Assignment -4

| Team ID | PNT2022TMID28587 |
|---------------------|--|
| Student Name | AJAY ASLEEN J |
| Student Roll Number | 312819106002 |
| Project Name | Smart Waste Management System for Metropolitan Cities. |

Question:

Write a 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.

Code:

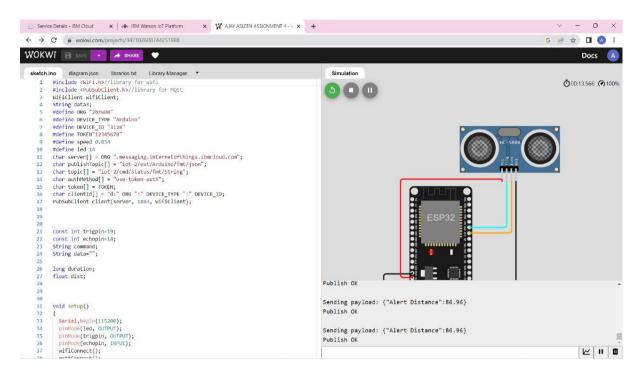
```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
WiFiClient wifiClient;
String data3;
#define ORG "0x5bsz"
#define DEVICE_TYPE "Arduino"
#define DEVICE ID "234566"
#define TOKEN "87654321"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Arduino/fmt/json";
char topic[] = "iot-2/cmd/status/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=19;
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;</pre>
  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("IBM subscribe to cmd OK");
```

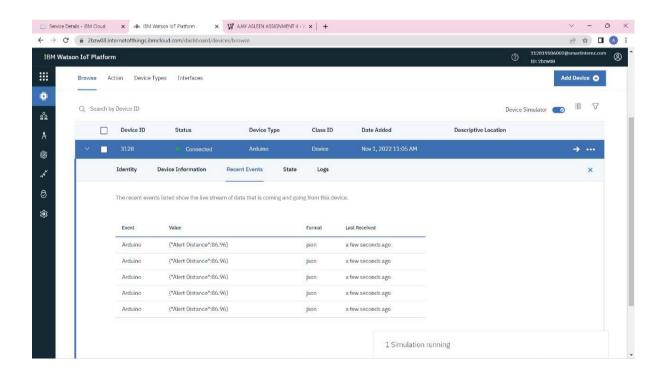
```
} else {
    Serial.println("subscribe to cmd FAILED");
void publishData()
  digitalWrite(trigpin, LOW);
  digitalWrite(trigpin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigpin, LOW);
  duration=pulseIn(echopin,HIGH);
  dist=duration*speed/2;
  if(dist<100){</pre>
    String payload = "{\"Alert Distance\":";
    pavload += 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");
    }
  }
  }
```

OUTPUT:

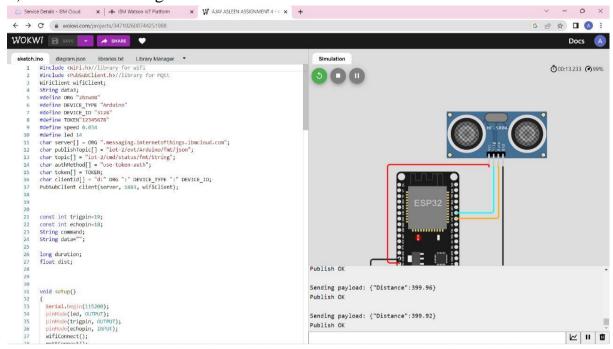
1) When distance is less than 100 cm



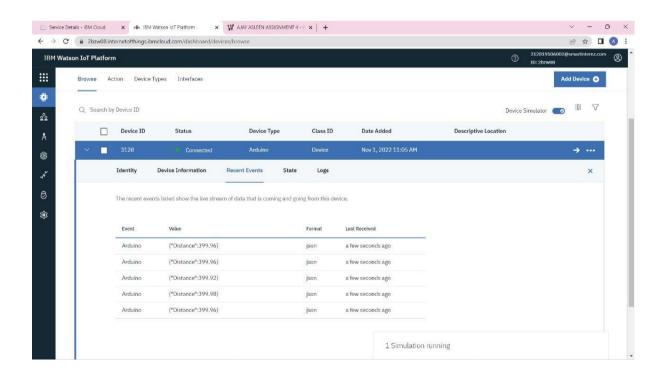
IBM RECENT EVENTS:



2) When distance is greater than 100 cm



IBM RECENT EVENTS:



WOKWILINK:

https://wokwi.com/projects/347102608744251988