

Assignment-4

Date	24 October 2022
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Team ID	PNT2022TMID30870
Project Name	Industry Specific Intelligent Fire Management System

Question :

Write code and connections in wokwi for ultrasonic sensors. That 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.

Wokwi:

<https://wokwi.com/projects/348563919373075027>

Code:

```
#include <WiFi.h>
#include <PubSubClient.h>

WiFiClient wifiClient;

#define ORG "rsag62"
#define DEVICE_TYPE "Mangala"
#define DEVICE_ID "Vinith"
#define TOKEN "RQ@nZ_ElnN7!Zdng+7"
#define speed 0.034

char server[] = ORG".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/event_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="";
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: ");

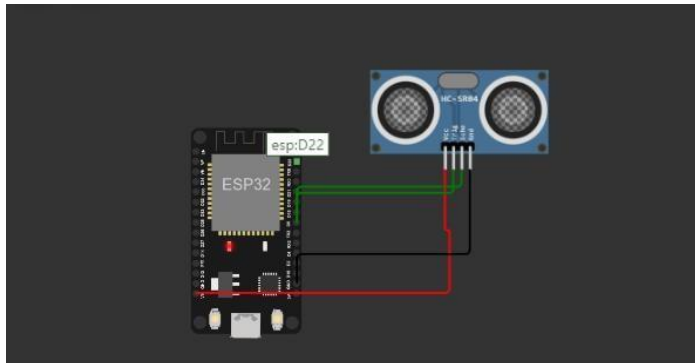
```

```

Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str()))
{ Serial.println("Publish OK");
} else {
Serial.println("Publish FAILED");
}
}
}
}

```

Diagram:



Wokwi Output:

IBM Cloud Acc IBM-EPBL/IBM IBM-EPBL/IBM Inbox (2,290) sketch.ino - W Service Details IBM Watson I sketch.ino - X

https://wokwi.com/projects/348563919373075027

Getting Started Circuit design Terrific IBM Cloud IBM-EPBL/IBM-Proj... IBM IoT Solutions | IBM WhatsApp Miro | Online Whitebo... IBM Cloud Sign up for My IBM ac... Other Bookmarks

WOKWI SAVE SHARE sketch.ino Docs

sketch.ino diagram.json libraries.txt Library Manager

```

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2 #include <PubSubClient.h>
3
4 WiFiClient wifiClient;
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19 PubSubClient client(server, 1883, wifiClient);
20 void publishData();
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25 long duration;
26 float dist;
27 void setup()
28 {
29   Serial.begin(115200);
30   pinMode(trigpin, OUTPUT);

```

Simulation

Connecting to Wifi. Wifi connected, IP address: 10.10.0.2
Reconnecting MQTT client to rsag62.messaging.internetofthings.ibmcloud.com
subscribe to cmd OK

IBM Watson IoT Platform dashboard showing a device named 'Vinith' with status 'Disconnected'. The device type is 'Mangala' and the class ID is 'Device'. The date added is 'Nov 17, 2022 2:09 PM'. The 'Recent Events' tab is selected, showing a table with columns: Event, Value, Format, and Last Received. The table is currently empty, indicating no recent events. A message at the bottom states '0 Simulations running'.

IBM cloud output:

IBM Watson IoT Platform dashboard showing the same device 'Vinith' with status 'Disconnected'. The 'Recent Events' tab is selected, displaying a table with recent events. The table has columns: Event, Value, Format, and Last Received. The events are listed as follows:

Event	Value	Format	Last Received
event_1	{"randomNumber":98}	json	a few seconds ago
event_1	{"randomNumber":7}	json	a few seconds ago
event_1	{"randomNumber":79}	json	a few seconds ago
event_1	{"randomNumber":91}	json	a few seconds ago
event_1	{"randomNumber":74}	json	a few seconds ago

At the bottom, it indicates '1 Simulation running'.