

Assignment -4

Assignment Date	20 October 2022
Student Name	Priyanka P
Student Roll Number	912219106015
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

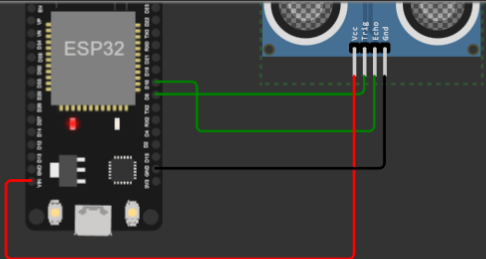
```
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2 #include <PubSubClient.h>
3 #include <ArduinoJson.h>
4 WiFiClient wifiClient;
5 #define ORG "mdcgp5"
6 #define DEVICE_TYPE "Demo_123"
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13 char authMethod[] = "use-token-auth";
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15 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

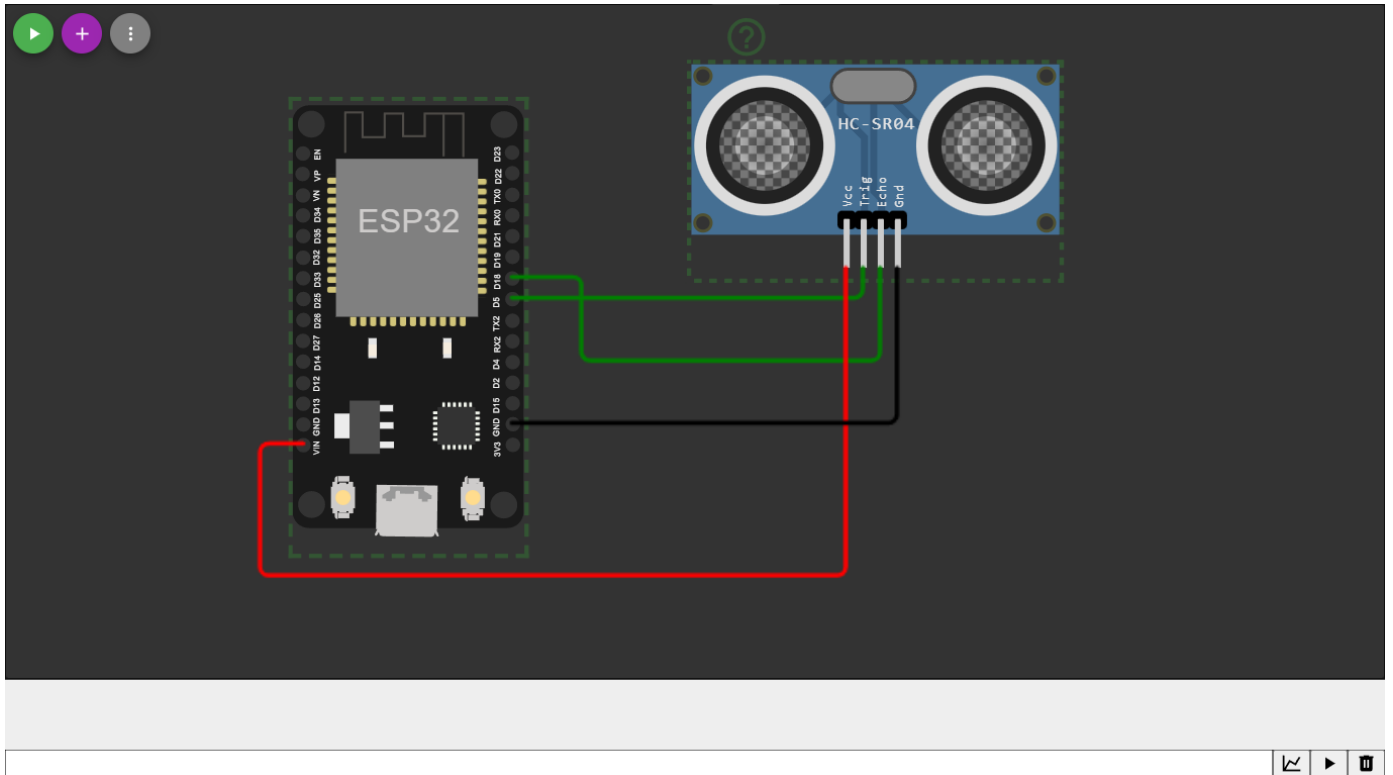
Distance: 41cm



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 ☒

+

Add Device

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	
▼ <input type="checkbox"/>	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