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.

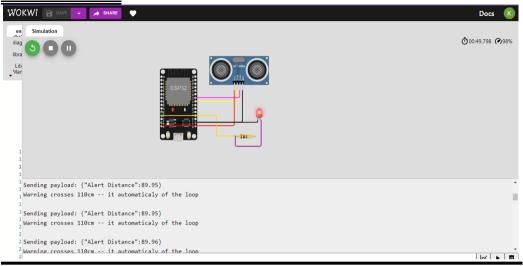
PROGRAM:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "mcyhqa"
#define DEVICE TYPE "kabishena"
#define DEVICE ID "kabishena123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/kabishena/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/346835035606745683

Device Drilldown - kabishena123

	Connection Information				
Device Credentials	Basic connection informa	Basic connection information about this device.			
Connection Information					
Recent Events	Device ID	kabishena123			
Nocent Events	Device Type	kabishena			
State	Date Added	Oct 29, 2022 12:24 PM			
Device Information	Added By	kabishena288@gmail.com			
Metadata		Kabishenazoo@gman.com			
Metadata	Connection Status	Connected			
Diagnostics		Connection Time: Oct 29, 2022 12:25 PM			
C		Client Address: 145.40.94.93 Insecure			
Connection Logs					
Device Actions					

IBM CLOUD OUTPUT

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Device Drilldown - kabishena123

	Device Credentials
	Connection Information
ĺ	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
kabishena	{"Alert Distance":89.95}	json	a few seconds ago
kabishena	{"Alert Distance":90}	json	a few seconds ago
kabishena	{"Alert Distance":89.95}	json	a few seconds ago
kabishena	{"Alert Distance":89.95}	json	a few seconds ago
kabishena	{"Alert Distance":89.95}	json	a few seconds ago

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