

ASSIGNMENT-4
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Qn: Write code and connections in wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Upload document with wokwi share link and images of IBM cloud

LINK:

<https://wokwi.com/projects/new/arduino-uno>

CODE:

```
long          int
echoPin=7;    long
int trigPin=5; void
setup()

  Serial.begin(9600);
  pinMode(7,OUTPUT);
  pinMode(5,INPUT);
}

void loop()

  int duration, distance;
  digitalWrite(3,LOW);
  delayMicroseconds(2);
  digitalWrite(3,HIGH);
  delayMicroseconds(10);
  digitalWrite(3,LOW);

  duration=pulseIn(7,HIGH);
  distance=(duration*0.034/2
); delay(1000); if
(distance<=100)
```

Serial.println("ALERT!!");

SIMULATIONS:

WOKWI

Docs

Wokwi simulation interface showing code, hardware diagram, and serial output.

Code (sketch.ino):

```
1 // Pin*5;
2
3 {
4   Serial.begin(9600);
5   pinMode(7,OUTPUT);
6   pinMode(5,INPUT);
7 }
8
9
10 void loop()
11 {
12   int duration, distance;
13   digitalWrite(3,HIGH);
14   delayMicroseconds(2);
15   digitalWrite(3,LOW);
16   delayMicroseconds(10);
17   digitalWrite(3,HIGH);
18
19   duration=pulseIn(7,HIGH);
20   distance=(duration*0.034/2);
21   delay(1000);
22   if (distance<=100)
23   {
24     Serial.println("ALERT!!");
25   }
26 }
27 }
```

Hardware Diagram: A Wokwi simulation of an Arduino Uno connected to an ultrasonic sensor (HC-SR04) via a breadboard. The sensor's VCC is connected to the 5V pin, GND to GND, and the Trig pin to digital pin 7. The Echo pin is connected to digital pin 5.

Serial Output:

```
ALERT!!
ALERT!!
ALERT!
ALERT!
ALERT!!
ALERT!!
ALERT!!
```

Python Code (Test_python_3.7.4.py):

```
1 pH = random.r
2 turbidity = random.randint(1,
3 temperature = random.randint(0,
4
5 data = {'pH': pH, 'turbid': tur
6
7
8
9 # print(data)
10 def myOnPublishCallback():
11     while True:
```

Run Output:

```
Published pH= 4 Turbidity: 204 Temperature: 94
Published pH= 12 Turbidity: 564 Temperature: 54
Published pH= 2 Turbidity: 571 Temperature: 98
Published pH= 7 Turbidity: 677 Temperature: 65
Published pH= 8 Turbidity: 352 Temperature: 13
Published pH= 5 Turbidity: 862 Temperature: 88
Published pH= 3 Turbidity: 834 Temperature: 7
Published pH= 9 Turbidity: 213 Temperature: 89
Published pH= 14 Turbidity: 677 Temperature: 22
Published pH= 11 Turbidity: 292 Temperature: 168
Published pH= 2 Turbidity: 53 Temperature: 21
Published pH= 6 Turbidity: 499 Temperature: 69
Published pH= 11 Turbidity: 238 Temperature: 26
Published pH= 2 Turbidity: 443 Temperature: 43
Published pH= 6 Turbidity: 986 Temperature: 91
Published pH= 5 Turbidity: 593 Temperature: 85
Published pH= 14 Turbidity: 308 Temperature: 86
Published pH= 4 Turbidity: 532 Temperature: 8
Published pH= 3 Turbidity: 54 Temperature: 8
```

IBM Watson IoT Platform:

Recent events listed show the live stream of data that is coming in:

Event	Value
demo	{"pH":12,"turbid":93,"temp":87}
demo	{"pH":7,"turbid":873,"temp":94}
demo	{"pH":3,"turbid":204,"temp":19}
demo	{"pH":11,"turbid":304,"temp":77}
demo	{"pH":13,"turbid":16,"temp":50}

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