

# ASSIGNMENT 4

## Ultrasonic sensor simulation in Wokwi

**TEAM ID :** PNT2022TMIB36623

### **Question:**

Write a code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100cms send an “Alert” to IBM cloud and display in the device recent events.

### **Solution:**

### **Code:**

```
// defines pins numbers
const int trigPin = 2;
const int echoPin = 5;
// defines variables
long duration;
int distance;
void setup() {
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin, INPUT); // Sets the echoPin as an Input
  Serial.begin(9600); // Starts the serial communication
}
void loop() {
  // Clears the trigPin
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  // Sets the trigPin on HIGH state for 10 micro seconds
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  // Reads the echoPin, returns the sound wave travel time in microseconds
  duration = pulseIn(echoPin, HIGH);
  // Calculating the distance
  distance= duration*0.034/2;
  // Prints the distance on the Serial Monitor
  Serial.print("Distance: ");
  Serial.print(distance);
  Serial.println(" cm");

  if(distance <= 100){
    Serial.println("Alert Distance is less than 100 cm");
```

```

}

}

DIAGRAM.JSON

{
  "version": 1,
  "author": "Uri Shaked",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": -21.91, "left": -66.98, "attrs": {} },
    { "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -56.74, "left": 85.25, "attrs": {} }
  ],
  "connections": [
    [ "esp:TX0", "$serialMonitor:RX", "", [ ] ],
    [ "esp:RX0", "$serialMonitor:TX", "", [ ] ],
    [ "ultrasonic1:ECHO", "esp:D5", "green", [ "v0" ] ],
    [ "ultrasonic1:VCC", "esp:3V3", "red", [ "v99.32", "h-11.05" ] ],
    [ "esp:GND.1", "ultrasonic1:GND", "black", [ "h0" ] ],
    [ "esp:D2", "ultrasonic1:TRIG", "green", [ "h0" ] ]
  ]
}

```

OUTPUT:

IBM CLOUD OUTPUT:

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains various icons for navigation. The main content area shows a list of devices, with 'Sundar\_1' selected. Below the device list, there are tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is active, showing a table of events. The table has columns for 'Event', 'Value', 'Format', and 'Last Received'. The events listed are 'event\_1' with values like '{"Distance":47,"Alert":"Distance less than 100"}' and '{"Distance":50,"Alert":"Distance less than 100"}', all in 'json' format and received 'a few seconds ago'. At the bottom, a status bar indicates '2 Simulations running'.

Event	Value	Format	Last Received
event_1	{"Distance":47,"Alert":"Distance less than 100"}	json	a few seconds ago
event_1	{"Distance":50,"Alert":"Distance less than 100"}	json	a few seconds ago
event_1	{"Distance":4,"Alert":"Distance less than 100"}	json	a few seconds ago
event_1	{"Distance":10,"Alert":"Distance less than 100"}	json	a few seconds ago

2 Simulations running

