Assignment 4

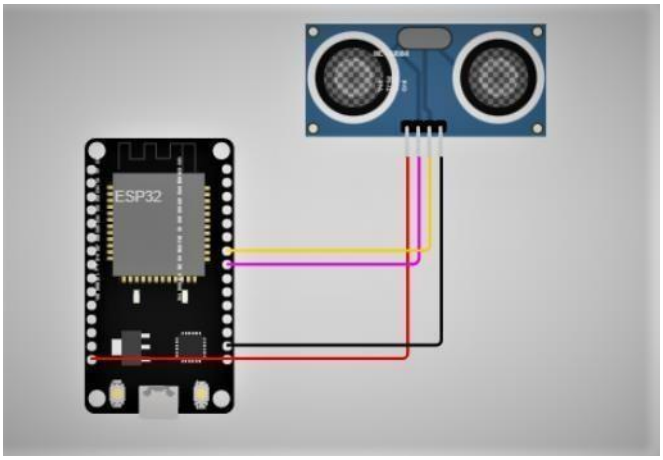
Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send alert to ibm cloud and display in device recent events. Upload document with wokwi share link and images of ibmcloud Code

```
#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();
```

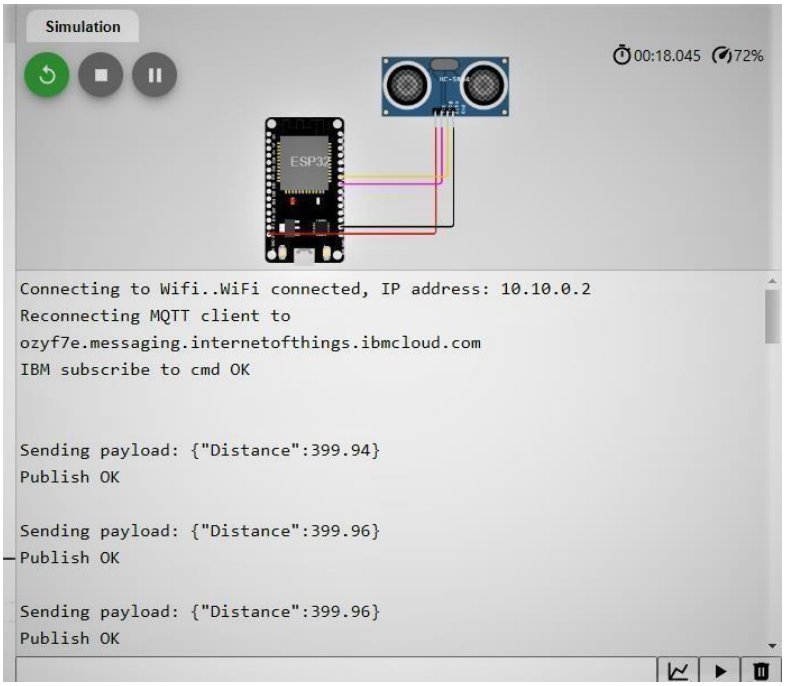
```
    }
} void wifiConnect() {
    Serial.print("Connecting to "); Serial.print("Wifi");
    WiFi.begin("Wokwi-GUEST", "", 6); while
    (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP());
}

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");
   }
  }
}
```

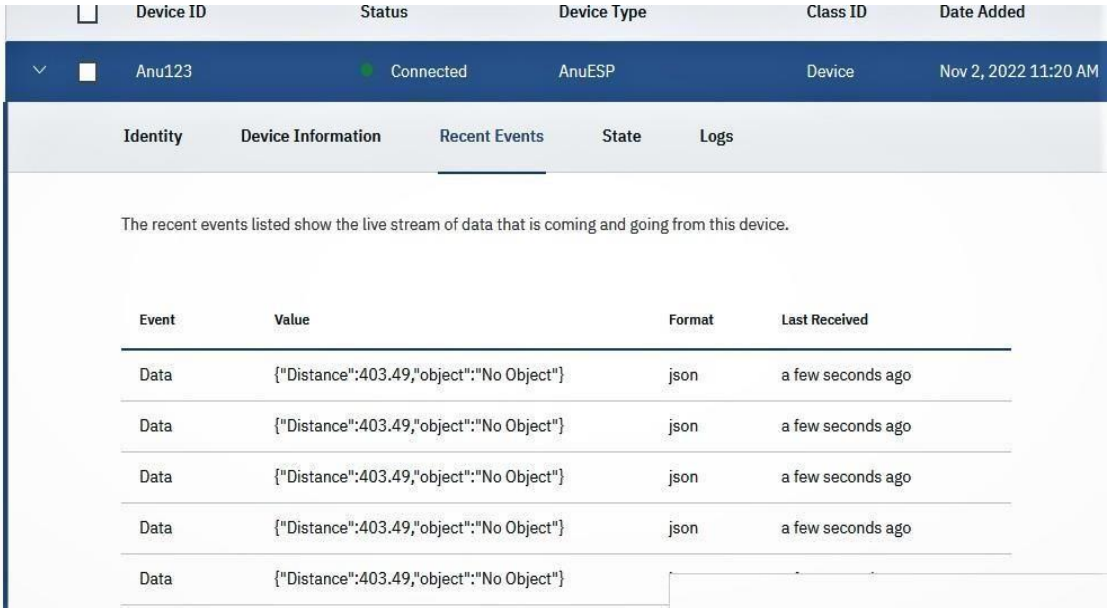
Connections



Output:



Cloud image:



Wokwi link:

https://wokwi.com/projects/347195489784955474