

#### Assignment -4

Assignment Date	5 NOVEMBER 2022
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Maximum Marks	2 Marks
Team ID	PNT2022TMID46961

##### Question-1:

*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 = "3gcqg0"
#define deviceType = "Ultrasonicsensor"
#define deviceId = "b11m3edevicid"
#define authMethod = "use-token-auth"
#define authToken = "v?J8iAARoSx(p_gCsL"
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!!! ALERT!!! Object Detected");
}
else
{
Serial.print("Measured distance: ");
Serial.println(readDistanceCM());
}
delay(1000);
}

```

## SIMULATION OUTPUT:

The screenshot displays the Wokwi simulation environment. On the left, the code for the ESP32 is shown, which configures pins 2 and 3 for the ultrasonic sensor and implements a distance-measuring function. The main loop checks if the measured distance is less than or equal to 100cm. If true, it prints an alert; otherwise, it prints the measured distance and delays for 1000ms.

On the right, the simulation shows the physical components: an ESP32 microcontroller and an HC-SR04 ultrasonic sensor. The sensor's VCC is connected to the ESP32's 5V pin, GND to GND, TRIG to pin 2, and ECHO to pin 3. The simulation output window shows the following sequence of events:

```

ALERT!!! ALERT!!! Object Detected
ALERT!!! ALERT!!! Object Detected
ALERT!!! ALERT!!! Object Detected
ALERT!!! ALERT!!! Object Detected
ALERT!!! ALERT!!! Object Detected
ALERT!!! ALERT!!! Object Detected
ALERT!!! ALERT!!! Object Detected

```

The bottom of the image shows the Windows taskbar with various open applications and the system clock indicating 12:45 on 08-11-2022.

Wokwi Share Link:

<https://wokwi.com/projects/347743036681224788>

IBM Cloud Device Details:

The screenshot shows the IBM Watson IoT Platform interface. The 'Browse Devices' page displays a table with one device: b11m3edevicid, which is disconnected. A modal window is open showing the device's details.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class
b11m3edevicid	Disconnected	Ultrasonicsensor	Device	8 Nov 2022 10:03		abarna1424@gmail.com	

  

Identity	Device Information	Recent Events	State	Logs
Device ID	b11m3edevicid			
Device Type	Ultrasonicsensor			
Date Added	8 Nov 2022 10:03			
Added By	abarna1424@gmail.com			
Connection Status	Disconnected			

IBM Cloud Device Recent Details:

The screenshot shows the IBM Watson IoT Platform interface. The 'Browse Devices' page displays a table with one device: b11m3edevicid, which is disconnected. A modal window is open showing the device's recent events.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class
b11m3edevicid	Disconnected	Ultrasonicsensor	Device	8 Nov 2022 10:03		abarna1424@gmail.com	

  

Event	Value	Format	Last Received
event_1	["ALERT!!!ALERT!!!object Detected":38]	json	a few seconds ago
event_1	["ALERT!!!ALERT!!!object Detected":2]	json	a few seconds ago
event_1	["ALERT!!!ALERT!!!object Detected":100]	json	a few seconds ago
event_1	["ALERT!!!ALERT!!!object Detected":74]	json	a few seconds ago
event_1	["ALERT!!!ALERT!!!object Detected":82]	json	a few seconds ago