ASSIGNMENT-4

Date	2 Nov 2022
Name	Deepa Shree S
Team ID	PNT2022TMID33996
Project Name	IoT Based Safety Gadgets for Child Safety Monitoring and Notification

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.

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "cygk4h"
#define DEVICE_TYPE "f1"
#define DEVICE_ID "f4"
#define TOKEN "987654312"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/shreedharen/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");
}
}
}
```
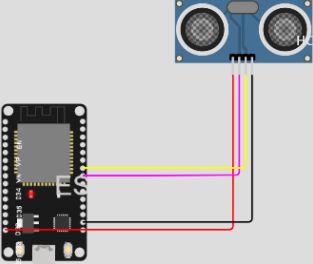
Link: https://wokwi.com/projects/347642004584268372
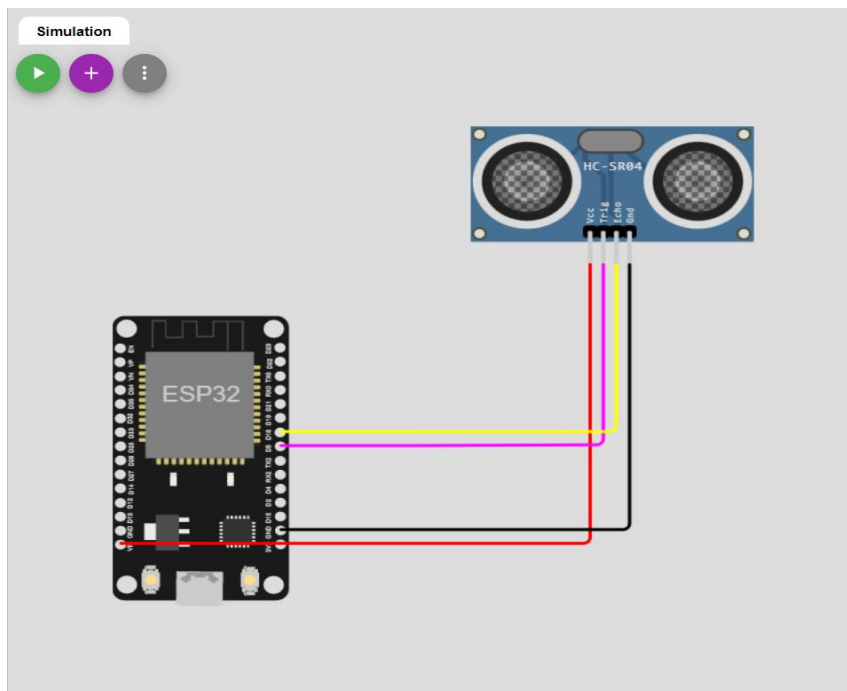
Connection:

Output:


```
Connecting to Wifi......WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to ozyf7e.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK


Sending payload: {"Distance":399.99}
Publish OK

Sending payload: {"Distance":399.92}
Publish OK

Sending payload: {"Distance":399.94}
Publish OK

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

Cloud image:

		Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location		
∨	■	f4	● Connected	f1	Device	5 Nov 2022 11:33		→	⋯

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
shreedharen	{"Distance":399.96}	json	a few seconds ago
shreedharen	{"Distance":399.94}	json	a few seconds ago
shreedharen	{"Distance":399.64}	json	a few seconds ago