

Assignment – 4

Link:

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

Program Code:

```
#define ECHO_PIN 2

#define TRIG_PIN 3

#define organization = "k2m20e"

#define deviceType = "abcd"

#define deviceId = "16"

#define authMethod = "token"

#define authToken = "12345678"


void setup(){

    Serial.begin(9600);

    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 image displays two screenshots of the IBM Watson IoT Platform interface, showing device management and event configuration.

Top Screenshot: The interface shows the "Recent Events" tab for a device with ID 16. The events are listed in a table with columns: Event, Value, Format, and Last Received. The events are generated by a schedule named "event_1".

Event	Value	Format	Last Received
event_1	{"randomNumber":39,"distance":71}	json	a few seconds ago
event_1	{"randomNumber":91,"distance":179}	json	a few seconds ago
event_1	{"randomNumber":93,"distance":197}	json	a few seconds ago
event_1	{"randomNumber":57,"distance":139}	json	a few seconds ago
event_1	{"randomNumber":37,"distance":113}	json	a few seconds ago

The "Device Type: abcd" configuration window is open, showing the "Events" tab. The event type name is "event_1". The schedule is set to "Every Minute" with a delay of "20". The payload is a JSON object:

```
{ 0: { 1: "randomNumber": random(0, 100), 2: "distance": random(0, 200), 3: } }
```

Bottom Screenshot: The interface shows the "Device ID" search results. The device with ID 16 is selected, and its details are displayed in the "Device Information" tab. The "Recent Events" tab is also visible, showing the same events as the top screenshot.

Device ID	Status	Device Type	Class ID
15	Disconnected	abcd	Device
16	Disconnected	abcd	Device

The "Device ID" search results table shows the following details for device 16:

Device ID	Status	Device Type	Class ID
16	Disconnected	abcd	Device

The "Device Information" tab shows the following details for device 16:

Device ID	Status	Device Type	Class ID
16	Disconnected	abcd	Device

The "Recent Events" tab shows the same events as the top screenshot.

IBM Watson IoT Platform

ultrasonic

1 minute

distance

now

Device Type: abcd

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, 200)
3 }
4

```

Upload a CSV file

Cancel Save

WOKWI

SAVE SHARE

hc-sr04.ino by urish

diagram.json Library Manager

```

1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization = "k2m20e"
4 #define deviceType = "abcd"
5 #define deviceId = "16"
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
27   if(distance<100)
28   {
29     Serial.println("person detected");
30   }
31   else{
32     Serial.print("Measured distance:");
33     Serial.println(readDistanceCM());
34   }
35   delay(1000);
36 }

```

Simulation

00:08.761 102%

Editing Ultrasonic Distance Sensor

Distance: 76cm

Measured distance:194.33

Measured distance:194.43

Measured distance:194.43

person detected

person detected

person detected

person detected