

Assignment -4

DATE	2 NOVEMBER 2022
NAME	MADHAN DEEPAK R
STUDENT ROLL NUMBER	815119106020
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 ="c9ybtpr"
#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 "c9ybtpt"
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 virtual representation 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 includes a play button, a plus button, and a menu button.

The bottom of the image shows a Windows taskbar with the search bar, task view button, and several open applications including Edge, File Explorer, and VS Code. The system clock shows 18:14 on 01-11-2022.

Output:

The screenshot displays the Wokwi online Arduino IDE interface. The left pane shows the sketch code for an ultrasonic sensor project. 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.