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");
```

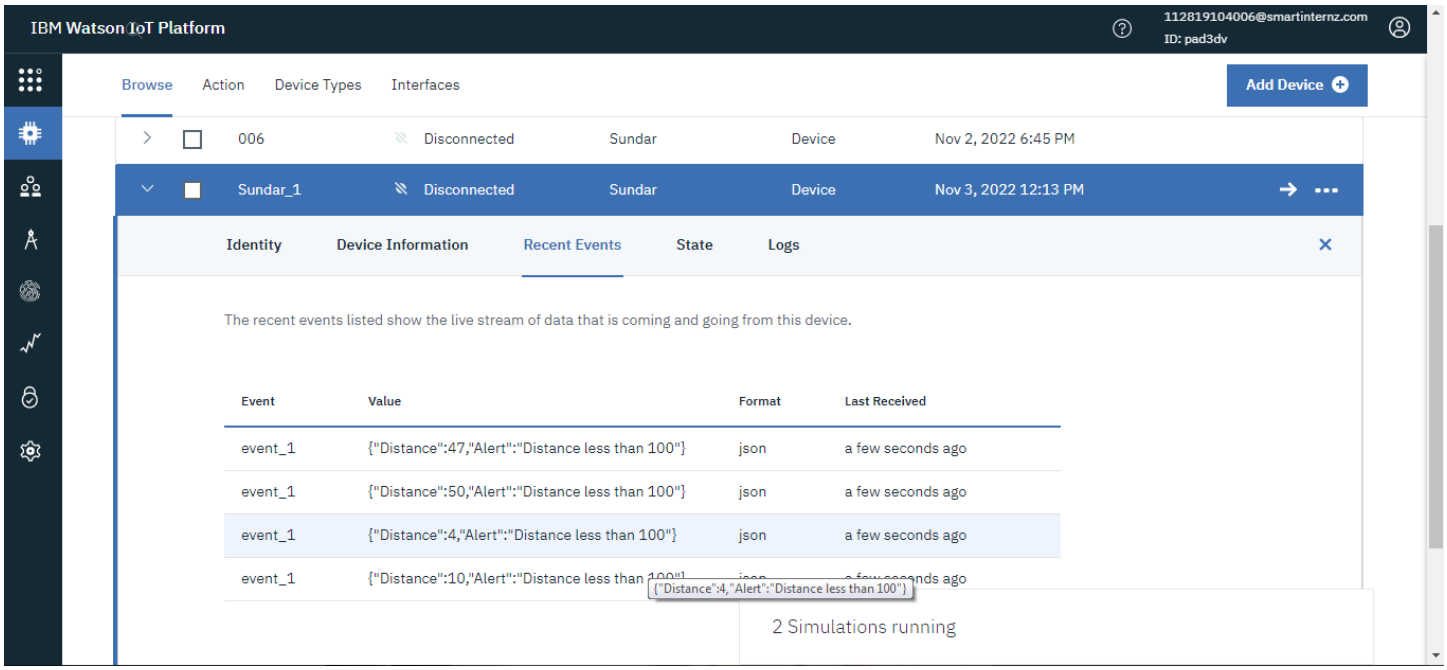
```
  }

}
```

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:



WOKWI SAVE SHARE esp32-dht22.ino by urish Docs SIGN IN

esp32-dht22.ino ● diagram.json ● libraries.txt Library Manager

```
// 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);
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  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");
```
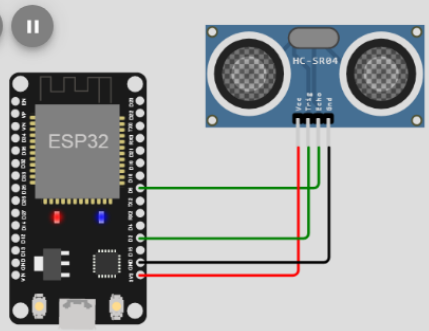

Simulation 00:08.600 38%



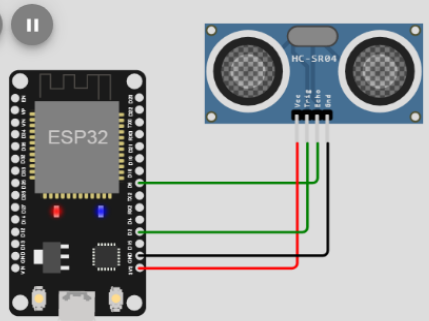

```
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
```

WOKWI SAVE SHARE esp32-dht22.ino by urish Docs SIGN UP

esp32-dht22.ino ● diagram.json ● libraries.txt Library Manager

```
{
  "version": 1,
  "author": "Uri Shaked",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": -21.91, "left": -66
    { "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -56.74, "left": 85.
  ],
  "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" ] ]
  ]
}
```

Simulation 00:26.200 38%




```
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
Distance: 399 cm
```