

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/348653697180369492>

CODE :

The screenshot displays the Wokwi IDE interface. On the left, the code editor shows the following C++ code:

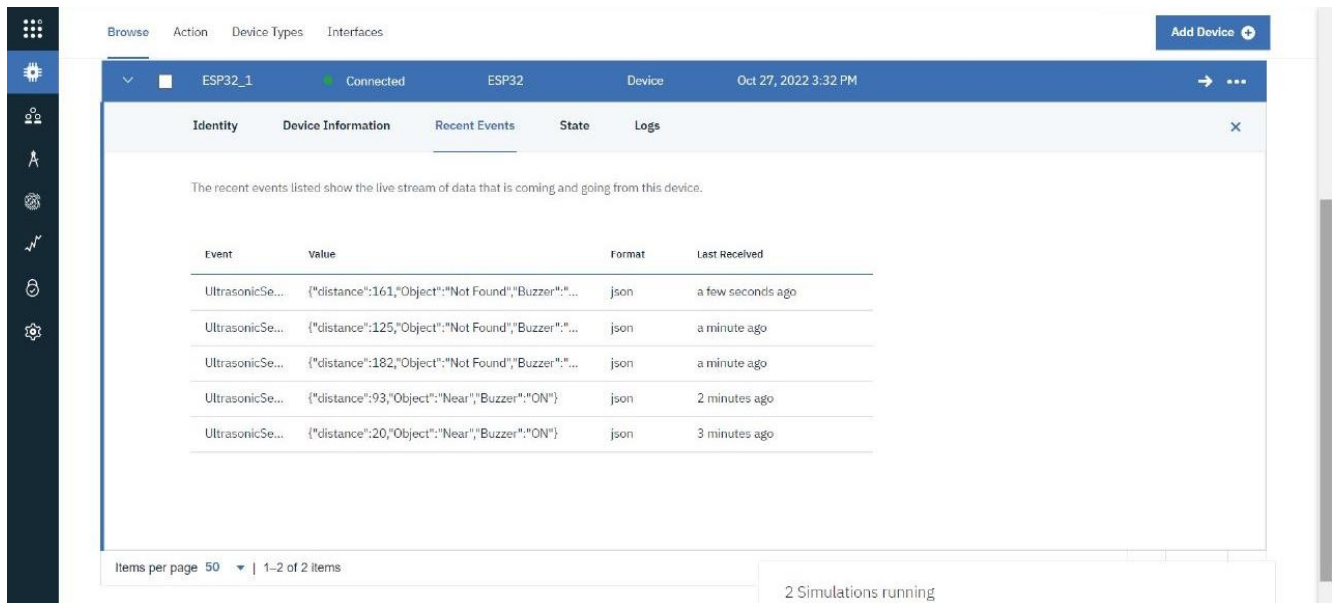
```
1 // Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4
5 const unsigned int MAX_DIST = 200;
6
7 void setup() {
8
9   pinMode(TRIG_PIN, OUTPUT);
10  digitalWrite(TRIG_PIN, LOW);
11
12  pinMode(ECHO_PIN, INPUT);
13
14  Serial.begin(9600);
15 }
16
17 void loop() {
18
19   int distance;
20
21   digitalWrite(TRIG_PIN, HIGH);
22   delayMicroseconds(10);
23   digitalWrite(TRIG_PIN, LOW);
24   while ( digitalRead(ECHO_PIN) == 1);
25   distance = random(0,190);
26   if ( distance <100 )
27   {
28     Serial.println("distance: ");
29     Serial.print(distance);
30     Serial.println("\t Object is NEAR, Buzzer: ON");
31   }
32   else
33   {
34     Serial.println("distance: ");
35     Serial.print(distance);
36     Serial.println("\t Object Not Found, Buzzer: OFF");
37   }
38 }
```

On the right, the simulation window shows an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The sensor's VCC pin is connected to the 5V pin on the Arduino, GND to GND, TRIG to digital pin 7, and ECHO to digital pin 8. A red wire is connected to the 5V pin, and a green wire is connected to the GND pin.

OUTPUT :

IBM Cloud Event:

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



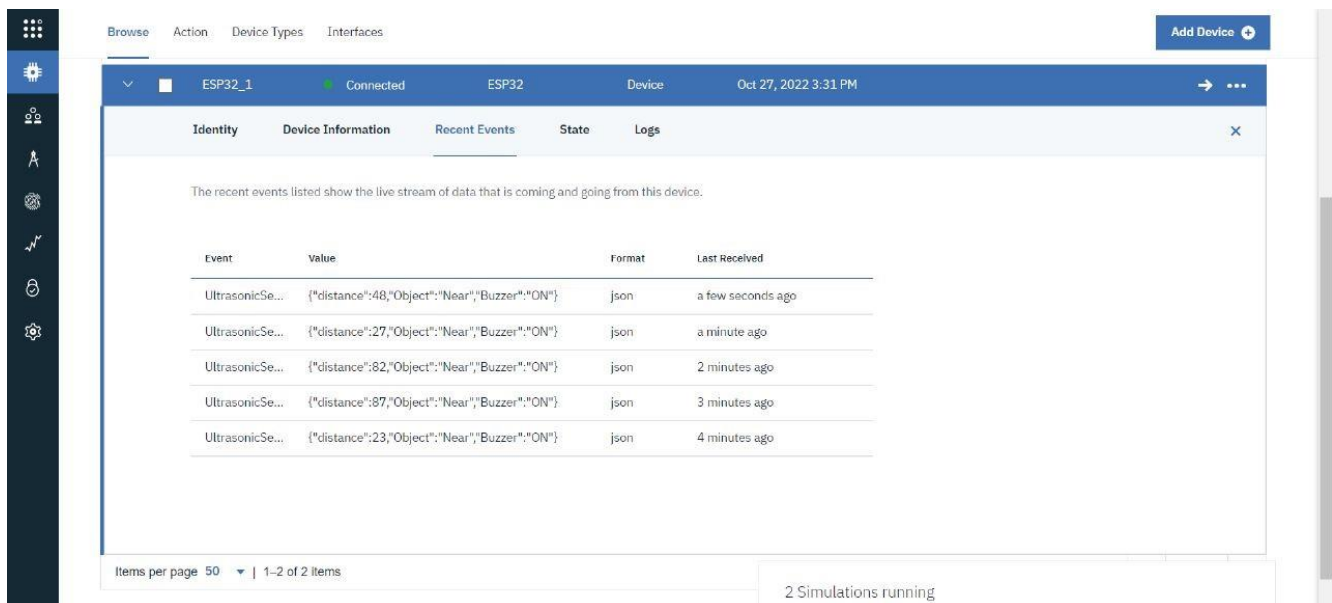
The screenshot displays the IBM Cloud IoT Platform console for a device named ESP32_1. The 'Recent Events' tab is selected, showing a list of events. The events are filtered by 'Device' and 'State'. The table below shows the recent events:

Event	Value	Format	Last Received
UltrasonicSe...	{"distance":161,"Object":"Not Found","Buzzer":"..."}	json	a few seconds ago
UltrasonicSe...	{"distance":125,"Object":"Not Found","Buzzer":"..."}	json	a minute ago
UltrasonicSe...	{"distance":182,"Object":"Not Found","Buzzer":"..."}	json	a minute ago
UltrasonicSe...	{"distance":93,"Object":"Near","Buzzer":"ON"}	json	2 minutes ago
UltrasonicSe...	{"distance":20,"Object":"Near","Buzzer":"ON"}	json	3 minutes ago

Items per page 50 | 1-2 of 2 items

2 Simulations running

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



The screenshot displays the IBM Cloud IoT Platform console for a device named ESP32_1. The 'Recent Events' tab is selected, showing a list of events. The events are filtered by 'Device' and 'State'. The table below shows the recent events:

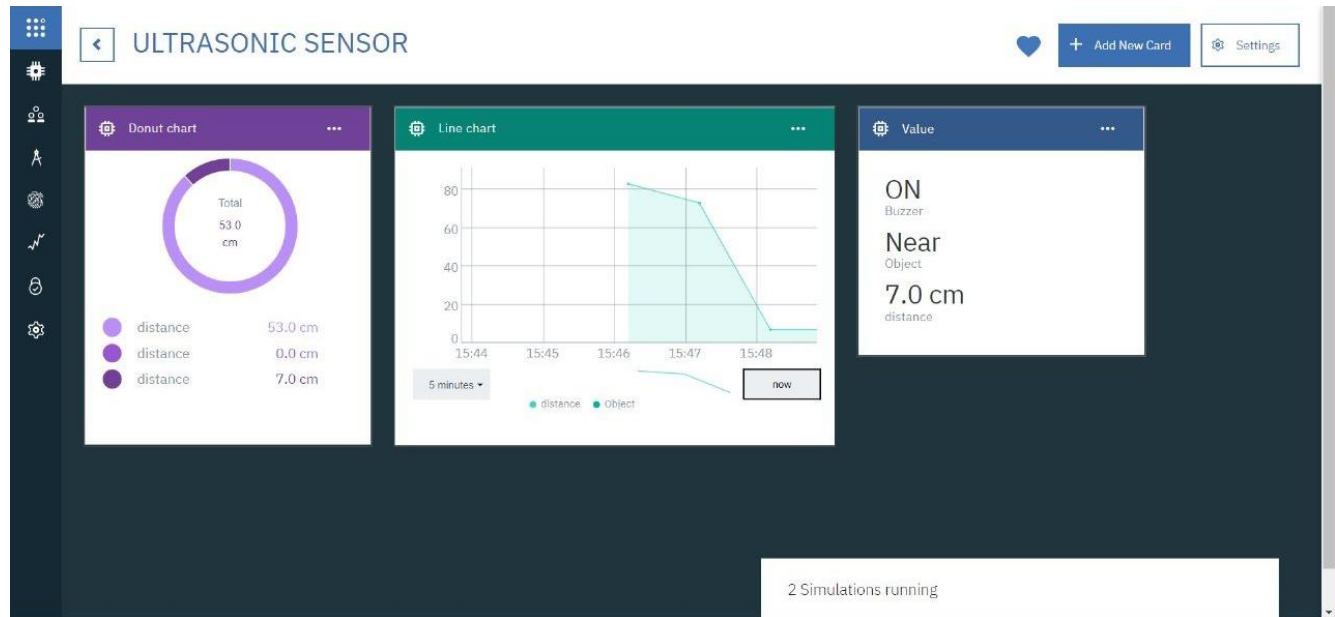
Event	Value	Format	Last Received
UltrasonicSe...	{"distance":48,"Object":"Near","Buzzer":"ON"}	json	a few seconds ago
UltrasonicSe...	{"distance":27,"Object":"Near","Buzzer":"ON"}	json	a minute ago
UltrasonicSe...	{"distance":82,"Object":"Near","Buzzer":"ON"}	json	2 minutes ago
UltrasonicSe...	{"distance":87,"Object":"Near","Buzzer":"ON"}	json	3 minutes ago
UltrasonicSe...	{"distance":23,"Object":"Near","Buzzer":"ON"}	json	4 minutes ago

Items per page 50 | 1-2 of 2 items

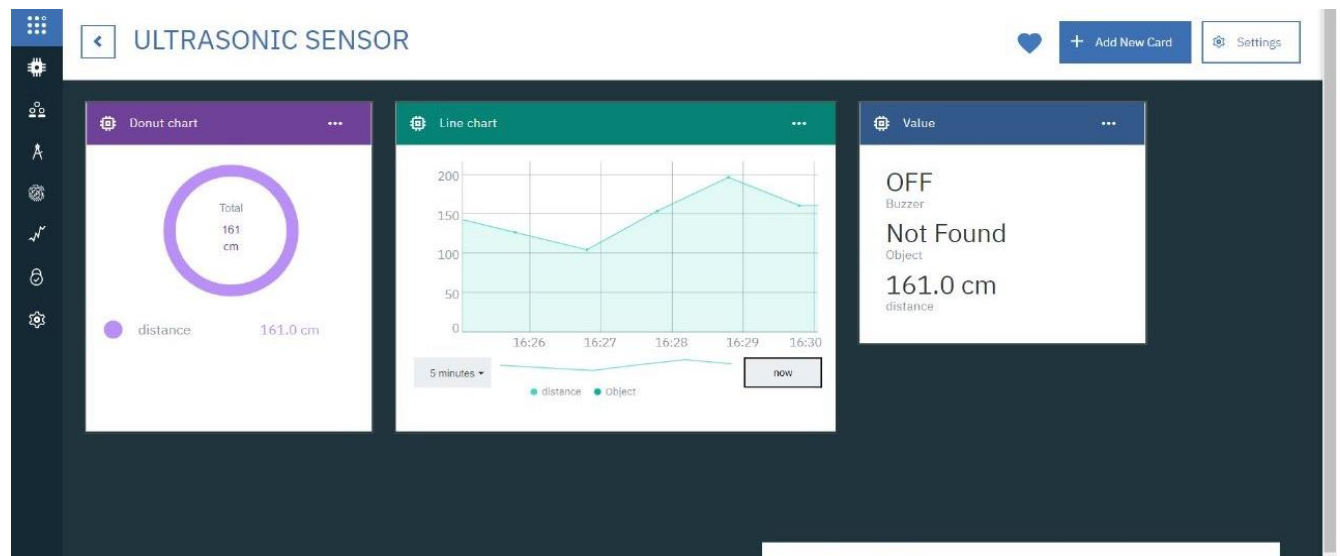
2 Simulations running

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/348653697180369492>