

Assignment -4
ULTRASONIC SENSOR

| | |
|---------------------|--------------------------------|
| Assignment Date | 11 th November 2022 |
| Student Name | Nishanthini P |
| Student Roll Number | 412519106089 |
| 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 = "gh3cse"
#define deviceType = "ultrasonic"
#define deviceId = "ultrasonic_sensor"
#define authMethod = "use-token-auth" #define authToken = "E38kH1+R5(js2Bf&!o"
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!!! Object Detected");
  }
}
```

```

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 code for `hc-sr04.ino` is shown, which configures an Arduino Uno with an HC-SR04 ultrasonic sensor. The code defines pins for TRIG, ECHO, and sets up a loop that reads distance and triggers an alert if it's 100cm or less.

On the right, the simulation shows the physical components connected. The output window at the bottom right displays the following sequence of events:

```

Measured distance: 227.95
Measured distance: 147.03
Measured distance: 147.03
Measured distance: 147.03
ALERT!!! Object Detected
ALERT!!! Object Detected
ALERT!!! Object Detected

```

WOKWI SHARE LINK:

<https://wokwi.com/projects/290056311044833800>

IBM CLOUD DEVICE DETAILS :

IBM Watson IoT Platform

sec19ec150@salamtap.edu.in
ID: gh3cse

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Device Drilldown - ultrasonic_sensor

Device Credentials

- Connection Information
- Recent Events
- State
- Device Information
- Metadata
- Diagnostics
- Connection Logs
- Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

| | |
|-----------------------|--------------------|
| Organization ID | gh3cse |
| Device Type | ultrasonic |
| Device ID | ultrasonic_sensor |
| Authentication Method | use-token-auth |
| Authentication Token | E38kH1+R5(js2Bf&lo |

⚠ Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

[Find out how to add these credentials to your device](#)

IBM CLOUD DEVICE RECENT EVENTS:

IBM Watson IoT Platform

sec19ec150@salamtap.edu.in
ID: gh3cse

Browse Action Device Types Interfaces

Add Device

| Device ID | Status | Device Type | Class ID | Date Added | Descriptive Location |
|-------------------|--------------|-------------|----------|----------------------|----------------------|
| ultrasonic_sensor | Disconnected | ultrasonic | Device | 17 Nov 2022 10:42 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 object is detected":97} | json | a few seconds ago |
| event_1 | {"alert object is detected":77} | json | a few seconds ago |
| event_1 | {"alert object is detected":96} | json | a few seconds ago |
| event_1 | {"alert object is detected":27} | json | a few seconds ago |
| event_1 | {"alert object is detected":11} | json | a few seconds ago |

1 Simulation running

LINE CHART OF IBM CLOUD DEVICE:



Sensor



+ Add New Card

Paste Card

Settings

