

Assignment – 4

Date	29 October 2022
Team ID	PNT2022TMID15872
Project Name	Smart Waste Management System For Metropolitan Cities
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 = "znscs13"
#define deviceType = "SENSOR"
#define deviceId = "SENSOR-23"
#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!!");
}
else
{
  Serial.print("Measured distance: ");
  Serial.println(readDistanceCM());
}
delay(1000);
}

```

Simulation Output:

The screenshot displays the Wokwi IDE interface. On the left, the sketch.ino file contains the following code:

```

1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization = "zncs13"
4 #define deviceType = "SENSOR"
5 #define deviceId = "SENSOR-23"
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!!!");
27   }
28   else {
29     Serial.print("Measured distance: ");
30     Serial.println(readDistanceCM());
31   }
32 }

```

On the right, the simulation shows an HC-SR04 sensor connected to an Arduino Uno. The output window displays the following sequence of events:

```

Measured distance: 395.25
Measured distance: 395.27
Alert!!!
Alert!!!
Measured distance: 189.43
Alert!!!
Measured distance: 395.27

```

Wokwi Share Link

<https://wokwi.com/projects/347139253809971794>

IBM Cloud Device Details:

IBM Watson IoT Platform

sakthinarmdha2002@gmail.com
ID: zncs13

Back

Device Drilldown - SENSOR-23

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Connection Information

Basic connection information about this device.

Device ID

SENSOR-23

Device Type

SENSOR

Date Added

Oct 29, 2022 12:03 PM

Added By

sakthinarmdha2002@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!!!":69}		1 Simulation running

IBM Cloud Device Recent Events

IBM Watson IoT Platform

sakthinarmdha2002@gmail.com
ID: zncs13

Browse

Action

Device Types

Interfaces

Add Device

Device ID	Status	Device Type	Class ID	Date Added
SENSOR-23	Disconnected	SENSOR	Device	Oct 29, 2022 12:03 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	{"ALERT!!!":67}	json	a few seconds ago
event_1	{"ALERT!!!":10}	json	a minute ago
event_1	{"ALERT!!!":13}	json	2 minutes ago
event_1	{"ALERT!!!":47}	json	2 minutes ago
event_1	{"ALERT!!!":35}	json	3 minutes ago

1 Simulation running