

**Assignment -4**  
**ULTRASONIC SENSOR**

Assignment Date	11 <sup>th</sup> November 2022
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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 IDE interface. 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 2 for ECHO and 3 for TRIG, sets up serial communication at 9600 baud, and implements a loop that triggers the sensor, reads the distance, and prints it. A delay of 1000ms is used between readings. The sensor is set to detect objects within a range of 2-400cm.

On the right, the simulation window shows the physical components connected. The output console 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

Line chart



1 minute

Distance

now