

NalaiyaThiran(IBM)ASSIGNMENT – 4

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms, send “alert” to IBM Cloud and display in device recent events.

Code:

```
#include "Ultrasonic.h"

Ultrasonic ultrasonic(12, 13);
int distance;

void setup() {
  Serial.begin(9600);
}

void loop() {

  distance = ultrasonic.read(CM);

  Serial.print("Distance in CM: ");
  Serial.println(distance);if
  (distance<100)
    Serial.print("alert");
  Serial.println();
  delay(1000);
}
```

Output:

The screenshot displays a Wokwi simulation environment. On the left, the code editor shows the following C++ code:

```
4 #include <Arduino.h>
5 #endif
6
7 #include "Ultrasonic.h"
8
9 Ultrasonic::Ultrasonic(uint8_t trigPin, uint8_t echoPin, unsigned long timeout) {
10   trig = trigPin;
11   echo = echoPin;
12   threePins = trig == echo ? true : false;
13   pinMode(trig, OUTPUT);
14   pinMode(echo, INPUT);
15   timeout = timeout;
16 }
17
18 unsigned int Ultrasonic::timing() {
19   if (threePins)
20     pinMode(trig, OUTPUT);
21   digitalWrite(trig, LOW);
22   delayMicroseconds(2);
23   digitalWrite(trig, HIGH);
24   delayMicroseconds(10);
25   digitalWrite(trig, LOW);
26
27   if (threePins)
28     pinMode(trig, INPUT);
29
30   previousMicros = micros();
31   while(!digitalRead(echo) && (micros() - previousMicros) <= timeout);
32   previousMicros = micros();
33   while(digitalRead(echo) && (micros() - previousMicros) <= timeout);
34   return micros() - previousMicros;
35 }
36
37
38 unsigned int Ultrasonic::read(uint8_t und) {
39   return timing() / und / 2;
40 }
41
42
43 unsigned int Ultrasonic::distanceRead(uint8_t und) {
44   return read(und);
45 }
```

On the right, the simulation shows an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The sensor's output is displayed in the console as:

```
alert
Distance in CM: 48
alert
Distance in CM: 48
alert
Distance in CM: 48
alert
```

LINK:

<https://wokwi.com/projects/347470277044601426>