

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/346561446597886547>

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
85   Serial.print("Sending payload: ");
86   Serial.println(payload);
87
88
89   if (client.publish(publishTopic, (char*) payload.c_str())) {
90     Serial.println("Publish ok");// if it successfully upload data on the cloud then it wi
91   } else {
92     Serial.println("Publish failed");
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

31b6or.internetofthings.ibmcloud.com/dashboard/devices/browse

511919106010@smartinternz.com ID: 31b6or

Browse Action Device Types Interfaces

Add Device

>	<input type="checkbox"/>	agricultureid	Disconnected	smart_agri	Device	Oct 12, 2022 12:14 PM	
>	<input checked="" type="checkbox"/>	sound23	Disconnected	ultrasonic	Device	Oct 26, 2022 11:43 AM	→ ...
<div>Identity Device Information Recent Events State Logs</div> <div>Device ID: sound23 Device Type: ultrasonic Date Added: Oct 26, 2022 11:43 AM Added By: 511919106010@smartinternz.com Connection Status: Disconnected Last Connected: Oct 27, 2022 11:20 AM Client Address: 145.40.94.93 Insecure Duration: a minute Data Transferred: 2.2 KB</div>							
>	<input type="checkbox"/>	trainingid	Disconnected	siva23	Device	Oct 1, 2022 6:44 PM	

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1 Simulation running

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<div>Identity Device Information Recent Events State Logs</div> <div>The recent events listed show the live stream of data that is coming and going from this device.</div> <table><thead><tr><th>Event</th><th>Value</th><th>Format</th><th>Last Received</th></tr></thead><tbody><tr><td>event_1</td><td>{"distance":40}</td><td>json</td><td>a few seconds ago</td></tr><tr><td>event_1</td><td>{"distance":25}</td><td>json</td><td>a few seconds ago</td></tr><tr><td>event_1</td><td>{"distance":94}</td><td>json</td><td>a few seconds ago</td></tr><tr><td>event_1</td><td>{"distance":28}</td><td>json</td><td>a few seconds ago</td></tr><tr><td>event_1</td><td>{"distance":13}</td><td>json</td><td>a few seconds ago</td></tr></tbody></table>								Event	Value	Format	Last Received	event_1	{"distance":40}	json	a few seconds ago	event_1	{"distance":25}	json	a few seconds ago	event_1	{"distance":94}	json	a few seconds ago	event_1	{"distance":28}	json	a few seconds ago	event_1	{"distance":13}	json	a few seconds ago
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