

ASSIGNMENT -4

IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION

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QUESTION:

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>
#include <ArduinoJson.h>

WiFiClient wifiClient;
#define ORG "fvdupc"

#define DEVICE_TYPE
"abcd"#define DEVICE_ID
"rasp" #define TOKEN
"12345678"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abcd_1/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="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";
longduration;
```

```

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()
{

```

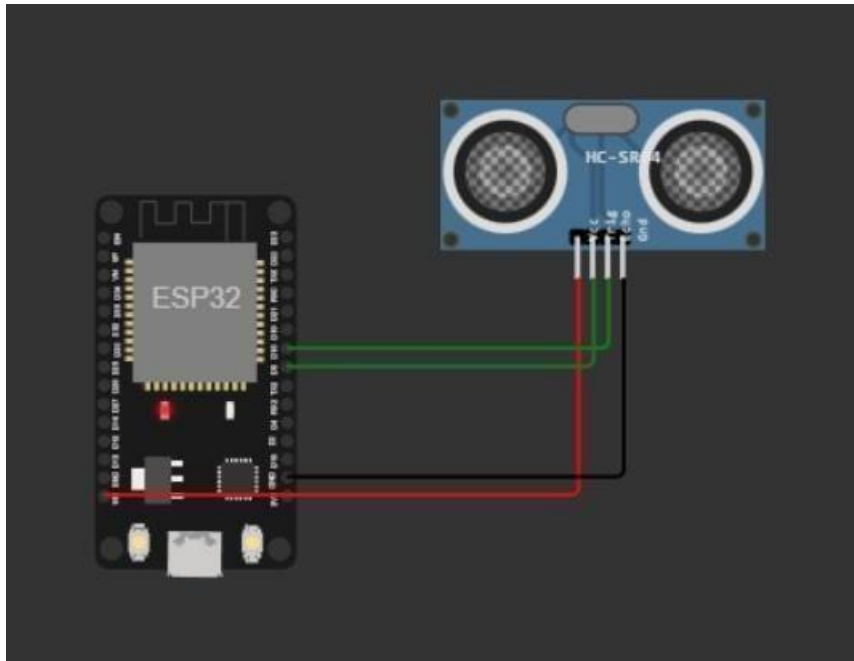
```

    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){
    dist=100-dist; icon="fa-
    trash";
} else { dist=0;
    icon="fa-trash-
    o";
}
DynamicJsonDocument
doc(1024);String payload;
doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=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");
}
}

```

CONNECTIONS:



OUTPUT:

WOKWI

SAVE SHARE

Docs

sketch.ino diagram.json libraries.txt Library Manager

```
1 #include <Wifi.h>
2 #include <PubSubClient.h>
3 #include <ArduinoJson.h>
4
5 WiFiClient wificlient;
6
7 #define ORG "fvdupc"
8 #define DEVICE_TYPE "abcd"
9 #define DEVICE_ID "rasp"
10 #define TOKEN "12345678"
11 #define speed 0.034
12
13 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
14 char publishTopic[] = "iot-2/evt/abcd_1/fmt/json";
15 char topic[] = "iot-2/cmd/home/fmt/String";
16 char authMethod[] = "use-token-auth";
17 char token[] = TOKEN;
18 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
19 PubSubClient client(server, 1883, wificlient);
20 void publishData();
21
22 const int trigpin=5;
23 const int echopin=18;
24 String command;
25 String data="";
26 String lat="14.167589";
27 String lon="80.248510";
28 String name="point2";
29 String icon="";
30
31 long duration;
32 int dist;
33
34 void setup()
35 {
```

Simulation

00:06.799

Restart the simulation

subscribe to cmd OK

Sending payload:
{ "Name": "point2", "Latitude": "14.167589", "Longitude": "80.248510", "Icon": "fa-trash-o", "FillPercent": 0 }

Publish OK

IBM Watson IoT Platform

412719104042@smartinternz.com

ID: fwlpuc

Browse

Action

Device Types

Interfaces

Add Device

Search by Device ID

Device Simulator

Device ID

Status

Device Type

Class ID

Date Added

Descriptive Location

abcd_1

Connected

abcd

Device

Oct 26, 2022 7:33 PM

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
event_1	{"alertdistance":86}	json	a few seconds ago
event_1	{"alertdistance":57}	json	a few seconds ago
event_1	{"alertdistance":27}	json	a few seconds ago
event_1	{"alertdistance":26}	json	a few seconds ago
event_1	{"alertdistance":48}	json	a few seconds ago

