

## Assignment -4

Assignment Date	20 October 2022
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Student Roll Number	912219106018
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 "wp3dnn"
#define DEVICE_TYPE "Child_Safety"
#define DEVICE_ID "123456"
#define TOKEN "pB)Q82no6ewf5e&-Or"
#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());
}

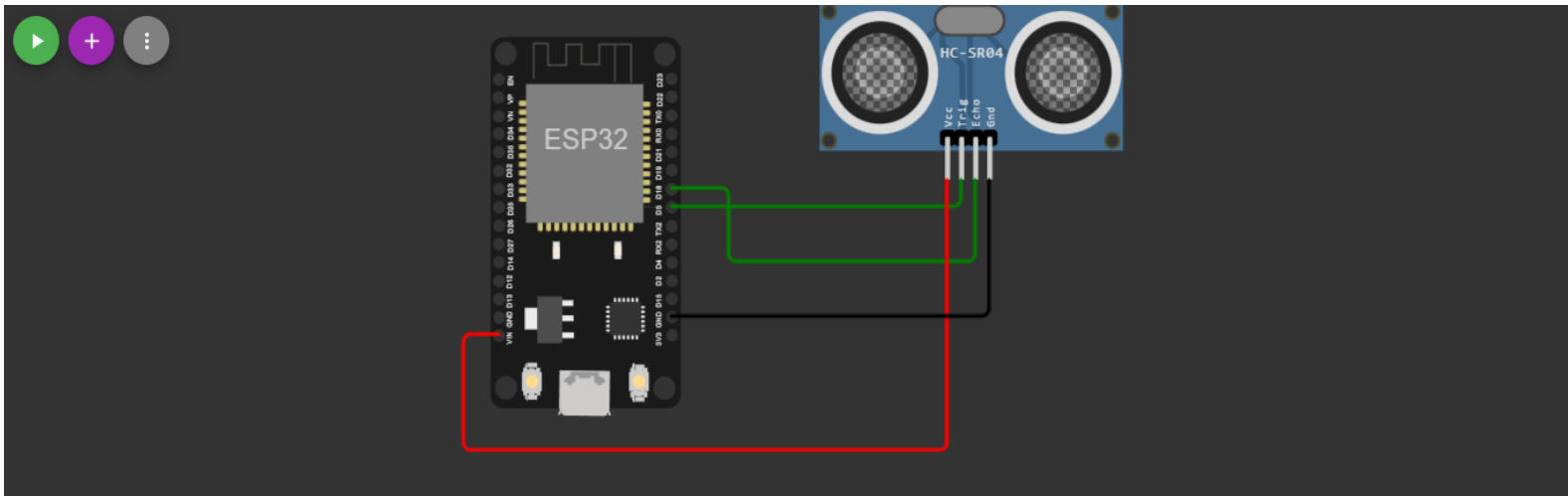
void mqttConnect() {
    if (!client.connected()) {
        Serial.print("Reconnecting MQTT client to "); Serial.println(server);
        while (!client.connect(clientId, authMethod, token)) {
            Serial.print(".");
            delay(1000);
        }
        initManagedDevice();
        Serial.println();
    }
}

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");
        }
    }
}
}

```

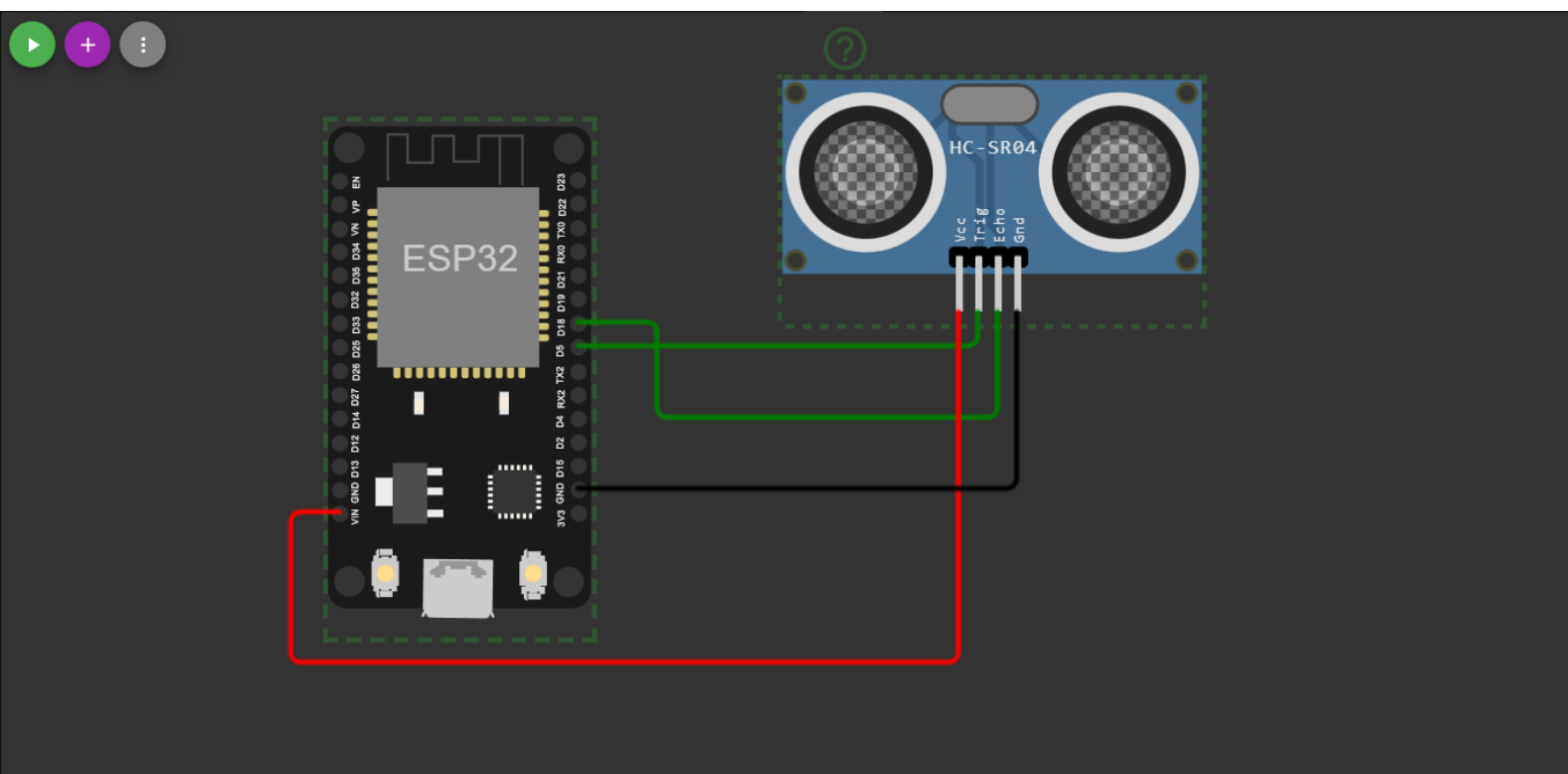


Connecting to Wifi...WiFi connected, IP address: 10.10.0.2  
Reconnecting MQTT client to 88653s.messaging.internetofthings.ibmcloud.com  
1  
subscribe to cmd OK

Sending payload: {"AlertDistance":":40}  
Publish OK

Sending payload: {"AlertDistance":":40}  
Publish OK

Sending payload: {"AlertDistance":":40}  
Publish OK



← → ↺ 🏠 88653s.internetofthings.ibmcloud.com/dashboard/devices/browse 🔍 📄 ☆ 🌐 ⚙️ 👤 ⋮

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 tsarthicktarthick6778@gmail.com ID: 88653s 👤

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Browse Action Device Types Interfaces

Add Device ➕

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🔍 Search by Device ID

Device Simulator ☒ 📄 🔍

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class
▼ <input type="checkbox"/>	wokwi_us	Connected	iot_device	Device	2 Nov 2022 10:21		tsarthicktarthick6778@gmail.com	→ ...
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":36}	json	a few seconds ago					
Data	{"AlertDistance":36}	json	a few seconds ago					
Data	{"AlertDistance":96}	json	a few seconds ago					
Data	{"AlertDistance":96}	json	a few seconds ago					
Data	{"AlertDistance":97}	json	a few seconds ago					

2 Simulations running