SMART WATER

MANAGEMENT PROJECT PHASE-4

TEAM MEMBERS:

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**ABOUT PROJECT:**

Water Quality Monitoring Management System using Wokwi

**COMPONENTS:**

* ESP32
* Ultrasonic Sensor

**CONNECTIONS:**

* Vin-VCC
* D6-Trig
* D18-Echo
* Gnd-Gnd

**Code:**

#include <WiFi.h>

#include <PubSubClient.h>

void callback(char\* subscribetopic, byte\* payload, unsigned int payloadLength);

//-------credentials of IBM Accounts------

#define ORG "eqfbco"//IBM ORGANITION ID

#define DEVICE\_TYPE "REAL\_TIME\_WATER\_QUALITY\_MONITORING"//Device type mentioned in ibm watson IOT Platform

#define DEVICE\_ID "PNT2022TMID47600A"//Device ID mentioned in ibm watson IOT Platform

#define TOKEN "12345678" //Token

String data3;

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/Data/fmt/json";

char subscribetopic[] = "iot-2/cmd/test/fmt/String";

char authMethod[] = "use-token-auth";

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE\_TYPE ":" DEVICE\_ID;

WiFiClient wifiClient;

PubSubClient client(server, 1883, callback ,wifiClient);

const int trigPin = 5;

const int echoPin = 18;

#define SOUND\_SPEED 0.034

long duration;

float distance;

void setup() {

**Serial**.begin(115200);

pinMode(trigPin, OUTPUT);

pinMode(echoPin, INPUT);

wificonnect();

mqttconnect();

}

void loop()

{

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

duration = pulseIn(echoPin, HIGH);

distance = duration \* SOUND\_SPEED/2;

**Serial**.print("Distance (cm): ");

**Serial**.println(distance);

if(distance<100)

{

**Serial**.println("ALERT!!");

delay(1000);

PublishData(distance);

delay(1000);

if (!client.loop()) {

mqttconnect();

}

}

delay(1000);

}

void PublishData(float dist) {

mqttconnect();

String payload = "{\"Distance\":";

payload += dist;

payload += ",\"ALERT!!\":""\"Distance less than 100cms\"";

payload += "}";

**Serial**.print("Sending payload: ");

**Serial**.println(payload);

if (client.publish(publishTopic, (char\*) payload.c\_str())) {

**Serial**.println("Publish ok");

} else {

**Serial**.println("Publish failed");

}

}

void mqttconnect() {

if (!client.connected()) {

**Serial**.print("Reconnecting client to ");

**Serial**.println(server);

while (!!!client.connect(clientId, authMethod, token)) {

**Serial**.print(".");

delay(500);

}

initManagedDevice();

**Serial**.println();

}

}

void wificonnect()

{

**Serial**.println();

**Serial**.print("Connecting to ");

WiFi.begin("Wokwi-GUEST", "", 6);

while (WiFi.status() != WL\_CONNECTED) {

delay(500);

**Serial**.print(".");

}

**Serial**.println("");

**Serial**.println("WiFi connected");

**Serial**.println("IP address: ");

**Serial**.println(WiFi.localIP());

}

void initManagedDevice() {

if (client.subscribe(subscribetopic)) {

**Serial**.println((subscribetopic));

**Serial**.println("subscribe to cmd OK");

} else {

**Serial**.println("subscribe to cmd FAILED");

}

}

void callback(char\* subscribetopic, byte\* payload, unsigned int payloadLength)

{

**Serial**.print("callback invoked for topic: ");

**Serial**.println(subscribetopic);

for (int i = 0; i < payloadLength; i++) {

//Serial.print((char)payload[i]);

data3 += (char)payload[i];

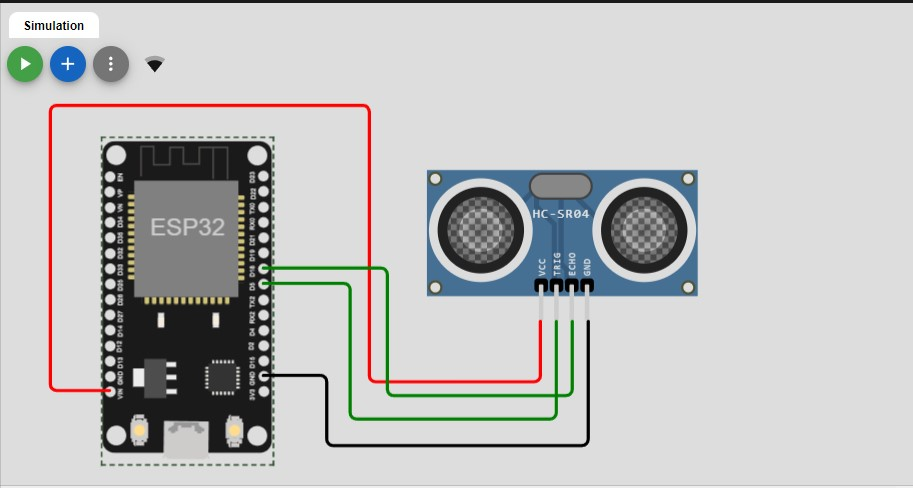
}

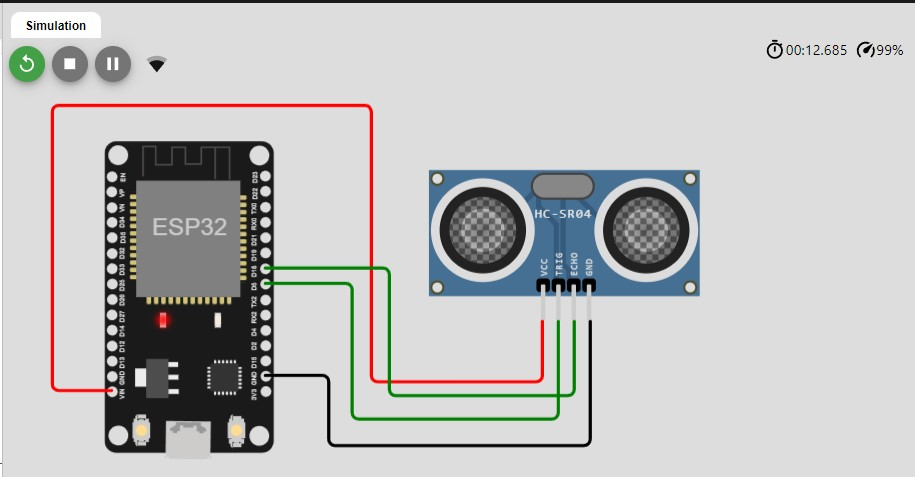
**Serial**.println("data: "+ data3);

data3="";

}

**OUTPUT:**

****

****

ets Jul 29 2019 12:21:46

rst:0x1 (POWERON\_RESET),boot:0x13 (SPI\_FAST\_FLASH\_BOOT)

configsip: 0, SPIWP:0xee

clk\_drv:0x00,q\_drv:0x00,d\_drv:0x00,cs0\_drv:0x00,hd\_drv:0x00,wp\_drv:0x00

mode:DIO, clock div:2

load:0x3fff0030,len:1156

load:0x40078000,len:11456

ho 0 tail 12 room 4

load:0x40080400,len:2972

entry 0x400805dc

Connecting to ..

WiFi connected

IP address:

10.10.0.2

Reconnecting client to eqfbco.messaging.internetofthings.ibmcloud.com

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**Wokwi link:**

**https://wokwi.com/projects/379641500287004673**