

## Assignment-04

|                 |                                                            |
|-----------------|------------------------------------------------------------|
| Assignment Date | 1 November 2022                                            |
| Team ID         | PNT2022TMID31713                                           |
| Project Name    | Project-Smart Farmer-IoT Enabled Smart Farming Application |

### Question-4:

Write code and connections in wokwi for ultrasonic. 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 = "2tpzx1"
#define deviceType = "Ultrasonic_1"
#define deviceId = "Ultrasonic"
#define authMethod = "use-token-auth"
#define authToken = "123456789"

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);
}
```

Wokwi Link: <https://wokwi.com/projects/347143640248746580>

The screenshot displays the Wokwi web IDE interface. On the left, the 'sketch.ino' file is open, containing the following code:

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization = "2tpzx1"
4 #define deviceType = "Ultrasonic_1"
5 #define deviceId = "Ultrasonic"
6 #define authMethod = "use-token-auth"
7 #define authToken = "123456789"
8 void setup() {
9   Serial.begin(9600);
10  pinMode(TRIG_PIN, OUTPUT);
11  pinMode(ECHO_PIN, INPUT);
12 }
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 void loop() {
25   float distance = readDistanceCM();
26   if(distance <= 100)
27   {
28     Serial.println("person detected ");
29   }
30   else{
31     Serial.print("Measured distance: ");
32   }
```

On the right, the 'Simulation' window shows a virtual circuit with an ultrasonic sensor module connected to a microcontroller board. A slider control for the sensor is set to 73cm. Below the circuit, the serial monitor displays the output of the program:

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

The bottom of the screen shows the Windows taskbar with the system clock at 11:17 on 01-11-2022.

# IBM Cloud

## Device Recent Events

RAK2245 x RAK2245 x RAK2245 x Welcome x IBM x IBM Wat x My IBM x Service D x IBM Wat x assignme x sketchin x +

2tpzx1.internetofthings.ibmcloud.com/dashboard/devices/browse

2tpzx1

IBM Watson IoT Platform

2tpzx1

2tpzx1

Device ID

Status

Device type

Class ID

Date Added

Descriptive Location

12345

Disconnected

NodeMCU

Device

Oct 25, 2022 1:46 PM

Ultrasonic

Disconnected

Ultrasonic\_1

Device

Nov 1, 2022 9:53 PM

Ultrasonic\_1

Connected

Ultrasonic

Device

Nov 1, 2022 10:41 PM

Identity

Device Information

Recent Events

State

Logs

Device ID

Ultrasonic\_1

Device Type

Ultrasonic

Date Added

Nov 1, 2022 10:41 PM

Added By

samritha.s2019@kgkite.ac.in

Connection Status

Connected

Connection Time: Nov 1, 2022 10:41 PM

Client Address: 106.197.123.99 SecureToken

Items per page 50

1-3 of 3 items

1 of 1 page

1 Simulation running

76°F

Mostly cloudy

ENG IN

01-11-20

RAK2245 x RAK2245 x RAK2245 x Welcome x IBM x IBM Wat x My IBM x Service D x IBM Wat x sketchin x assignme x +

2tpzx1.internetofthings.ibmcloud.com/dashboard/devices/browse

2tpzx1

IBM Watson IoT Platform

2tpzx1

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Ultrasonic

Disconnected

Ultrasonic\_1

Device

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Ultrasonic\_1

Connected

Ultrasonic

Device

Nov 1, 2022 10:41 PM

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

{"Persondetected":94}

json

a few seconds ago

event\_1

{"Persondetected":37}

json

a few seconds ago

event\_1

{"Persondetected":97}

json

a few seconds ago

event\_1

{"Persondetected":5}

json

a few seconds ago

event\_1

{"Persondetected":92}

json

a few seconds ago

Items per page 50

1-2 of 2 items

1 Simulation running

simulator.json

Show all

76°F

Mostly cloudy

ENG IN

01-11-20