

ASSIGNMENT - 4

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

CODE:

```
// put your setup code here, to run once:
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
pinMode(ECHO_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 / 238;
inches = pulse_width / 34;

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!!");
  }
}

```

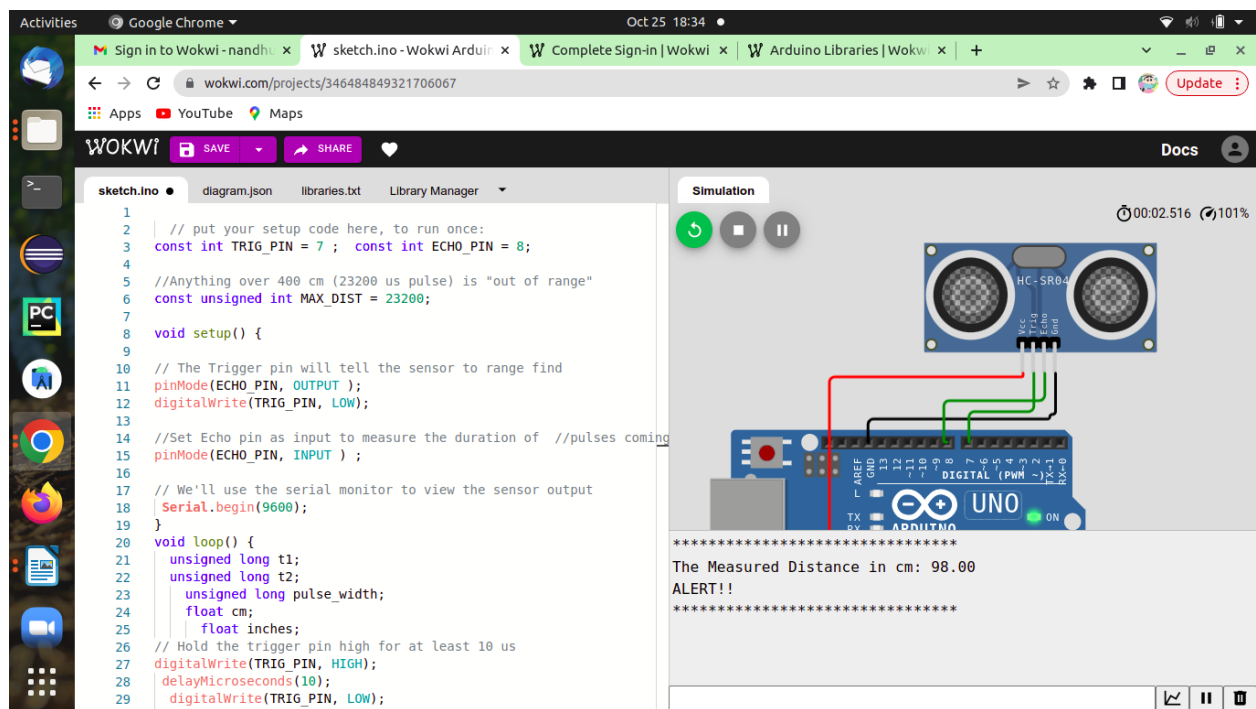
```

Serial.print("*****");
}

//wait at least 1000ms before next measurement
delay(1000);
}

```

If the distance is less than 100 cms ,it Alerts.



If the distance is more than 100 cms,it won't Alert

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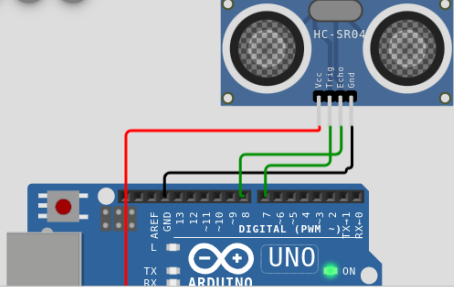
Docs

sketch.ino diagram.json libraries.txt Library Manager

```
25 float inches;
26 // Hold the trigger pin high for at least 10 us
27 digitalWrite(TRIG_PIN, HIGH);
28 delayMicroseconds(10);
29 digitalWrite(TRIG_PIN, LOW);
30
31 // Wait for pulse on echo pin
32 while (digitalRead( ECHO_PIN )!=0 );
33
34 // Measure how long the echo pin was held high (pulse width) // No
35 t1= micros ();
36 while (digitalRead(ECHO_PIN) == 1);
37 t2= micros ();
38 pulse_width = t2-t1;
39
40 // Calculate distance in centimeters and inches. The constants
41 // are found in the datasheet, and calculated from the assumed speed
42 // of sound in air at sea level (- 340m/s)
43 cm = pulse_width/58;
44 inches = pulse_width/148.0;
45
46 // Print out results
47 if (pulse_width <MAX_DIST ){
48 Serial.println("Out of range");
49 } else {
50 Serial.println("*****");
51 Serial.print("The Measured Distance in cm: ");
52 Serial.println(cm);
53
```

Simulation

00:02:799 100%



The Measured Distance in cm: 405.00
