

Smart Waste Management System for Metropolitan Cities

ASSIGNMENT 4:

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-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);
}

```

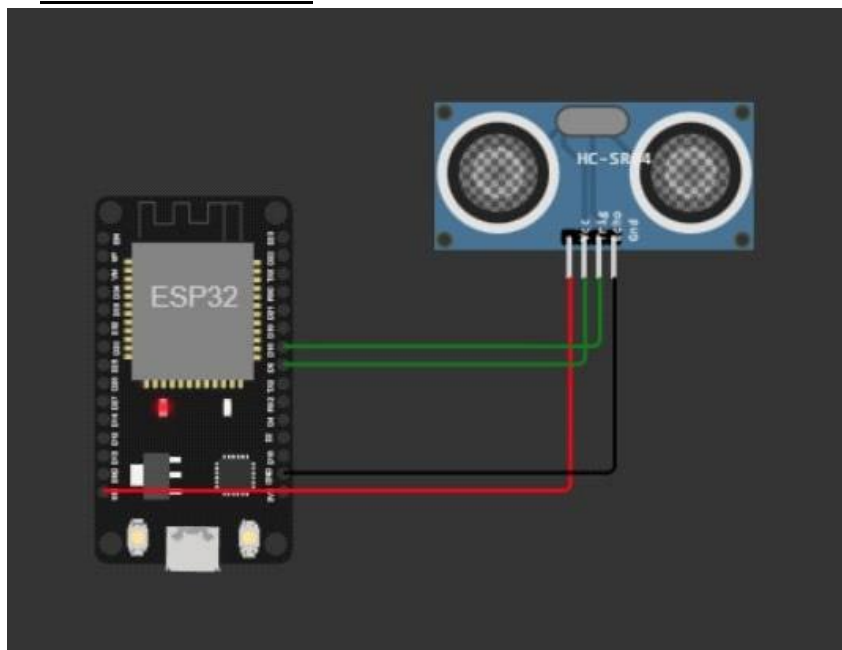
```

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");
    }
}
}

```

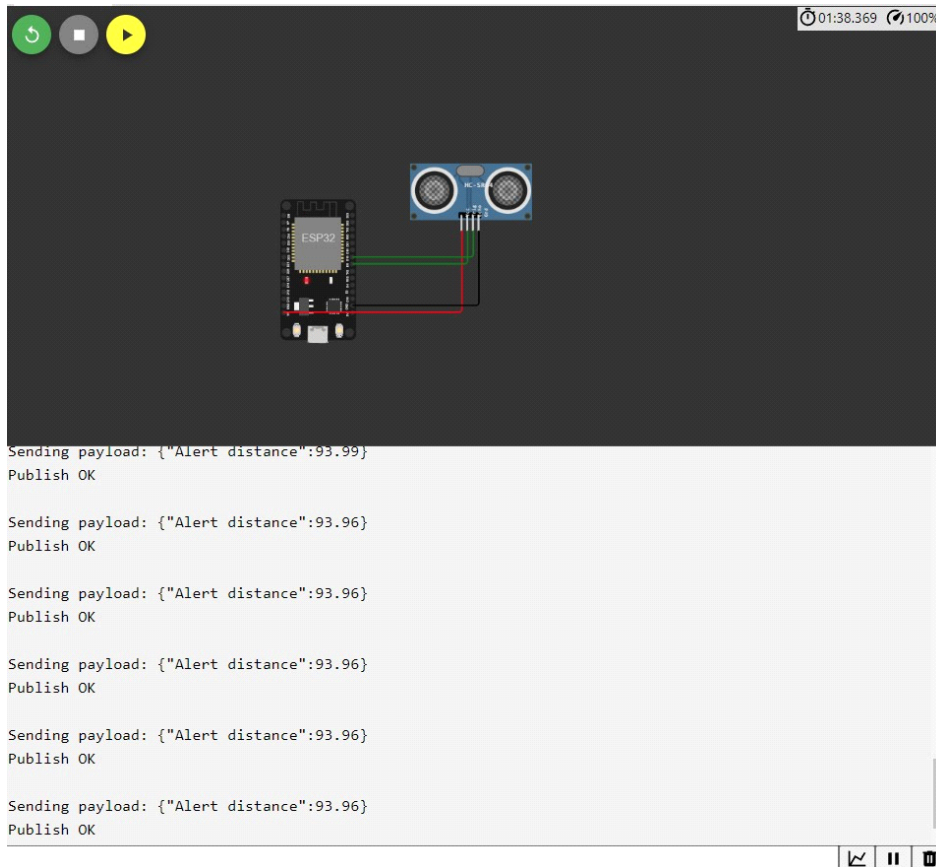
CONNECTIONS:



WOKWI LINK:

<https://wokwi.com/projects/347739718480298580>

OUTPUT:



IBM Watson IoT Platform

111719106009@smartinternz.com
ID: rhpqr...

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.

Search by Device ID

Device Simulator

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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