

Assignment -4

Assignment Date	20 October 2022
Student Name	Ramkumar T. D
Student Roll Number	912219106016
Maximum Marks	2 Marks

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 "mdcgp5"
#define DEVICE_TYPE "Demo_123"
#define DEVICE_ID "Text_1"
#define TOKEN "YxJ1(5ji(8I)J@XCJJ"
#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");
        }
    }
}
}

```

WOKWI

SAVE

SHARE

esp32-dht22.ino
by urish

Docs

SIGN IN

esp32-dht22.ino

diagram.json

libraries.txt

Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 #include <ArduinoJson.h>
4 WiFiClient wifiClient;
5 #define ORG "mdcgp5"
6 #define DEVICE_TYPE "Demo_123"
7 #define DEVICE_ID "Text_1"
8 #define TOKEN "Yx3l(5ji(8I)@XCJJ"
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10 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
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13 char authMethod[] = "use-token-auth";
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15 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
16 PubSubClient client(server, 1883, wifiClient);
17 void publishData();
18 const int trigpin=5;
19 const int echopin=18;
20 String command;
21 String data="";
22 long duration;
23 int dist;
24 void setup()
25 {
26   Serial.begin(115200);
27   pinMode(trigpin, OUTPUT);
28   pinMode(echopin, INPUT);
29   wifiConnect();
30   mqttConnect();
31 }
32 void loop() {
33   publishData();
34   delay(500);
35   if (!client.loop()) {
36     mqttConnect();
```

Simulation

00:54.560 85%

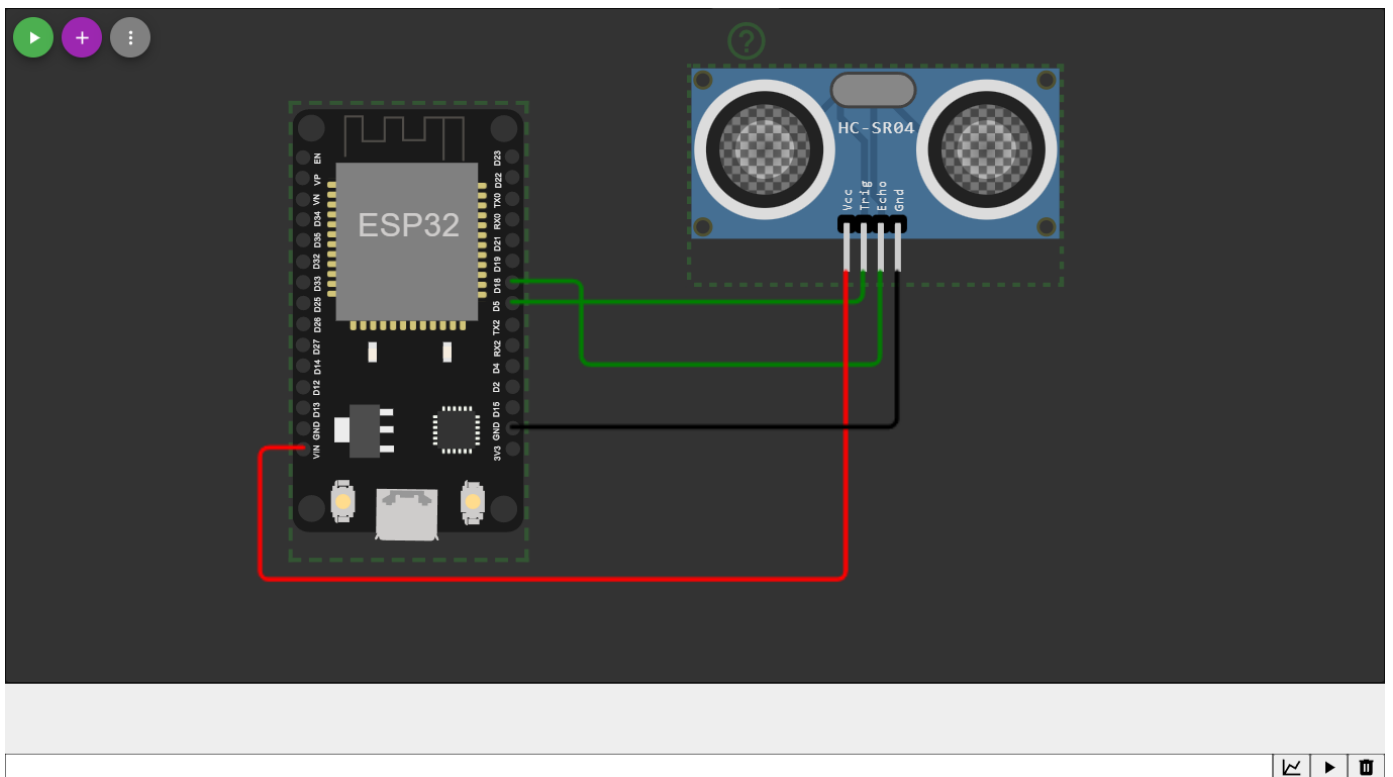
Editing Ultrasonic Distance Sensor

Distance: 41cm

Connecting to Wifi..WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to mdcgp5.messaging.internetofthings.ibmcloud.com
1
subscribe to cmd OK

Sending payload: {"AlertDistance":19}
Publish OK

Sending payload: {"AlertDistance":19}



← → ↺ 🏠

mdcgp5.internetofthings.ibmcloud.com/dashboard/devices/browse

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Amazon Sign-In NASA - Ion Propulsi... RAC of Solamalai C... TCS Recruitment: R... TCS Careers TNeGA IBM Challenge | Microso... Collections - clouds... Circuit design Fanta...

IBM Watson IoT Platform ? ramkumarbeece2@gmail.com ID: mdcgp5

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Browse Action Device Types Interfaces

🔍 Search by Device ID

Device Simulator ☒ 📶 📶

☐ Device ID Status Device Type Class ID Date Added Descriptive Location

▼ ☐ Text_1 Connected Demo_123 Device 2 Nov 2022 09:43 → ...

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	{"AlertDistance":87}	json	a few seconds ago
Data	{"AlertDistance":86}	json	a few seconds ago
Data	{"AlertDistance":58}	json	a few seconds ago
Data	{"AlertDistance":58}	json	a few seconds ago
Data	{"AlertDistance":19}	json	a few se

0 Simulations running