

T. Charu Vikashini Assignment -4

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 ="I6anqj"
#define deviceType=" Arduino"
#define deviceId ="97873"
#define authMethod ="use-token-auth"
#define authToken ="8?a&JnY)GiK?bjHNxn"

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);
```

```
}
```

Simulation

Output:

The screenshot displays the Wokwi web IDE interface. On the left, the sketch editor shows a C++ program for an Arduino Uno. The program defines pins for an HC-SR04 ultrasonic sensor and implements a distance-measuring function. The right side shows a simulation of the hardware, with the sensor connected to the Arduino's digital pins. Below the simulation, the output console displays the results of the program's execution.

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization "l6anqj"
4 #define deviceType "Arduino"
5 #define deviceId "97873"
6 #define authMethod "use-token-auth"
7 #define authToken "a?adlnY6ik2bjH0xm"
8
9 void setup() {
10   // put your setup code here, to run once:
11   Serial.begin(9600);
12   pinMode(TRIG_PIN, OUTPUT);
13   pinMode(ECHO_PIN, INPUT);
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
25 }
26
27 void loop() {
28   // put your main code here, to run repeatedly:
29   float distance = readDistanceCM();
30   if(distance <= 100)
31   {
32     Serial.println("person detected ");
33   }
34 }
```

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

Wokwi Link: <https://wokwi.com/projects/346964780074926676>

IBM CLOUD

Device Recent Events

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes tabs for 'Service Details - IBM Cloud' and multiple instances of 'IBM Watson IoT Platform'. The browser address bar shows the URL 'l6anqj.internetofthings.ibmcloud.com/dashboard/devices/browse'. The user is logged in as 'charuvikashini952002@gmail.com' with ID 'l6anqj'.

The main content area features a sidebar with navigation icons and a top bar with tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar labeled 'Search by Device ID' is present. A 'Device Simulator' toggle is set to 'On'. A table lists devices, with the first device (ID 97873, Status: Disconnected, Device Type: arduino) selected. A dropdown menu for this device shows options: 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Device Information' tab is active, displaying the following details:

Device ID	97873
Device Type	arduino
Date Added	Oct 31, 2022 8:15 AM
Added By	charuvikashini952002@gmail.com
Connection Status	Disconnected

At the bottom, a status bar indicates '6 Simulations running'. The Windows taskbar at the very bottom shows the date as 31-10-2022 and time as 08:28.

Service Details - IBM Cloud

IBM Watson IoT Platform

IBM Watson IoT Platform

IBM Watson IoT Platform

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16anqj.internetofthings.ibmcloud.com/dashboard/devices/browse

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IBM Watson IoT Platform

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charuvikashini952002@gmail.com

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ID: 16anqj

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Browse

Action

Device Types

Interfaces

Add Device

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97873

Disconnected

arduino

Device

Oct 31, 2022 8:15 AM

→ ⋮

Identity

Device Information

Recent Events

State

Logs

✕

The recent events listed show the live stream of data that is coming and going from this 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

Items per page 50 | 1-1 of 1 item

6 Simulations running

24°C

Partly sunny

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08:23

31-10-2022