Utilization Of Testing Tools

```
include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "4yi0vc"

#define DEVICE_TYPE "nodeMcu"

#define DEVICE_ID "Assignment4"

#define TOKEN "123456789"

#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=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 {
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");

  }
}

 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++){
    dist += (char)payload[i];
  }
  Serial.println("data:"+ data3);
  if(data3=="lighton"){
    Serial.println(data3);
    digitalWrite(led,HIGH);
  }
  data3="";
}
```