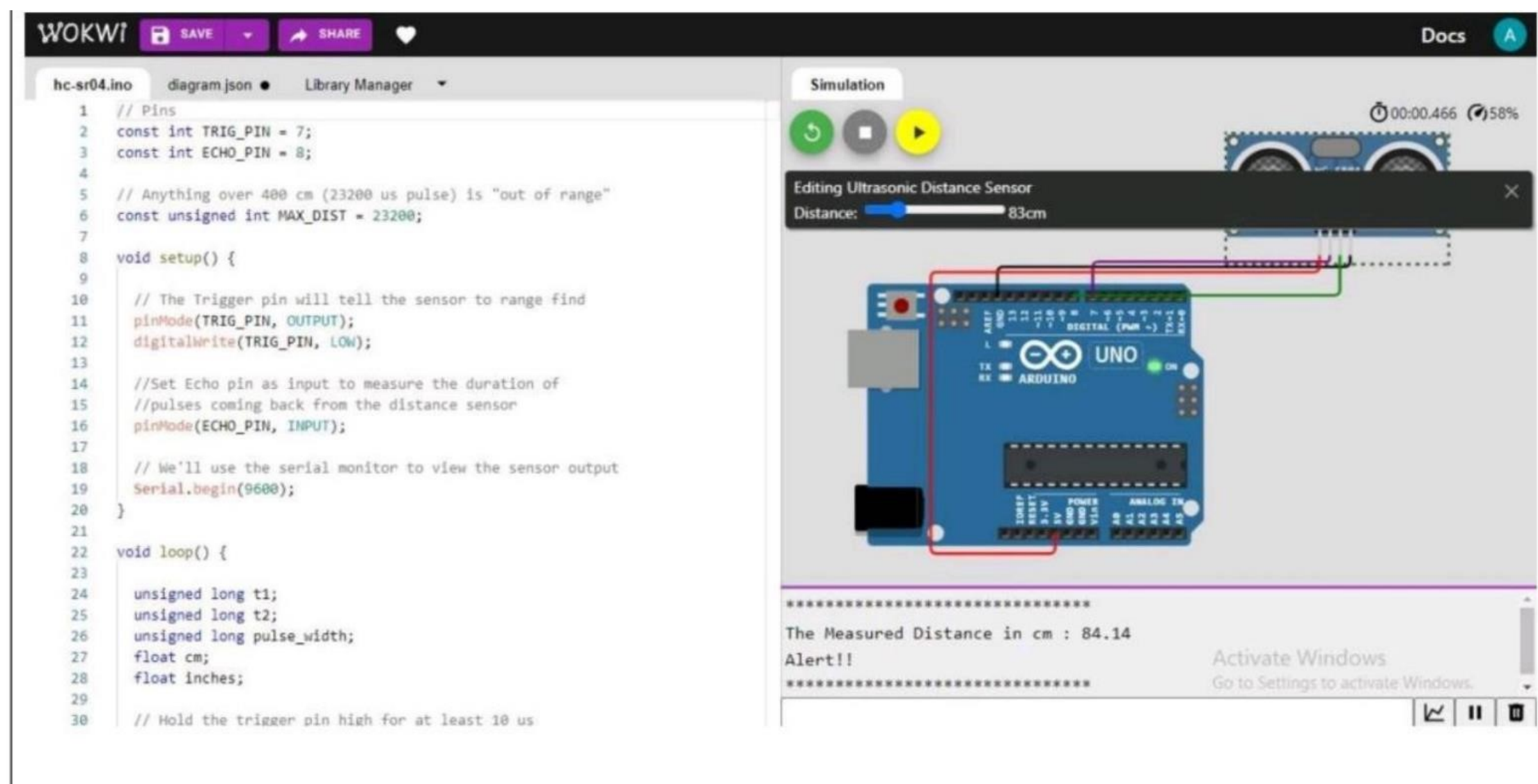
//wait at least 1000ms before next measurement

```

```
Delay(1000);  
}
```

## Output:

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



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

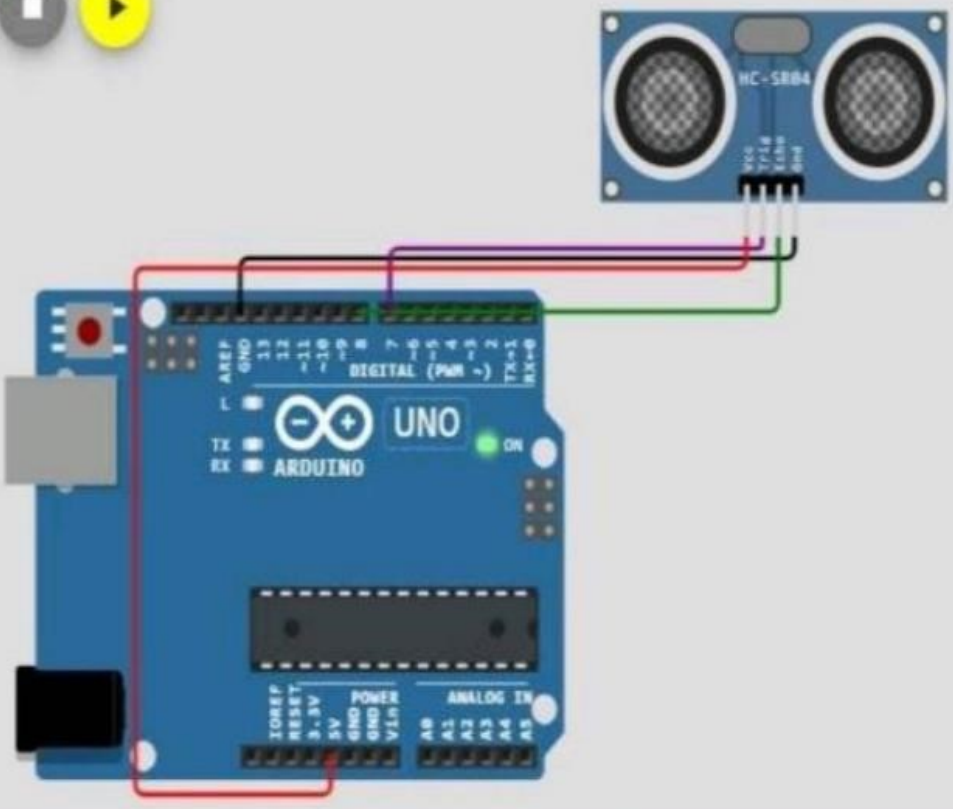
WOKWI SAVE SHARE Docs

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

