

## ASSIGNMENT 4

**wokwi link:**

<https://wokwi.com/projects/290056311044833800>

**Program code:**

```
/*  
  
  HC-SR04 Ultrasonic Sensor Example.  
  
  Turn the LED on when an object is within 100cm range.  
  
  Copyright (C) 2021, Uri Shaked  
  
*/  
  
#define ECHO_PIN 2  
  
#define TRIG_PIN 3  
  
#define organization = "hfblrc"  
  
#define device type = "type1"  
  
#define deviceId = "01"  
  
#define authmethod = "token"  
  
#define authToken = "12345678"  
  
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();  
    if(distance<=100)  
    {  
        Serial.println("person detected");  
    }  
    else{  
        Serial.print("Measured distance:");  
        Serial.println(readDistanceCM());  
    }  
    delay(1000);  
}
```

## IBM CLOUD:

The screenshot shows the IBM Watson IoT Platform interface. The main panel displays a table of events for device type1. The table has two columns: Event and Value. The events are as follows:

Event	Value
event_1	{"randomNumber":42,"distance":138}
event_1	{"randomNumber":27,"distance":83}
event_1	{"randomNumber":6,"distance":13}
event_1	{"randomNumber":42,"distance":22}
event_1	{"randomNumber":3,"distance":2}

Below the table, it says "Items per page 50 | 1-1 of 1 item".

A modal window titled "Device Type: type1" is open on the right. It shows the configuration for event type1. The "Event type name" is "event\_1". The "Schedule" is set to "20" and "Every Minute". The "Payload" is defined as:

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

There is an "Upload a CSV file" button at the bottom of the modal.

The screenshot shows the IBM Watson IoT Platform interface. The main panel displays a table of devices. The table has three columns: Device ID, Status, and Device Type. The device is as follows:

Device ID	Status	Device Type
01	Disconnected	type1

Below the table, it says "Items per page 50 | 1-1 of 1 item".

A modal window titled "Device Type: type1" is open on the right. It shows the configuration for event type1. The "Event type name" is "event\_1". The "Schedule" is set to "20" and "Every Minute". The "Payload" is defined as:

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

There is an "Upload a CSV file" button at the bottom of the modal.

IBM Watson IoT Platform

board1

Line chart

5 minutes

now

distance

Device Type: type1

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

WOKWI

SAVE SHARE

hc-sr04.ino by urish

diagram.json Library Manager

```
5 /*
6 #define ECHO_PIN 2
7 #define TRIG_PIN 3
8 #define organization "hfblrc"
9 #define device type "type1"
10 #define deviceId "01"
11 #define authmethod "token"
12 #define authToken "12345678"
13 void setup() {
14   Serial.begin(115200);
15   pinMode(LED_BUILTIN, OUTPUT);
16   pinMode(TRIG_PIN, OUTPUT);
17   pinMode(ECHO_PIN, INPUT);
18 }
19 float readDistanceCM() {
20   digitalWrite(TRIG_PIN, LOW);
21   delayMicroseconds(2);
22   digitalWrite(TRIG_PIN, HIGH);
23   delayMicroseconds(10);
24   digitalWrite(TRIG_PIN, LOW);
25   int duration = pulseIn(ECHO_PIN, HIGH);
26   return duration * 0.034 / 2;
27 }
28 void loop(){
29   float distance=readDistanceCM();
30   if(distance<=100)
31   {
32     Serial.println("person detected");
```

Simulation

00:05.765 103%

Measured distance:177.33  
Measured distance:177.34  
Measured distance:177.24  
Measured distance:177.40  
Measured distance:177.24  
Measured distance:177.33