

## Assignment 4

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### Question:

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

### Solution:

**Wokwi Project :** <https://wokwi.com/projects/346753465366610515>

The screenshot displays the Wokwi online IDE interface. On the left, the 'sketch.ino' file contains the following code:

```
70
71
72
73 /*.....retrieving to cloud.....*/
74
75 void PublishData(float dist) {
76   mqttconnect();//function call for connecting to ibm
77   /*
78    * creating the String in in form JSON to update the data to ibm cloud
79    */
80   String payload = "{\"distance\":\"";
81   payload += dist;
82
83
84   Serial.print("Sending payload: ");
85   Serial.println(payload);
86
87
88   if (client.publish(publishTopic, (char*) payload.c_str())) {
89     Serial.println("Publish ok");// If it successfully upload data on the cloud then it will
90   } else {
91     Serial.println("Publish failed");
92   }
93 }
94
95
96 void mqttconnect() {
97   if (!client.connected()) {
98     Serial.print("Reconnecting client to ");
99     Serial.println(server);
100    while (!client.connect(clientId, authMethod, token)) {
101      Serial.print(".");
102      delay(500);
103    }
104  }
105  initManagedDevice();
```

On the right, the simulation shows an ESP32 microcontroller connected to an HC-SR04 ultrasonic sensor. The sensor's output is displayed in the console:

```
Publish ok
distance in cm150.27
Sending payload: {"distance":150.27
Publish ok
distance in cm150.30
Sending payload: {"distance":150.30
Publish ok
```

IBM Watson IoT Platform

gn2e0q.internetofthings.ibmcloud.com/dashboard/devices/browse

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Browse Action Device Types Interfaces

Add Device +

Device ID	Status	Device Type	Class ID	Date Added
distanceid	Disconnected	ultrasonic	Device	Oct 28, 2022 2:36 PM
farmingid	Disconnected	janani_208	Device	Oct 28, 2022 10:44 AM

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1 Simulation running

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Browse Action Device Types Interfaces

Add Device +

Device ID	Status	Device Type	Class ID	Date Added
distanceid	Disconnected	ultrasonic	Device	Oct 28, 2022 2:36 PM

Identity Device Information Recent Events State Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
event_1	{"distance":19}	json	a few seconds ago
event_1	{"distance":87}	json	a few seconds ago
event_1	{"distance":9}	json	a few seconds ago
event_1	{"distance":24}	json	a few seconds ago

1 Simulation running

