

ASSIGNMENT-4

DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	24 October 2022
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Question 1:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less then 100 cms send “alert” to IBM cloud and display in device recent events.

Wokwi Link:

<https://wokwi.com/projects/348389389622051411>

Code:

```
#define TRIG_PIN 21
#define ECHO_PIN 19
#define LED_PIN 5
#define DISTANCE_THRESHOLD 100

float duration_us, distance_cm;

void setup() {
  Serial.begin(9600);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  pinMode(LED_PIN, OUTPUT);
}

void loop() {
```

```

digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);

duration_us = pulseIn(ECHO_PIN, HIGH);

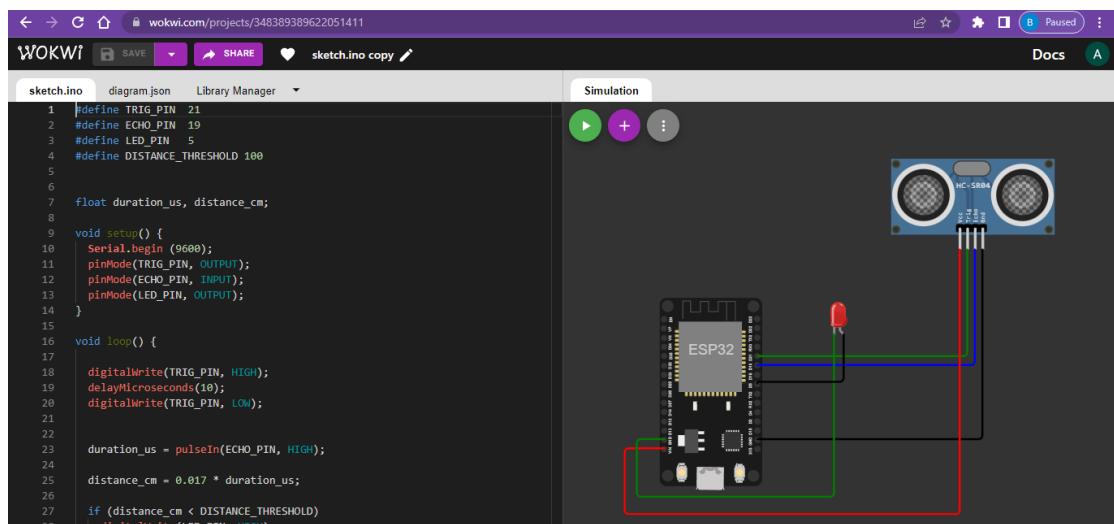
distance_cm = 0.017 * duration_us;

if (distance_cm < DISTANCE_THRESHOLD)
    digitalWrite(LED_PIN, HIGH);
else
    digitalWrite(LED_PIN, LOW);

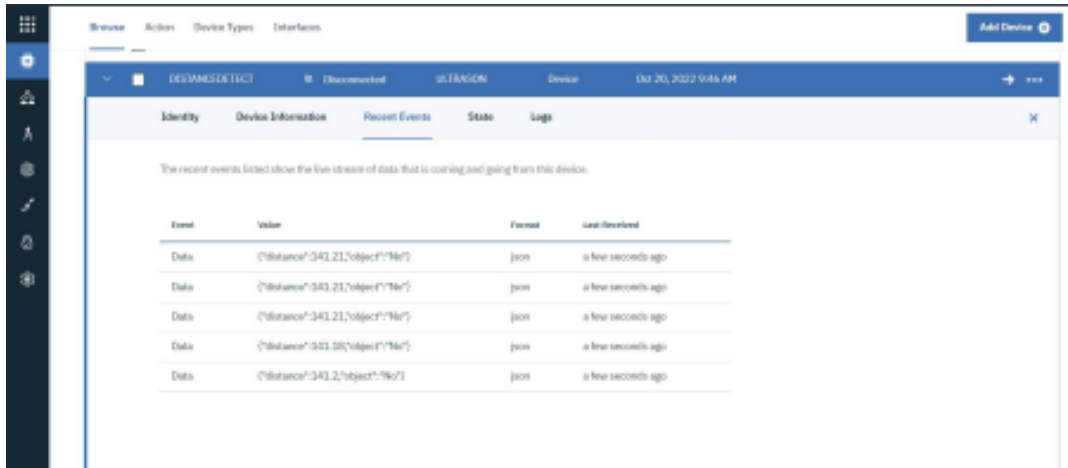
Serial.print("distance: ");
Serial.print(distance_cm);
Serial.println(" cm");

delay(500);
}

```



Data send to the IBM cloud device when the object is far



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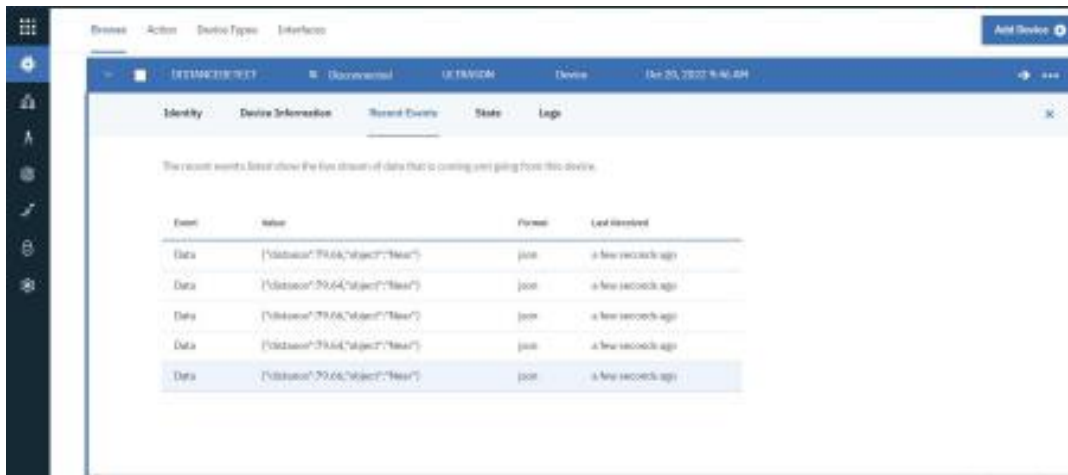
DEVWMSDETCT1 Documented ULTRASON Device Oct 20, 2022 9:46 AM

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
Data	{"distance":343.21,"object":"far"}	json	a few seconds ago
Data	{"distance":343.21,"object":"far"}	json	a few seconds ago
Data	{"distance":343.21,"object":"far"}	json	a few seconds ago
Data	{"distance":343.21,"object":"far"}	json	a few seconds ago
Data	{"distance":343.2,"object":"far"}	json	a few seconds ago

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
Data	{"distance":39.66,"object":"near"}	json	a few seconds ago
Data	{"distance":39.64,"object":"near"}	json	a few seconds ago
Data	{"distance":39.66,"object":"near"}	json	a few seconds ago
Data	{"distance":39.64,"object":"near"}	json	a few seconds ago
Data	{"distance":39.66,"object":"near"}	json	a few seconds ago