ASSIGNMENT 04

Date	28 OCT 2022	
Team id	PNT2022TMID46746	
Project Name	Project-smart waste management system for metropolitan cities	
Marks	2Marks	

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. Upload document with wokwi share link and images of IBM cloud.

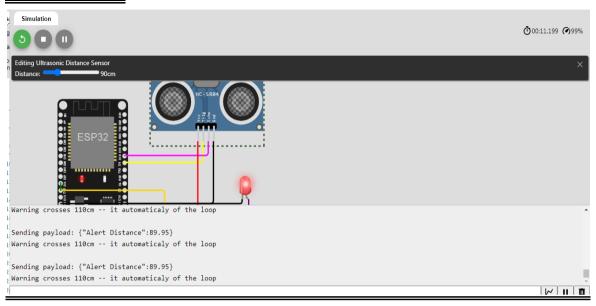
PROGRAM:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "gbuw7v"
#define DEVICE TYPE "saraswathi"
#define DEVICE ID "saraswathi123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/saraswathi/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
void publishData();
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;</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(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\":";
    payload += dist;
    payload += "}";
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
      if(client.publish(publishTopic, (char*) payload.c_str())) {
      Serial.println("Warning crosses 110cm -- it automaticaly of the loop");
      digitalWrite(led,HIGH);
    }
  }
    if(dist>101 && dist<111){</pre>
    String payload = "{\"Normal Distance\":";
    payload += dist;
    payload += "}";
```

```
Serial.print("\n");
 Serial.print("Sending payload: ");
 Serial.println(payload);
 }
}
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++){</pre>
 dist += (char)payload[i];
}
Serial.println("data:"+ data3);
if(data3=="lighton"){
 Serial.println(data3);
 digitalWrite(led,HIGH);
}
data3="";
```

OUTPUT:



WOKWI: https://wokwi.com/projects/346847301493326418

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Device Drilldown - saraswathi123

	Device ID	saraswathi123
Device Credentials	Device Type	saraswathi
Connection Information	Date Added	Nov 4, 2022 1:02 PM
Recent Events	Added By	ksaraswathi872@gmail.com
State	Connection Status	Disconnected
Device Information		Last Connected: Nov 4, 2022 1:04 PM Client Address: 145.40.94.93 Insecure
Metadata		Duration: a minute
Diagnostics		Data Transferred: 5.5 KB
Connection Logs		

IBM CLOUD OUTPUT

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©;

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Device Drilldown - saraswathi123

Device Credentials

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
saraswathi	{"Alert Distance":89.95}	json	a few seconds ago
saraswathi	{"Alert Distance":89.95}	json	a few seconds ago
saraswathi	{"Alert Distance":89.95}	json	a few seconds ago
saraswathi	{"Alert Distance":89.95}	json	a few seconds ago
saraswathi	{"Alert Distance":89.96}	json	a few seconds ago