## Assignment -4

Assignment Date	21 OCTOBER 2022
Student Name	ANISH B
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Maximum Marks	2 marks

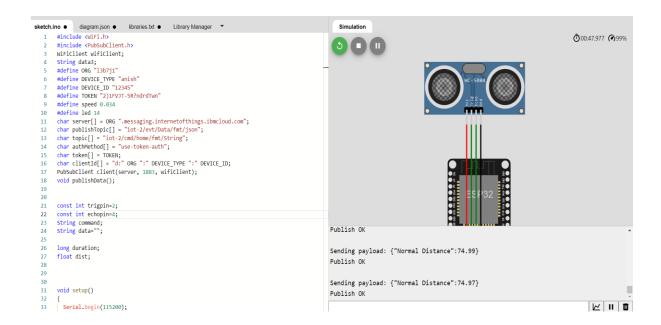
## Question-4:

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.

```
#include <WiFi.h>
#include < PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "13b7j1"
#define DEVICE_TYPE "anish"
#define DEVICE ID "12345"
#define TOKEN "2)1FVJT-5R?ndrdTwn"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/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=2;
const int echopin=4;
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");
  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 = "{\"Normal 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>101 && dist<111){
 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 automatically of the loop");
  digitalWrite(led,HIGH);
 }else {
  Serial.println("Publish FAILED");
}
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="";
```



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

Event	Value	Format	Last Received
Data	{"Normal Distance":39.97}	json	2 minutes ago
Data	{"Normal Distance":39.97}	json	2 minutes ago
Data	{"Normal Distance":39.97}	json	2 minutes ago
Data	{"Normal Distance":39.97}	json	2 minutes ago
Data	{"Normal Distance":39.97}	json	2 minutes ago

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