

Assignment -4

DATE	2 NOVEMBER 2022
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MAXIMUM MARKS	2 MARKS

Question-1: Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send “alert” to ibm cloud and display in device recent events.

Solution:

```
#define ECHO_PIN 2
#define TRIG_PIN 3
#define organization ="c9ybtv"
#define deviceType=" Arduino"
#define deviceId ="20020"
#define authMethod ="use-token-auth"
#define authToken ="123456789"
void setup() {
    // put your setup code here, to run once:
    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() {
    // put your main code here, to run repeatedly:
    float distance = readDistanceCM();
    if(distance <= 100)
    {
        Serial.println("person detected ");
    }
    else{
        Serial.print("Measured distance: ");
        Serial.println(readDistanceCM());
    }
}
```

```
delay(1000);
```

```
}
```

Input :

The screenshot displays the Wokwi online IDE interface. On the left, the 'sketch.ino' file contains the following C++ code:

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization "c9ybtpr"
4 #define deviceType="Arduino"
5 #define deviceId="20020"
6 #define authMethod="use-token-auth"
7 #define authToken="123456789"
8 void setup() {
9   // put your setup code here, to run once:
10  Serial.begin(9600);
11  pinMode(TRIG_PIN, OUTPUT);
12  pinMode(ECHO_PIN, INPUT);
13 }
14 float readDistanceCM() {
15  digitalWrite(TRIG_PIN, LOW);
16  delayMicroseconds(2);
17  digitalWrite(TRIG_PIN, HIGH);
18  delayMicroseconds(10);
19  digitalWrite(TRIG_PIN, LOW);
20  int duration = pulseIn(ECHO_PIN, HIGH);
21  return duration * 0.034 / 2;
22
23
24
25 }
26
27 void loop() {
28  // put your main code here, to run repeatedly:
```

On the right, the 'Simulation' tab shows a 3D model of an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The sensor's VCC pin is connected to the 5V pin on the Arduino, and its GND pin is connected to a GND pin. The TRIG pin is connected to digital pin 3, and the ECHO pin is connected to digital pin 2. The simulation controls (play, add, and settings buttons) are visible at the top of the simulation area.

Output:

The screenshot displays the Wokwi online Arduino IDE interface. The left pane shows the sketch code for an ultrasonic sensor simulation. The right pane shows a simulation of an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The simulation output window at the bottom right displays the measured distance.

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization "c9ybtp"
4 #define deviceType "Arduino"
5 #define deviceId "20020"
6 #define authMethod "use-token-auth"
7 #define authToken "123456789"
8 void setup() {
9   // put your setup code here, to run once:
10  Serial.begin(9600);
11  pinMode(TRIG_PIN, OUTPUT);
12  pinMode(ECHO_PIN, INPUT);
13 }
14 float readDistanceCM() {
15  digitalWrite(TRIG_PIN, LOW);
16  delayMicroseconds(2);
17  digitalWrite(TRIG_PIN, HIGH);
18  delayMicroseconds(10);
19  digitalWrite(TRIG_PIN, LOW);
20  int duration = pulseIn(ECHO_PIN, HIGH);
21  return duration * 0.034 / 2;
22 }
23
24
25 }
26
27 void loop() {
28  // put your main code here, to run repeatedly:
```

Simulation output:

```
Measured distance: 395.27
Measured distance: 395.25
Measured distance: 395.27
Measured distance: 395.25
Measured distance: 395.25
Measured distance: 395.25
Measured distance: 395.25
Measured distance: 395.25
Measured distance: 395.25
```

Wokwi Link: <https://wokwi.com/projects/347128758734422612>

IBM CLOUD

Device Recent Events

← Back

Device Drilldown - 20020

Device Credentials

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID

c9ybtp

Device Type

arduino

Device ID

20020

Authentication Method

use-token-auth

Authentication Token

123456789

0 Simulations running

Activate Windows
Go to Settings to activate Windows.

Authentication tokens are non-new authentication token.

Browse

Action

Device Types

Interfaces

Add Device +

Event	Value	Format	Last Received
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago

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1 Simulation running

Activate Windows
Go to Settings to activate Windows.