

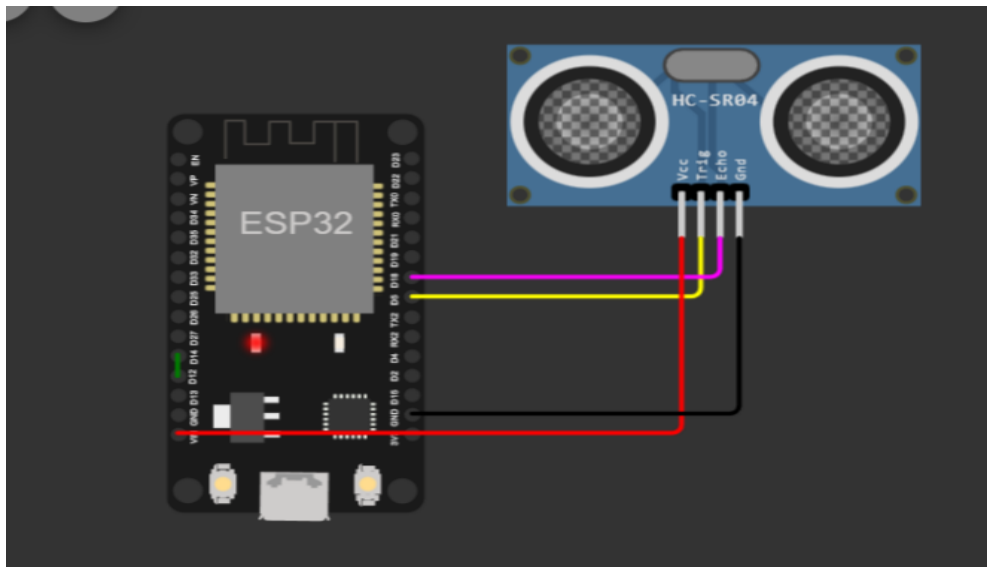
ASSIGNMENT 4

Project Name: Smart Waste Management System for Metropolitan cities

Team ID: PNT2022TMID48524

Team Member: **R.Swetha**

Circuit Diagram:



Program:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "3w5ire"
#define DEVICE_TYPE "SwethaRamesh"
#define DEVICE_ID "Assignment4"
```

```
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/SwethaRamesh/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(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 = "{\"Normal 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");
    }

}

}
```

OUTPUT SCREENSHOT:

W esp32-dht22.ino copy - Wokwi A x IBM Watson IoT Platform x IBM x +

wokwi.com/projects/346495170800255572

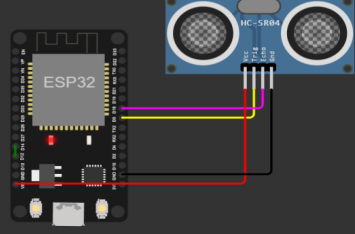
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WOKWI SAVE SHARE Docs

esp32-dht22.ino diagram.json libraries.txt Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wificlient;
4 String data;
5 #define ORG "Swire"
6 #define DEVICE_TYPE "SwethaRamesh"
7 #define DEVICE_ID "Assignment4"
8 #define TOKEN "123456789"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/SwethaRamesh/fmt/json";
13 char topic[] = "iot-2/cmd/home/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wificlient);
18 void publishData();
19
20
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25
26 long duration;
27 float dist;
28
29
30
31 void setup()
32 {
33   Serial.begin(115200);
34 }
```

Simulation



00:19.462 96%

Publish OK

Sending payload: {"Normal Distance":89.98}

Publish OK

Sending payload: {"Normal Distance":90.00}

Publish OK

IBM Watson IoT Platform

920219106036@smartinternz.com ID: 3w5lre

Back

Device Drilldown - Assignment4

Device Credentials

Client Address: 185.178.200.138 Insecure

Duration: a few seconds

Data Transferred: 3.8 KB

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
SwethaRame...	{"Normal Distance":89.98}	json	a few seconds ago
SwethaRame...	{"Normal Distance":89.95}	json	a few seconds ago
SwethaRame...	{"Normal Distance":89.95}	json	a few seconds ago
SwethaRame...	{"Normal Distance":90}	json	a few seconds ago
SwethaRame...	{"Normal Distance":89.98}	json	a few seconds ago