

Assignment -4
ULTRASONIC SENSOR

Assignment Date	11 th 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:

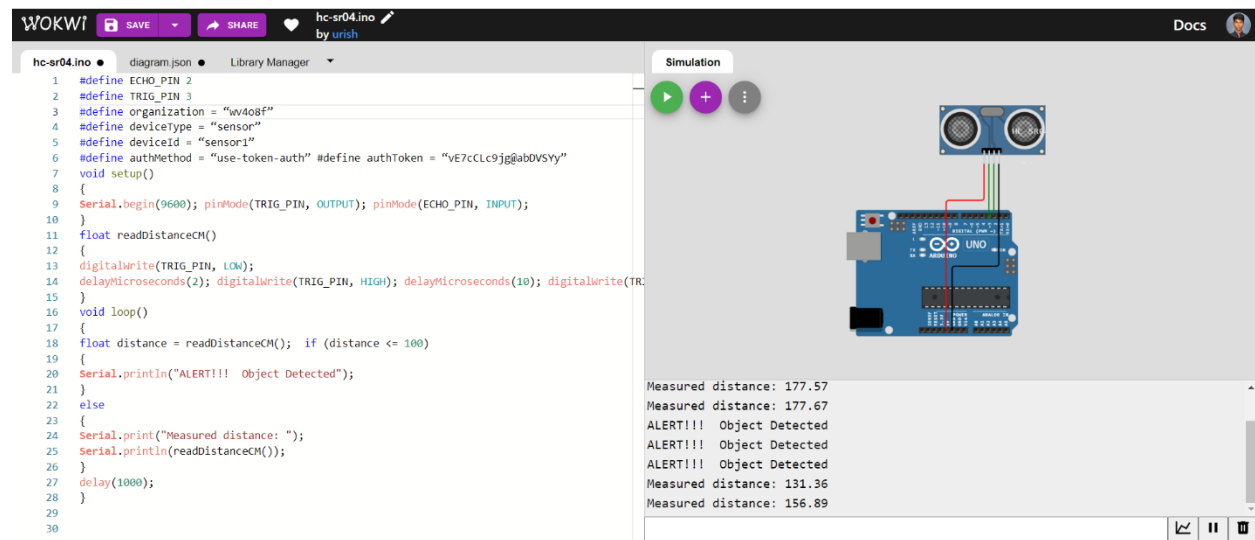
```
#define ECHO_PIN 2
#define TRIG_PIN 3
#define organization = "wv4o8f"
#define deviceType = "sensor"
#define deviceId = "sensor1"
#define authMethod = "use-token-auth" #define authToken = "vE7cCLc9jg@abDVSyY"
void setup()
{
  Serial.begin(9600); pinMode(TRIG_PIN, OUTPUT); pinMode(ECHO_PIN, INPUT);
}
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 defines pins for the HC-SR04 sensor and implements a loop to read distance and trigger an alert if it's 100cm or less. On the right, the simulation window shows a 3D model of the Arduino Uno and the sensor. Below the model, the simulation output log shows the following sequence of events:

```

Measured distance: 177.57
Measured distance: 177.67
ALERT!!! Object Detected
ALERT!!! Object Detected
ALERT!!! Object Detected
Measured distance: 131.36
Measured distance: 156.89

```

WOKWI SHARE LINK:

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

IBM CLOUD DEVICE DETAILS :

IBM Watson IoT Platform

sec19ec128@sairamtap.edu.in
ID: ww4o8f

← Back

Device Drilldown - sensor1

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	ww4o8f
Device Type	sensor
Device ID	sensor1
Authentication Method	use-token-auth
Authentication Token	vE7cCLc9jg@abDVSyY

⚠ 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

sec19ec128@sairamtap.edu.in
ID: ww4o8f

Browse Action Device Types Interfaces

Add Device +

>	12345	Disconnected	NodeMCU	Device	17 Nov 2022 1:33 PM
▼	sensor1	Disconnected	sensor	Device	18 Nov 2022 3:28 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	{"alertr object detected":5}	json	a few seconds ago
event_1	{"alertr object detected":40}	json	a few seconds ago
event_1	{"alertr object detected":71}	json	a few seconds ago
event_1	{"alertr object detected":87}	json	a few seconds ago
event_1	{"alertr object detected":92}	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