

## ASSIGNMENT-4

### DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	25 October 2022
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Maximum Marks	2 Marks

#### Question1 :

Write 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.

WOKWI LINK :

<https://wokwi.com/projects/346504553060893268>

CODE :

The screenshot displays the Wokwi IDE interface. On the left, the code for 'hc-sr04.ino' is shown. The code defines pins for TRIG (7) and ECHO (8), sets a maximum distance of 200 cm, and implements a loop that sends an alert to IBM Cloud if the distance is less than 100 cm. On the right, a simulation of the hardware setup is shown, featuring an Arduino Uno connected to an HC-SR04 ultrasonic sensor. The simulation output shows the distance being measured and the alert being sent to IBM Cloud.

```
1 // Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4 const unsigned int MAX_DIST = 200;
5
6 void setup() {
7   pinMode(TRIG_PIN, OUTPUT);
8   digitalWrite(TRIG_PIN, LOW);
9
10  pinMode(ECHO_PIN, INPUT);
11
12  Serial.begin(9600);
13 }
14
15 void loop() {
16   int distance;
17
18   digitalWrite(TRIG_PIN, HIGH);
19   delayMicroseconds(10);
20   digitalWrite(TRIG_PIN, LOW);
21
22   while ( digitalRead(ECHO_PIN) == 1);
23   distance = random(0,200);
24   if ( distance < 100 )
25   {
26     Serial.println("distance: ");
27     Serial.print(distance);
28     Serial.println("\t Object is NEAR");
29   }
30   else
31   {
32     Serial.println("distance: ");
33     Serial.print(distance);
34     Serial.println("\t No Object Found");
35   }
36   delay(1000);
37 }
38
39 }
```

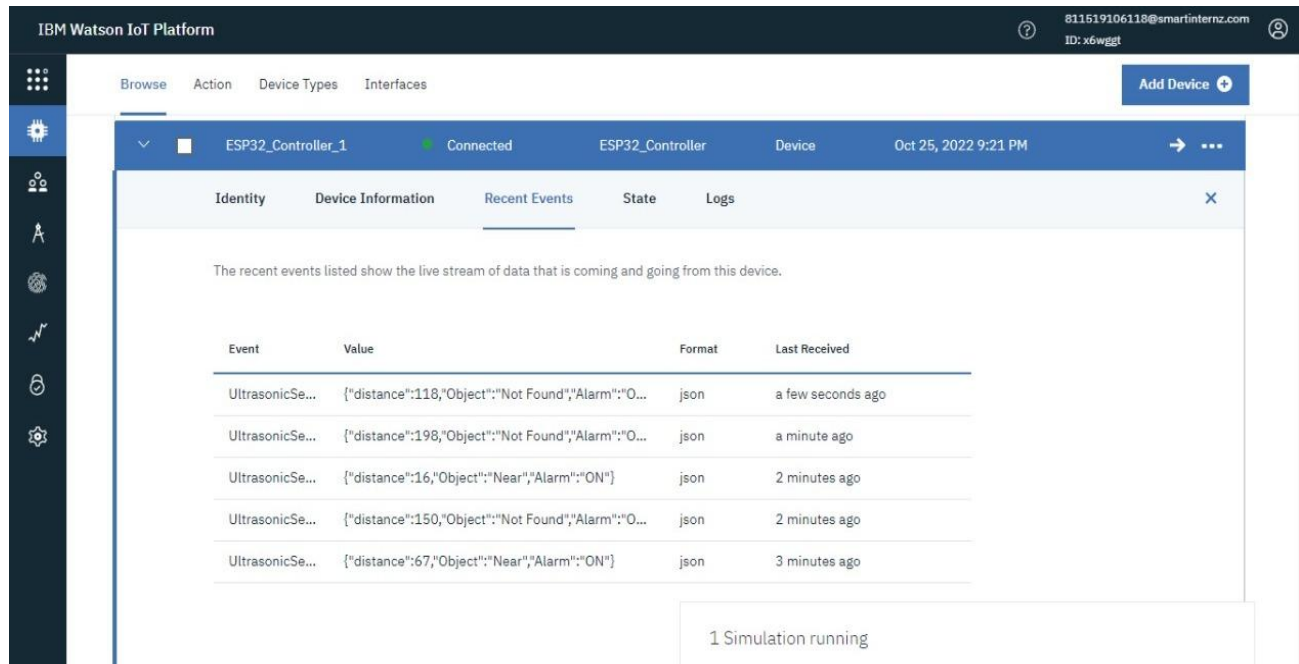
Simulation output:

```
distance:
73 Object is NEAR
distance:
58 Object is NEAR
distance:
130 No Object Found
distance:
72 Object is NEAR
distance:
144 No Object Found
distance:
78 Object is NEAR
```

OUTPUT :

IBM Cloud Event:

**Whenever distance is less than 100 cm send "alert" to IBM cloud Event**



IBM Watson IoT Platform

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ESP32\_Controller\_1 Connected ESP32\_Controller Device Oct 25, 2022 9:21 PM

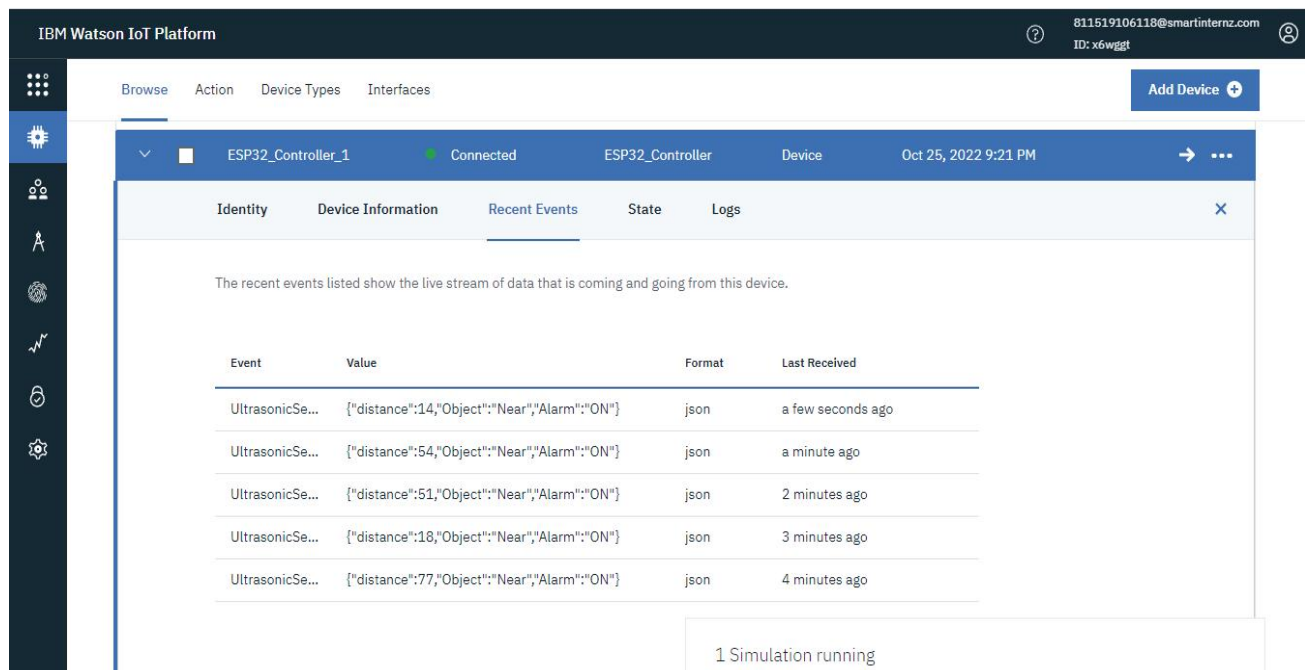
Identity Device Information Recent Events State Logs

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

Event	Value	Format	Last Received
UltrasonicSe...	{"distance":118,"Object":"Not Found","Alarm":"O...	json	a few seconds ago
UltrasonicSe...	{"distance":198,"Object":"Not Found","Alarm":"O...	json	a minute ago
UltrasonicSe...	{"distance":16,"Object":"Near","Alarm":"ON"}	json	2 minutes ago
UltrasonicSe...	{"distance":150,"Object":"Not Found","Alarm":"O...	json	2 minutes ago
UltrasonicSe...	{"distance":67,"Object":"Near","Alarm":"ON"}	json	3 minutes ago

1 Simulation running

Data sent to the IBM Cloud Device when the object is near



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Identity Device Information Recent Events State Logs

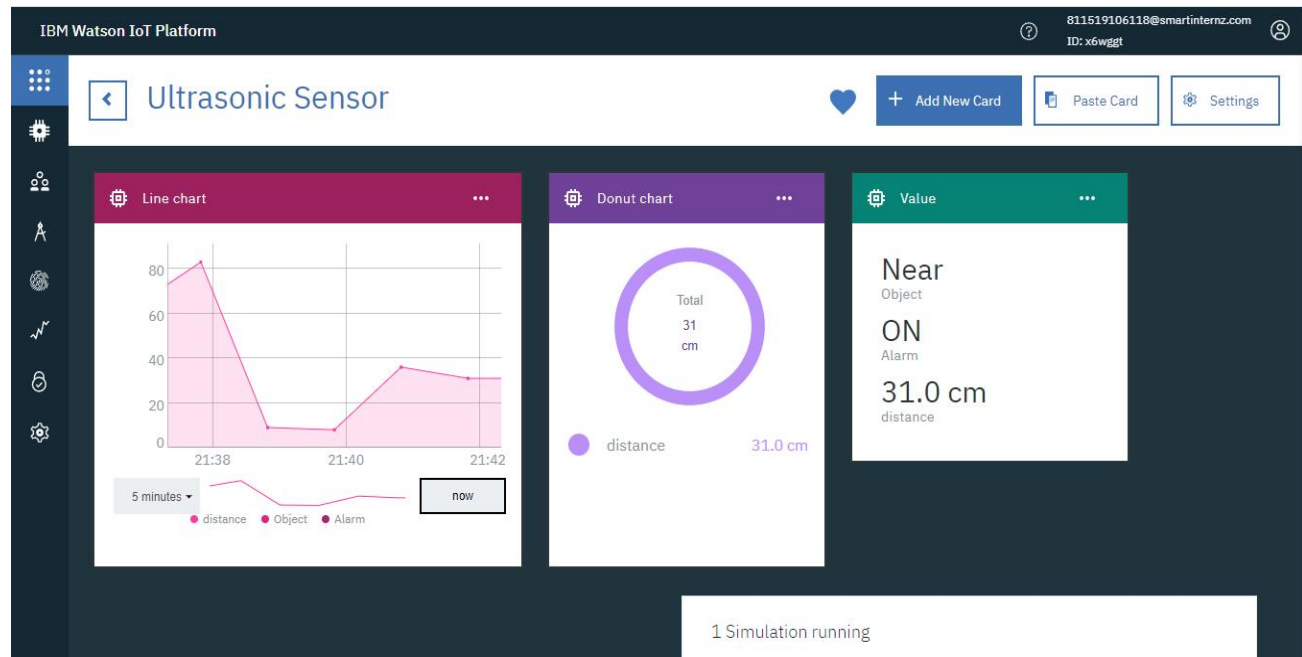
The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
UltrasonicSe...	{"distance":14,"Object":"Near","Alarm":"ON"}	json	a few seconds ago
UltrasonicSe...	{"distance":54,"Object":"Near","Alarm":"ON"}	json	a minute ago
UltrasonicSe...	{"distance":51,"Object":"Near","Alarm":"ON"}	json	2 minutes ago
UltrasonicSe...	{"distance":18,"Object":"Near","Alarm":"ON"}	json	3 minutes ago
UltrasonicSe...	{"distance":77,"Object":"Near","Alarm":"ON"}	json	4 minutes ago

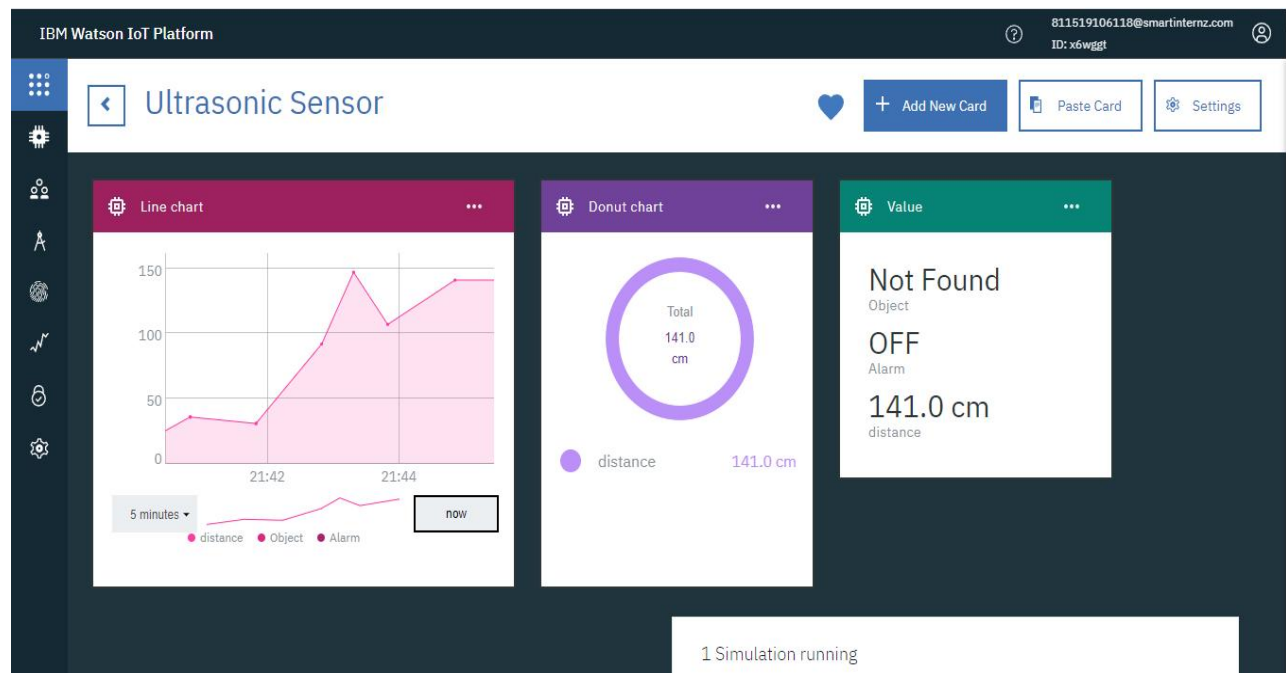
1 Simulation running

## IBM Cloud Event Board Output:

Data sent to the IBM Cloud Device when the object is near



Data sent to the IBM Cloud Device when the object is Not Found



WOKWI LINK :

<https://wokwi.com/projects/346504553060893268>