Assignment 4

Date	9 Nov 2022
Team ID	PNT2022TMID06420
Project Name	Project- IoT Based Safety Gadget For Child Safety Monitoring & Notification

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send alert to ibm cloud and display in device recent events. Upload document with wokwi share link and images of ibm cloud

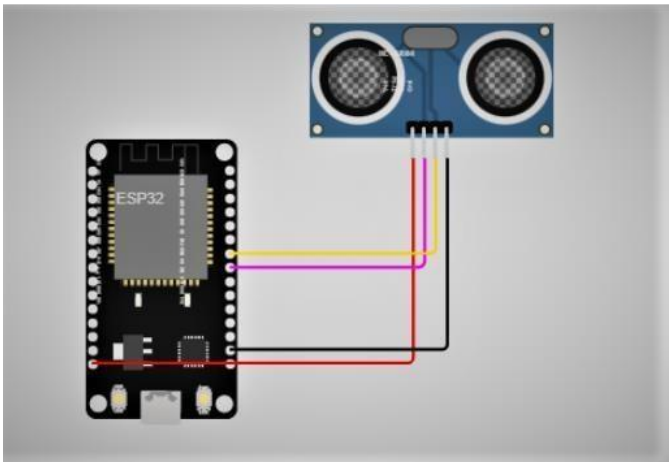
Code

```
#include <WiFi.h> #include
<PubSubClient.h>
WiFiClient wifiClient; String
data3;
#define ORG "ozyf7e"
#define DEVICE_TYPE "AnuESP"
#define DEVICE_ID "Anu123"
#define TOKEN "12345678"
#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);
```

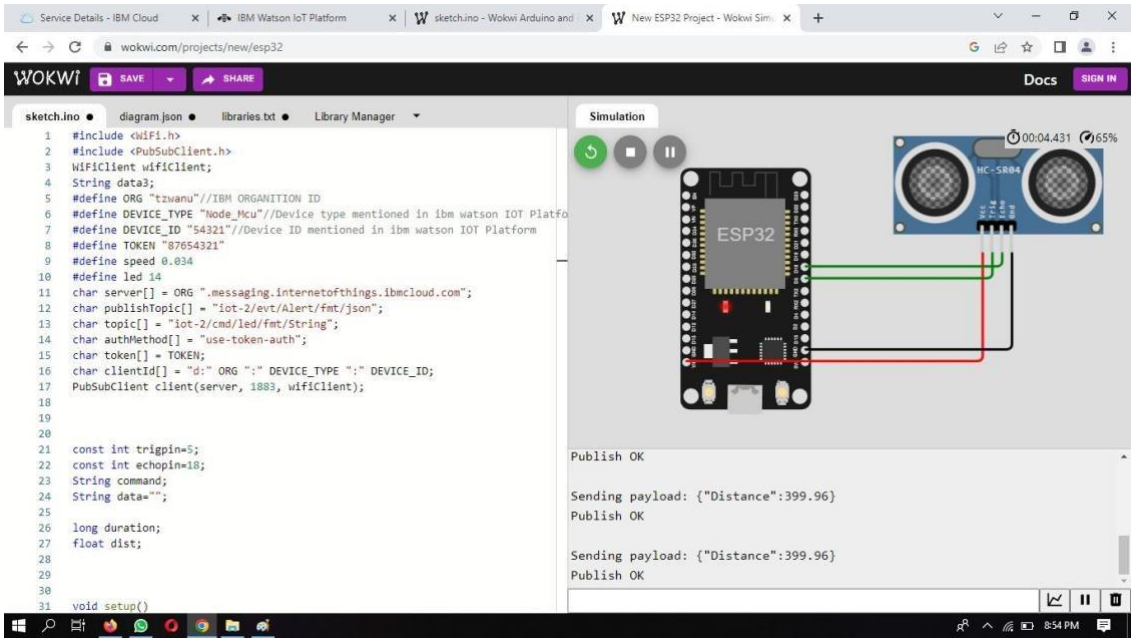
```
    pinMode(echopin, INPUT);
    wifiConnect(); mqttConnect();
}

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"); }
  }
}
```

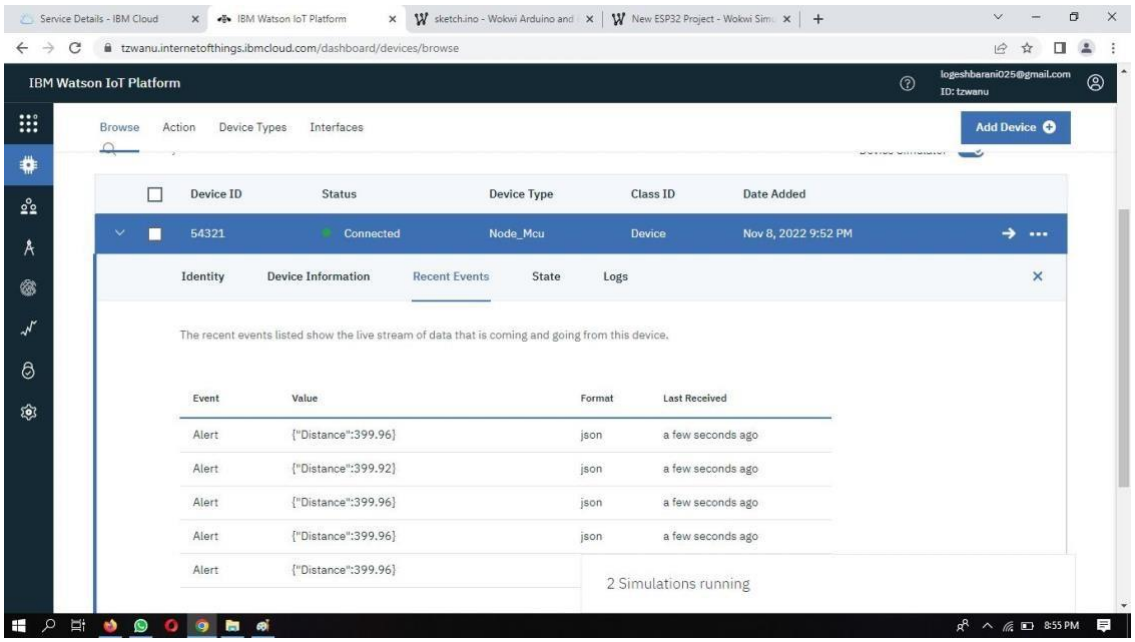
Connections



Output:



Cloud image:



Wokwi link:

https://wokwi.com/projects/347864912800776788