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**Assignment -4**

**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 :**

#include <WiFi.h>

#include <PubSubClient.h>

#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "nhpwjc"

#define DEVICE\_TYPE "raspberypi"

#define DEVICE\_ID "12345"

#define TOKEN "123456789"

#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;

int 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(1000);

}

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){

DynamicJsonDocument doc(1024);

String payload;

doc["AlertDistance:"]=dist;

serializeJson(doc, payload);

delay(3000);

**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");

}

}

}



