ASSIGNMENT 4

Date	24 Oct 22
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Project Name	Smart Waste Management For Metropolitan Cities

Write code and connections in wokwi for ultrasonic sensor.

Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.

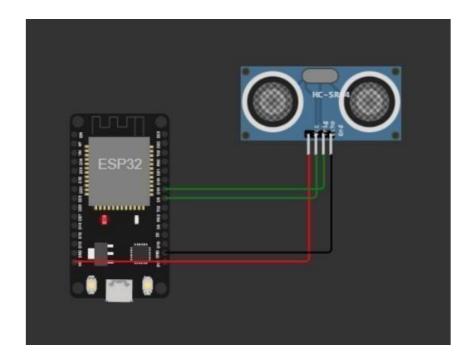Upload document with wokwi share link and images of ibm cloud

CODE:

```cpp
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient;

#define ORG "nhpwjc"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "USE YOUR ID"
#define TOKEN "USE YOUR TOKEN"
#define speed 0.034

char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/fmt/json"; char topic[] =
"iot-2/cmd/home/fmt/String"; char authMethod[] = "use-
token- auth"; char token[] = TOKEN; char clientId[] = "d:"
ORG ":" DEVICE_TYPE ":" DEVICE_ID; PubSubClient
client(server, 1883, wifiClient); void publishData();
const int trigpin=5; const
int echopin=18;
String command;
String data="";
long
duration; float
dist;

void
setup()
{
  Serial.begin(115200);
  pinMode(trigpin, OUTPUT);
```

```
  pinMode(echopin, INPUT); wifiConnect();
  mqttConnect();
} void loop() { publishData();

  delay(500);

  if (!client.loop()) {
mqttConnect(); } }

void wifiConnect() {
  Serial.print("Connecting to "); Serial.print("Wifi");
  WiFi.begin("Wokwi-GUEST", "", 6); while (WiFi.status() !=
  WL_CONNECTED) { delay(500);
    Serial.print(".");
  }
  Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
}

void mqttConnect() { if
  (!client.connected()) {
    Serial.print("Reconnecting MQTT client to "); Serial.println(server);
    while (!client.connect(clientId, authMethod, token)) { Serial.print(".");
    delay(500);
    } initManagedDevice();
  Serial.println(); } }

void initManagedDevice() { if
  (client.subscribe(topic)) {
    // Serial.println(client.subscribe(topic)); Serial.println("subscribe to cmd
    OK");
  } else {
    Serial.println("subscribe to cmd FAILED"); } }
void publishData()
{ digitalWrite(trigpin,LOW);
  digitalWrite(trigpin,HIGH);
```

```
  delayMicroseconds(10); digitalWrite(trigpin,LOW);
  duration=pulseIn(echopin,HIGH);
  dist=duration*speed/2; if(dist<100){
    String payload = "{\"Alert distance\":"; payload +=
    dist; payload += "}";
    Serial.print("\n");
    Serial.print("Sending payload: "); Serial.println(payload);
    if    (client.publish(publishTopic,   (char*)   payload.c_str()))   {
      Serial.println("Publish OK");
    } else {
      Serial.println("Publish FAILED"); }
  }
}
```

CONNECTIONS:

OUTPUT:

```
Sending payload: {"Alert distance":93.99}
Publish OK

Sending payload: {"Alert distance":93.96}
Publish OK

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Publish OK
```


Browse   Action   Device Types   Interfaces

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class	Firmware Version
12345	● Connected	NodeMCU	Device	Oct 17, 2022 2:36 PM		111719106009@smartinternz.com		

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
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago

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