

## ASSIGNMENT-4

Date	10NOVEMBER2022
TeamID	PNT2022TMID16776
MaximumMarks	2Marks

### Question1:

\*Write code and connections in wokwi for the ultrasonic sensor.

\*Write code and connections in work for ultrasonic sensor. Whenever distance is less than 100cms send "alert" to IBM cloud and display in device recent events.

### Code:

```
#define ECHO_PIN 2
#define TRIG_PIN 3

void setup() {
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
}

float readDistanceCM() {
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  int duration = pulseIn(ECHO_PIN, HIGH);
  return duration * 0.034 / 2;
}

void loop() {
  float distance = readDistanceCM();

  bool isNearby = distance < 100;
  digitalWrite(LED_BUILTIN, isNearby);

  Serial.print("Measured distance: ");
  Serial.println(readDistanceCM());

  delay(100);
}
```

WOKWI LINK :

<https://wokwi.com/projects/346602893692895828>

## Solution :

hc-sr04.ino • diagram.json Library Manager

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 void setup() {
4   Serial.begin(115200);
5   pinMode(LED_BUILTIN, OUTPUT);
6   pinMode(TRIG_PIN, OUTPUT);
7   pinMode(ECHO_PIN, INPUT);
8 }
9 float readDistanceCM() {
10  digitalWrite(TRIG_PIN, LOW);
11  delayMicroseconds(2);
12  digitalWrite(TRIG_PIN, HIGH);
13  delayMicroseconds(10);
14  digitalWrite(TRIG_PIN, LOW);
15  int duration = pulseIn(ECHO_PIN, HIGH);
16  return duration * 0.034 / 2;
17 }
18
19 void loop() {
20  float distance = readDistanceCM();
21
22  bool isNearby = distance < 100;
23  digitalWrite(LED_BUILTIN, isNearby);
24
25  Serial.print("Measured distance: ");
26  Serial.println(readDistanceCM());
27
28  delay(100);
29 }
30
```

Simulation

7 new notifications

## Solution run:

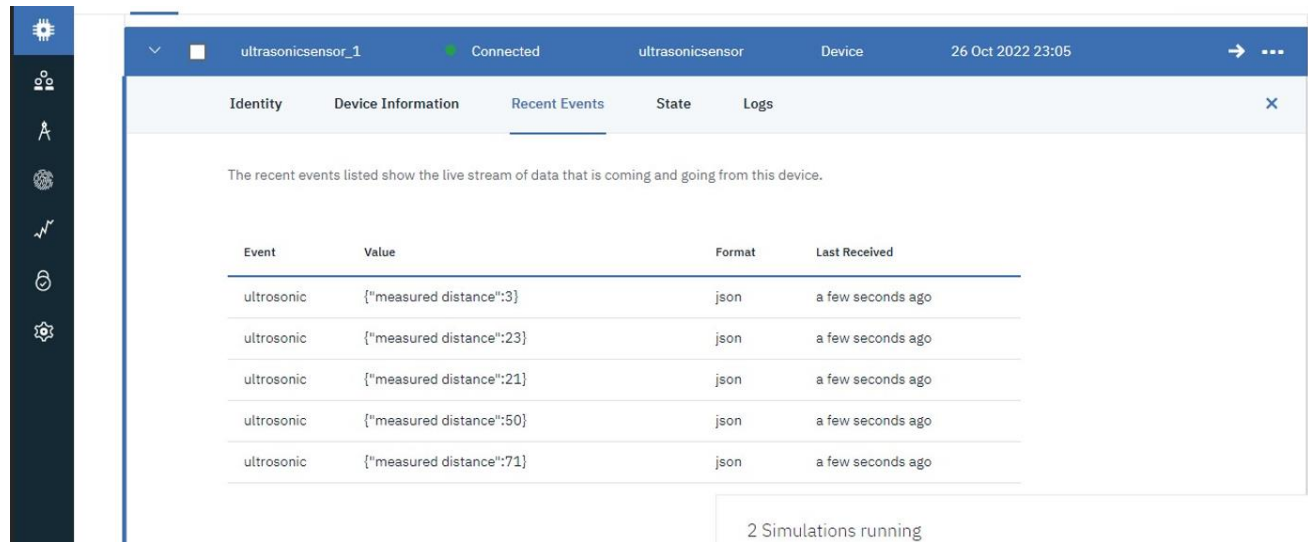
hc-sr04.ino • diagram.json Library Manager

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 void setup() {
4   Serial.begin(115200);
5   pinMode(LED_BUILTIN, OUTPUT);
6   pinMode(TRIG_PIN, OUTPUT);
7   pinMode(ECHO_PIN, INPUT);
8 }
9 float readDistanceCM() {
10  digitalWrite(TRIG_PIN, LOW);
11  delayMicroseconds(2);
12  digitalWrite(TRIG_PIN, HIGH);
13  delayMicroseconds(10);
14  digitalWrite(TRIG_PIN, LOW);
15  int duration = pulseIn(ECHO_PIN, HIGH);
16  return duration * 0.034 / 2;
17 }
18
19 void loop() {
20  float distance = readDistanceCM();
21
22  bool isNearby = distance < 100;
23  digitalWrite(LED_BUILTIN, isNearby);
24
25  Serial.print("Measured distance: ");
26  Serial.println(readDistanceCM());
27
28  delay(100);
29 }
30
```

Simulation

Measured distance: 97.67  
Measured distance: 97.77  
Measured distance: 97.67  
Measured distance: 97.67  
Measured distance: 97.67  
Measured distance: 97.73  
Measured distance: 97.67

OUTPUT:  
DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

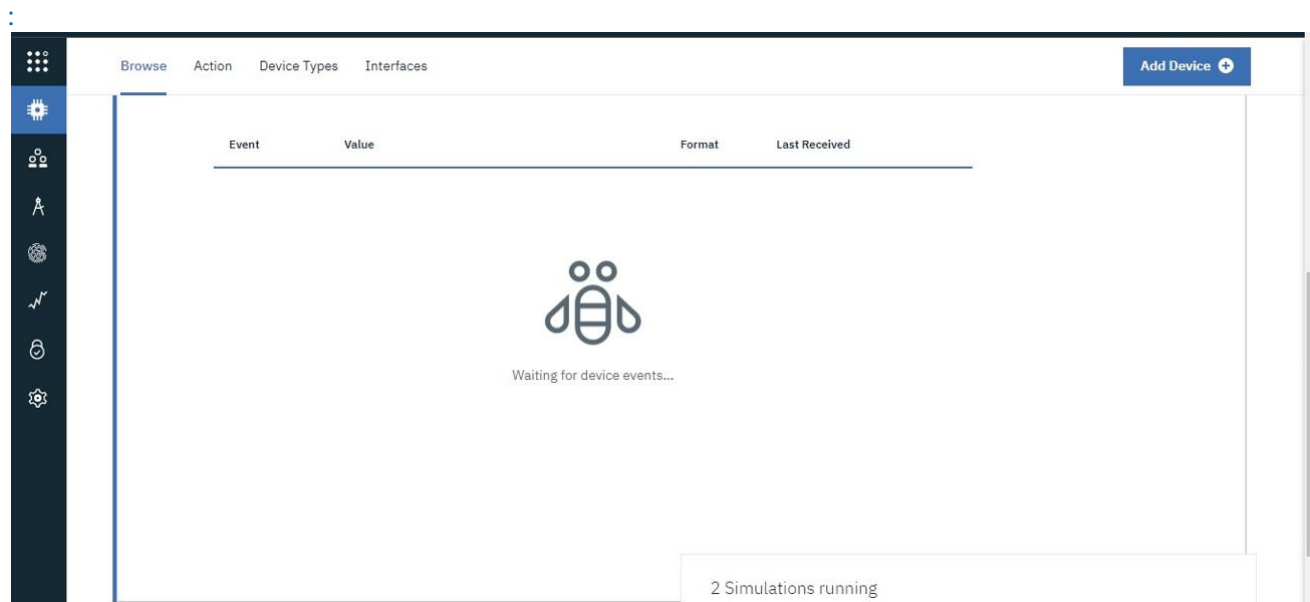


The screenshot shows the IBM Cloud IoT dashboard for a device named 'ultrasonicsensor\_1'. The device is connected, and the 'Recent Events' tab is selected. The events table shows five entries, all with the event name 'ultrasonic' and a JSON value for 'measured distance'. The values are 3, 23, 21, 50, and 71, all received 'a few seconds ago' in 'json' format. A status bar at the bottom indicates '2 Simulations running'.

Event	Value	Format	Last Received
ultrasonic	{"measured distance":3}	json	a few seconds ago
ultrasonic	{"measured distance":23}	json	a few seconds ago
ultrasonic	{"measured distance":21}	json	a few seconds ago
ultrasonic	{"measured distance":50}	json	a few seconds ago
ultrasonic	{"measured distance":71}	json	a few seconds ago

2 Simulations running

When no object is detected



The screenshot shows the IBM Cloud IoT dashboard for the same device, but now it is in a waiting state. The 'Recent Events' tab is still selected, but the events table is empty. A large icon of a person with a question mark is displayed in the center, with the text 'Waiting for device events...' below it. A status bar at the bottom indicates '2 Simulations running'.

Waiting for device events...

2 Simulations running