

ASSIGNMENT 4

Ultrasonic sensor simulation in Wokwi

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.

Wokwi simulation link:

<https://wokwi.com/projects/347030433173602900>

Code:

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization = "g8lzy9"
4 #define deviceType = "DEEPAK"
5 #define deviceId = "93"
6 #define authMethod = "token"
7 #define authToken = "12345678"
8
9 void setup(){
10     Serial.begin(9600);
11     pinMode(TRIG_PIN,OUTPUT);
12     pinMode(ECHO_PIN,INPUT);
13 }
14
15 float readDistanceCM(){
16     digitalWrite(TRIG_PIN,LOW);
17     delayMicroseconds(2);
18     digitalWrite(TRIG_PIN,HIGH);
19     delayMicroseconds(10);
20     digitalWrite(TRIG_PIN,LOW);
21     int duration=pulseIn(ECHO_PIN,HIGH);
22     return duration*0.034/2;
23 }
24 void loop(){
```

```

25     float distance=readDistanceCM();
26     if(distance<=100)
27     {
28         Serial.println("person detected");
29     }
30     else{
31         Serial.print("Measured distance:");
32         Serial.println(readDistanceCM());
33     }
34     delay(1000);
35 }

```

IBM Cloud:

The screenshot displays the IBM Watson IoT Platform interface. The main dashboard shows a list of devices, with one device (ID: 93) selected. The device is in a 'Disconnected' state. The 'Recent Events' tab is active, showing a table of events. The table has columns for Event, Value, Format, and Last Received. Two events are listed, both in JSON format.

Event	Value	Format	Last Received
event_1	{"randomNumber":88,"distance":123}	json	a few seconds ago
event_1	{"randomNumber":79,"distance":48}	json	a few seconds ago

An overlay window titled 'Device Type: DEEPAK' is open, showing the 'Events' configuration. It includes a 'New event type' button, a 'Send' button, and a 'Schedule' dropdown set to 'Every Minute'. The 'Payload' section shows a JSON template for the event data.

```

{
  "randomNumber": random(0, 100),
  "distance": random(0, 150)
}

```

At the bottom of the overlay, there is an 'Upload a CSV file' button and 'Cancel' and 'Save' buttons.

Service Details - IBM Cloud x IBM Watson IoT Platform x +

g8lzy9.internetofthings.ibmcloud.com/dashboard/devices/browse

deepakkumarmurugan3152@gmail.com ID: g8lzy9

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Search by Device ID

Device ID	Status	Device Type	Class ID	Date
93	Disconnected	DEEPAK	Device	Oct 31, 2022 10:26 AM

Identity Device Information Recent Events State Logs

Device ID: 93
Device Type: DEEPAK
Date Added: Oct 31, 2022 10:26 AM
Added By: deepakkumarmurugan3152@gmail.com
Connection Status: Disconnected

Items per page 50 | 1-1 of 1 item

Device Type: DEEPAK

Events 1 New event type +

Event type name: event_1 Send

Schedule: 20 Every Minute

Payload: Specify the event payload in the editor window or by uploading a CSV file.

```
0 {  
1   "randomnumber": random(0, 100),  
2   "distance": random(0, 150),  
3 }  
4
```

Upload a CSV file

Cancel Save

Service Details - IBM Cloud x IBM Watson IoT Platform x WhatsApp Web x +

g8lzy9.internetofthings.ibmcloud.com/dashboard/boards/28a0501d-2b09-439d-ac5d-e3a7c183e232

deepakkumarmurugan3152@gmail.com ID: g8lzy9

IBM Watson IoT Platform

ultrasonic

Line chart

150
100
50
0

15:02:30 15:03

1 minute now

distance

Device Type: DEEPAK

Events 1 New event type +

Event type name: event_1 Send

Schedule: 20 Every Minute

Payload: Specify the event payload in the editor window or by uploading a CSV file.

```
0 {  
1   "randomnumber": random(0, 100),  
2   "distance": random(0, 150),  
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```

Upload a CSV file

Cancel Save

Wokwi Simulation:

Service Details - IBM Cloud x IBM Watson IoT Platform x (1) WhatsApp x W New Arduino Uno Project - V x W sketch.ino - Wokwi Arduino x +

wokwi.com/projects/new/arduino-uno

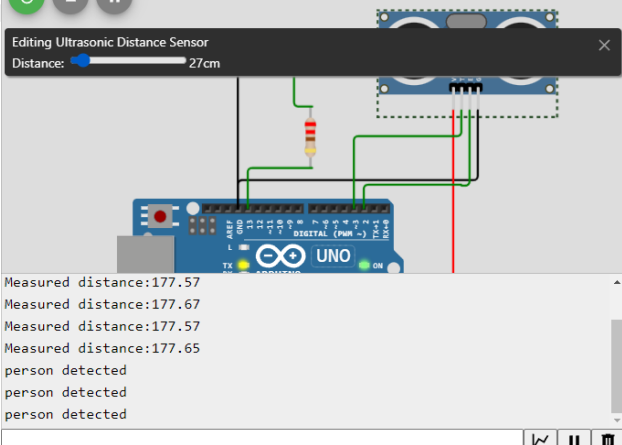
WOKWI SAVE SHARE Docs

sketch.ino diagram.json Library Manager

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20   digitalWrite(TRIG_PIN, LOW);
21   int duration=pulseIn(ECHO_PIN,HIGH);
22   return duration*0.034/2;
23 }
24 void loop(){
25   float distance=readDistanceCM();
26
27
28   if(distance<=100)
```

Simulation 00:08.196 65%

Editing Ultrasonic Distance Sensor Distance: 27cm



Measured distance:177.57
Measured distance:177.67
Measured distance:177.57
Measured distance:177.65
person detected
person detected
person detected

IBM-35110-16626....pdf

Show all x

ENG 15:10