

ASSIGNMENT 4

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Project Name	Smart Waste Management System 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:

```
#include <WiFi.h>
#include <PubSubClient.h> WiFiClient
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-tokenauth";
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);

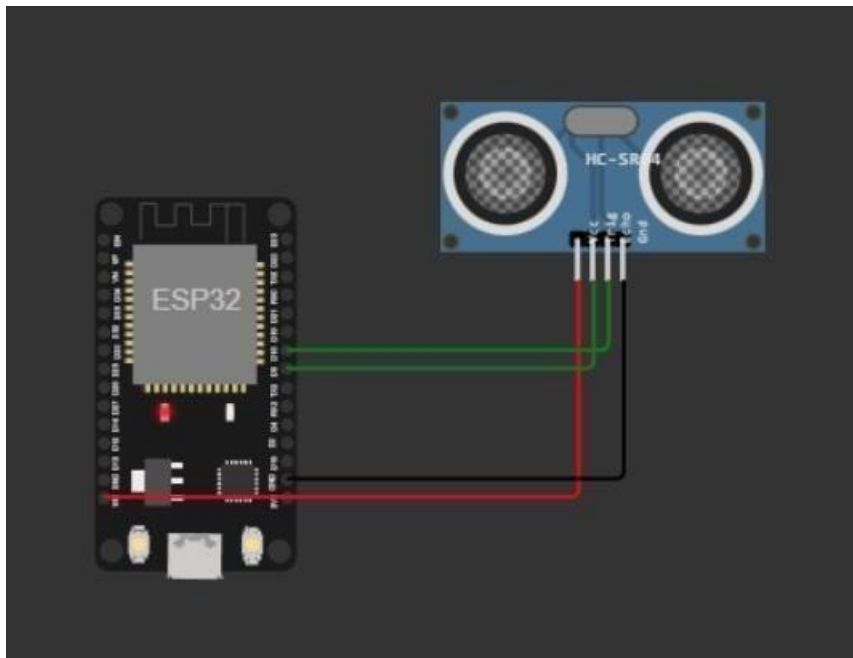
```

```

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"); }
}
}

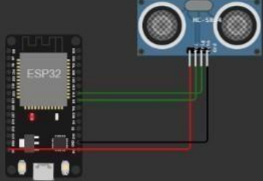
```

CONNECTIONS:



OUTPUT:

01:38.369 100%



The image shows a breadboard setup with an ESP32 microcontroller and an HC-SR04 ultrasonic sensor. The sensor is connected to the ESP32 via four jumper wires: a red wire for VCC, a black wire for GND, a green wire for the Trig pin, and a blue wire for the Echo pin.

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

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

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