

Assignment – 4

Date	29 October 2022
Team ID	PNT2022TMID15636
Project Name	Real-Time River Water Quality Monitoring and Control System
Maximum Marks	2 Marks

Question:

Write code and connections in wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Upload document with wokwi share link and images of IBM cloud

Solution:

```
#define ECHO_PIN 2
#define TRIG_PIN 3
#define organization = "5b7mor"
#define deviceType = "ultrasonic"
#define deviceId = "ultrasonic"
#define authMethod = "use-token-auth"
#define authToken = "12345678"
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("!!!ALERT Required Object was Detected ALERT!!!");
    }
    else {
        Serial.print("Measured distance: ");
        Serial.println(readDistanceCM());
    }
}
```

```
    delay(1000);  
}
```

Simulation Output:

The screenshot displays the Wokwi web-based simulation environment. On the left, the 'sketch.ino' file contains the following code:

```
1 #define ECHO_PIN 2  
2 #define TRIG_PIN 3  
3 #define organization = "5b7mor"  
4 #define deviceType = "ultrasonic"  
5 #define deviceId = "ultrasonic"  
6 #define authMethod = "use-token-auth"  
7 #define authToken = "12345678"  
8 void setup() {  
9   Serial.begin(9600);  
10  pinMode(TRIG_PIN, OUTPUT);  
11  pinMode(ECHO_PIN, INPUT);  
12 }  
13 float readDistanceCM() {  
14   digitalWrite(TRIG_PIN, LOW);  
15   delayMicroseconds(2);  
16   digitalWrite(TRIG_PIN, HIGH);  
17   delayMicroseconds(10);  
18   digitalWrite(TRIG_PIN, LOW);  
19   int duration = pulseIn(ECHO_PIN, HIGH);  
20   return duration * 0.034 / 2;  
21 }  
22 void loop() {  
23   float distance = readDistanceCM();  
24   if (distance <= 100)  
25   {  
26     Serial.println("!!!ALERT Required Object was Detected ALERT!!!");  
27   }  
28   else {  
29     Serial.print("Measured distance: ");  
30     Serial.println(readDistanceCM());  
31   }  
32   delay(1000);  
33 }
```

On the right, the 'Simulation' window shows an Arduino Uno board connected to an ultrasonic sensor. A slider for 'Distance' is set to 34cm. Below the sensor, a serial monitor displays the output:

```
!!!ALERT Required Object was Detected ALERT!!!  
!!!ALERT Required Object was Detected ALERT!!!  
!!!ALERT Required Object was Detected ALERT!!!  
!!!ALERT Required Object was Detected ALERT!!!  
!!!ALERT Required Object was Detected ALERT!!!  
!!!ALERT Required Object was Detected ALERT!!!  
!!!ALERT Required Object was Detected ALERT!!!
```

Wokwi Share Link

<https://wokwi.com/projects/347187603878969939>

IBM Cloud Device Details:

IBM

Service Details - IBM Cloud

IBM Watson IoT Platform

+

5b7mor.internetofthings.ibmcloud.com/dashboard/devices/drilldown/ultrasonicultrasonic?returnTo=/devices/browse

IBM Watson IoT Platform

baluvelappan@gmail.com
ID: 5b7mor

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← Back

Device Drilldown - ultrasonic

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Connection Information

Basic connection information about this device.

Device ID

ultrasonic

Device Type

ultrasonic

Date Added

Oct 29, 2022 10:16 AM

Added By

baluvelappan@gmail.com

Connection Status

Disconnected

Recent Events

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	{""!!ALERT Required Object was Detected ALERTI...	jsc	

1 Simulation running

Windows

Google

Word

11:49
02-11-2022

IBM Cloud Device Recent Events

IBM

Service Details - IBM Cloud

IBM Watson IoT Platform

5b7mor.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

baluvelappan@gmail.com
ID: 5b7mor

Add Device +

Browse

Action

Device Types

Interfaces

Device ID

Status

Device Type

Class ID

Date Added

Descriptive Location

ultrasonic

Disconnected

ultrasonic

Device

Oct 29, 2022 10:16 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	{!!!!ALERT Required Object was Detected ALERT!...	json	a few seconds ago
event_1	{!!!!ALERT Required Object was Detected ALERT!...	json	a few seconds ago
event_1	{!!!!ALERT Required Object was Detected ALERT!...	json	a few seconds ago
event_1	{!!!!ALERT Required Object was Detected ALERT!...	json	a few seconds ago
event_1	{!!!!ALERT Required Object was Detected ALERT!...	json	a few seconds ago

1 Simulation running