Code :

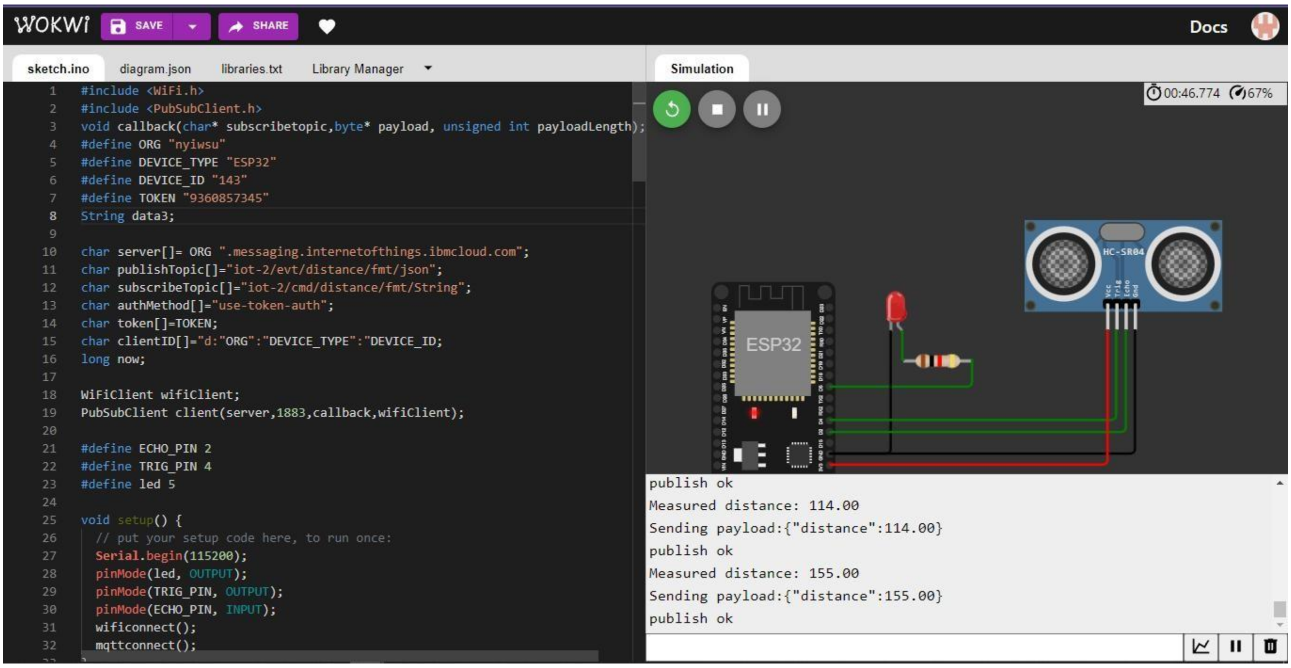
```
#include <WiFi.h>
#include <PubSubClient.h>
void callback(char* subscribetopic,byte* payload, unsigned int
payloadLength);
#define ORG "l12t39"
#define DEVICE_TYPE "ESP32"
#define DEVICE_ID "54321"
#define TOKEN "123456789"
String data3;
char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/distance/fmt/json";
char subscribeTopic[]="iot-2/cmd/test/fmt/String";
char authMethod[]="use-token-auth";
char token[]=TOKEN;
char clientID[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server,1883,callback,wifiClient);
#define ECHO_PIN 2
#define TRIG_PIN 4
#define led 5 void
setup() {
// put your setup code here, to run once:
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(TRIG_PIN, OUTPUT);
pinMode(ECHO_PIN, INPUT);
wificonnect();
mqttconnect();
} float readDistanceCM() {
digitalWrite(TRIG_PIN, LOW);
delayMicroseconds(2);
digitalWrite(TRIG_PIN, HIGH);
```

```
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);
int duration=random(1,200);
//Serial.println(duration);
//duration = pulseIn(ECHO_PIN, HIGH);
return duration ;
//Serial.println(duration); }void
loop() { float distance =
readDistanceCM();
//Serial.println(distance);
bool isNearby = distance < 100;
digitalWrite(led, isNearby);
Serial.print("Measured distance: ");
Serial.println(distance); if(distance<100){
PublishData2(distance);
}else{
PublishData1(distance);
}
//PublishData(distance);
delay(1000);
if(!client.loop()){
mqttconnect(); }
//delay(2000);
}

void PublishData1(float dist){
mqttconnect();
String payload= "{\"distance\":";
payload += dist;
payload+="}";
Serial.print("Sending payload:");
Serial.println(payload);
if(client.publish(publishTopic,(char*)payload.c_str())){
Serial.println("publish ok");
} else{
Serial.println("publish failed");
}
}
void PublishData2(float dist){
mqttconnect();
String payload= "{\"ALERT\":";
payload += dist; payload+="}";
Serial.print("Sending payload:");
Serial.println(payload);if(client.publish(publishTopic,(char*)payload.c_str())){
Serial.println("publish ok");
} else{
Serial.println("publish failed");
} } void mqttconnect(){
if(!client.connected()){
Serial.print("Reconnecting to ");
Serial.println(server);
while(!!!client.connect(clientID, authMethod, token)){
Serial.print(".");
delay(500); }
initManagedDevice();
Serial.println();
}
} void wificonnect(){
Serial.println();
Serial.print("Connecting to"); WiFi.begin("Wokwi-GUEST","",6);
while(WiFi.status()!=WL_CONNECTED){
delay(500);
Serial.print(".");
}
Serial.println("");
Serial.println("WIFI CONNECTED");
Serial.println("IP address:");
Serial.println(WiFi.localIP());
}
```

```
void initManagedDevice(){
if(client.subscribe(subscribeTopic)){
Serial.println((subscribeTopic));
Serial.println("subscribe to cmd ok");
}else{
Serial.println("subscribe to cmd 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++){data3 += (char)payload[i];
}
Serial.println("data:"+ data3);
if(data3=="lighton"){
Serial.println(data3);
digitalWrite(led,HIGH);
}else{
Serial.println(data3);
digitalWrite(led,LOW);
}
data3="";
}
```

WOKWI LINK:
https://wokwi.com/projects/346843326547231315

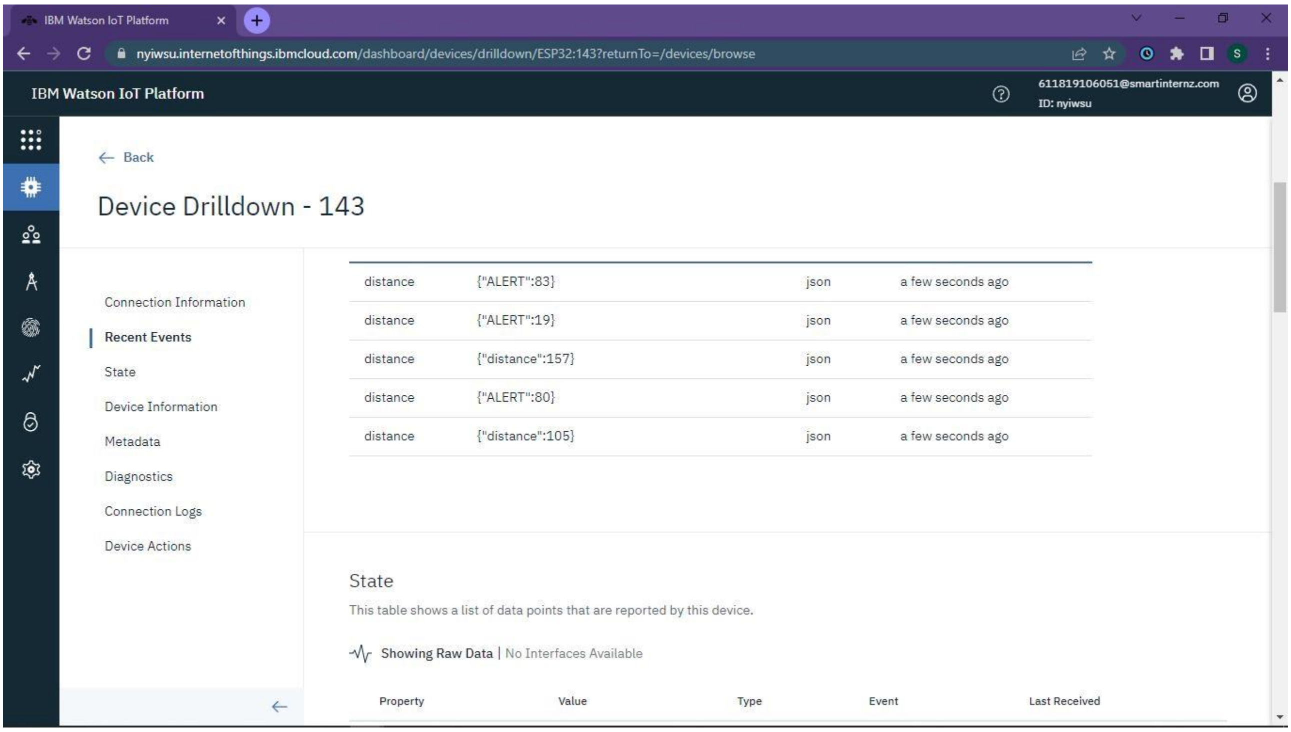
WOKWISIMULATION



```
#include <WiFi.h>
#include <PubSubClient.h>
void callback(char* subscribetopic,byte* payload, unsigned int payloadLength);
#define ORG "nyiwsu"
#define DEVICE_TYPE "ESP32"
#define DEVICE_ID "143"
#define TOKEN "9360857345"
String data3;

char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/distance/fmt/json";
char subscribeTopic[]="iot-2/cmd/distance/fmt/String";
char authMethod[]="use-token-auth";
char token[]=TOKEN;
char clientID[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
long now;

WiFiClient wifiClient;
PubSubClient client(server,1883,callback,wifiClient);

#define ECHO_PIN 2
#define TRIG_PIN 4
#define led 5

void setup() {
  // put your setup code here, to run once:
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  wificonnect();
  mqttconnect();
```

```
publish ok
Measured distance: 114.00
Sending payload:{"distance":114.00}
publish ok
Measured distance: 155.00
Sending payload:{"distance":155.00}
publish ok
```

CLOUD STORAGE



Device Drilldown - 143

distance	{"ALERT":83}	json	a few seconds ago
distance	{"ALERT":19}	json	a few seconds ago
distance	{"distance":157}	json	a few seconds ago
distance	{"ALERT":80}	json	a few seconds ago
distance	{"distance":105}	json	a few seconds ago

State

This table shows a list of data points that are reported by this device.

Showing Raw Data | No Interfaces Available

Property	Value	Type	Event	Last Received