

## ASSIGNMENT-IV

Assignment Date	01 November 2022
Student Name	SAI VISHNU L
Student Roll Number	953619106058

### CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "uwfajw"
#define DEVICE_TYPE "12345"
#define DEVICE_ID "saivishnu-device"
#define TOKEN "O@(-6lz8IFx5BotLG)"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/data/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);

const int trigpin=5;

const int echopin=18;
String command;
String data="";

long duration;
float dist;

void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
}

void loop() {
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);
```

```

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("IBM 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");
}

}

if(dist>100){
    String payload = "{\"Distance\":\"";
    payload += dist;
    payload += "\"}";

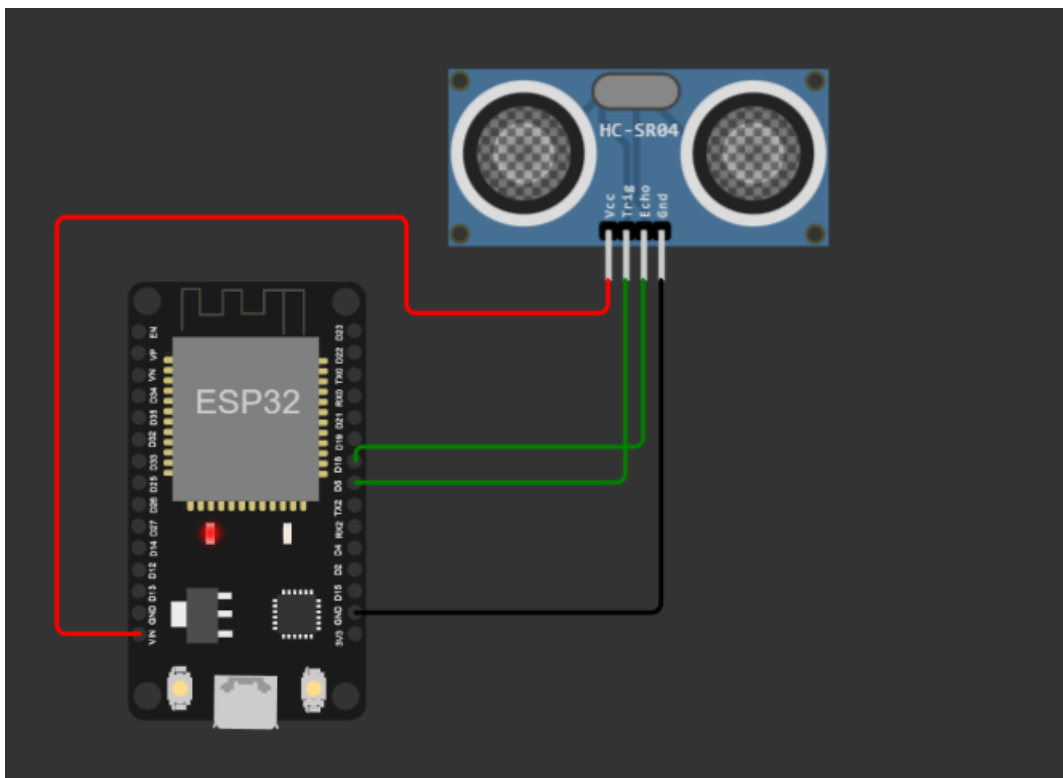
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }else {
        Serial.println("Publish FAILED");
    }
}

}

}

```

## CONNECTION:

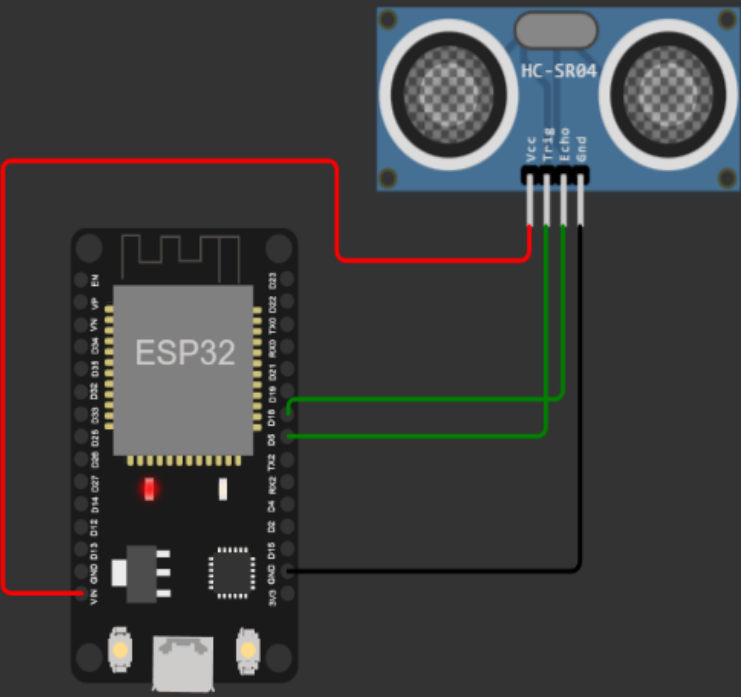


## OUTPUT:

Docs

Simulation

01:51.394 93%



```
graph TD; ESP32[Vin GND D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0 RST Vcc]; Sensor[HC-SR04 Vcc Trig Echo Gnd]; ESP32 -- Vcc --> Sensor; ESP32 -- GND --> Sensor; ESP32 -- D4 --> Sensor; ESP32 -- D5 --> Sensor;
```

Sending payload: {"Distance":399.96}  
Publish OK

Sending payload: {"Distance":399.96}  
Publish OK

Sending payload: {"Distance":399.96}

IBM Watson IoT Platform

953619106058@ritrjpm.ac.in  
ID: uwfajw

Browse

Action

Device Types

Interfaces

Add Device +

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
salvishnu-device	Connected	12345	Device	Nov 1, 2022 10:37 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
data	{"Distance":399.94}	json	a few seconds ago
data	{"Distance":399.96}	json	a few seconds ago
data	{"Distance":399.96}	json	a few seconds ago
data	{"Distance":399.96}	json	a few seconds ago
data	{"Distance":399.94}	json	a few seconds ago

0 Simulations running

WOKWI LINK:

<https://wokwi.com/projects/347150852721476179>