

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 ="wojzf4"
#define deviceType=" Arduino"
#define deviceId ="98439"
#define authMethod ="use-token-auth"
#define authToken ="984396212"

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);
```

```
}
```

Service Details - IBM Cloud

IBM Watson IoT Platform

W sketchino copy - Wokwi Arduino

WhatsApp

← → ↺

wokwi.com/projects/347388188737667667

G

🔖

☆

📱

⋮

Gmail

YouTube

Maps

WOKWI

SAVE

SHARE

sketchino copy

Docs

sketchino

diagram.json

Library Manager

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

#define ECHO_PIN 2

#define TRIG_PIN 3

#define organization ="wojzf4"

#define deviceType=" Arduino"

#define deviceId ="98439"

#define authMethod ="use-token-auth"

#define authToken ="984396212"

}

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:

Simulation

▶

+

⋮



Windows

🔍

📅

🌐

📁

🖱️

30°C Cloudy

15:23

04-11-2022

Output:

The screenshot displays the Wokwi web IDE interface. The top navigation bar includes tabs for 'Service Details - IBM Cloud', 'IBM Watson IoT Platform', 'sketch.ino copy - Wokwi Arduino', and '(1) WhatsApp'. The browser address bar shows the URL 'wokwi.com/projects/347388188737667667'. The Wokwi logo and 'SAVE' button are visible in the top left of the IDE. The 'sketch.ino' file is open, showing the following code:

```
2 #define TRIG_PIN 3
3 #define organization ="wojzf4"
4 #define deviceType=" Arduino"
5 #define deviceId ="98439"
6 #define authMethod ="use-token-auth"
7 #define authToken ="984396212"
8
9
10 void setup() {
11   // put your setup code here, to run once:
12   Serial.begin(9600);
13   pinMode(TRIG_PIN,OUTPUT);
14   pinMode(ECHO_PIN, INPUT);
15 }
16 float readDistanceCM() {
17   digitalWrite(TRIG_PIN, LOW);
18   delayMicroseconds(2);
19   digitalWrite(TRIG_PIN, HIGH);
20   delayMicroseconds(10);
21   digitalWrite(TRIG_PIN, LOW);
22   int duration = pulseIn(ECHO_PIN, HIGH);
23   return duration * 0.034 / 2;
24
25
26 }
27
28 void loop() {
29   // put your main code here, to run repeatedly:
30   float distance = readDistanceCM();
```

The 'Simulation' tab is active, showing a virtual Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The sensor is connected to the Arduino's digital pins (TRIG to pin 3, ECHO to pin 2). The simulation controls (play, stop, restart) are visible. A 'Restart the simulation' button is also present. The serial monitor output shows the following text:

```
person detected
person detected
person detected
person detected
person detected
person detected
```

The bottom status bar shows the system clock as 15:24 on 04-11-2022, with a weather widget indicating 30°C Cloudy.

Wokwi Link: <https://wokwi.com/projects/347388188737667667>

IBM CLOUD

Device Recent Events

Service Details - IBM Cloud x IBM Watson IoT Platform x sketch.ino copy - Wokwi Arduino x (2) WhatsApp x +

wojzf4.internetofthings.ibmcloud.com/dashboard/devices/browse

Gmail YouTube Maps

IBM Watson IoT Platform

svasanthavctwcse@gmail.com
ID: wojzf4

Browse Action Device Types Interfaces

Add Device +

Device ID	Status	Device Type	Class ID	Date Added	
98439	Disconnected	arduino	Device	4 Nov 2022 09:31	→ ...

Identity Device Information Recent Events State Logs

Device ID 98439

Device Type arduino

Date Added 4 Nov 2022 09:31

Added By svasanthavctwcse@gmail.com

Connection Status Disconnected

Items per page 50 | 1-1 of 1 item

1 of 1 page < 1 >

1 Simulation running

Windows taskbar: 15:28 04-11-2022 Rain ENG

Service Details - IBM Cloud

IBM Watson IoT Platform

sketchino copy - Wokwi Arduino

(2) WhatsApp

wojzf4.internetofthings.ibmcloud.com/dashboard/devices/browse

GmailYouTubeMaps

IBM Watson IoT Platform

svasanthavctwcse@gmail.com
ID: wojzf4

BrowseActionDevice TypesInterfaces

Add Device

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

Items per page 50 | 1-1 of 1 item

1 of 1 page

1 Simulation running

Rain

15:28
04-11-2022