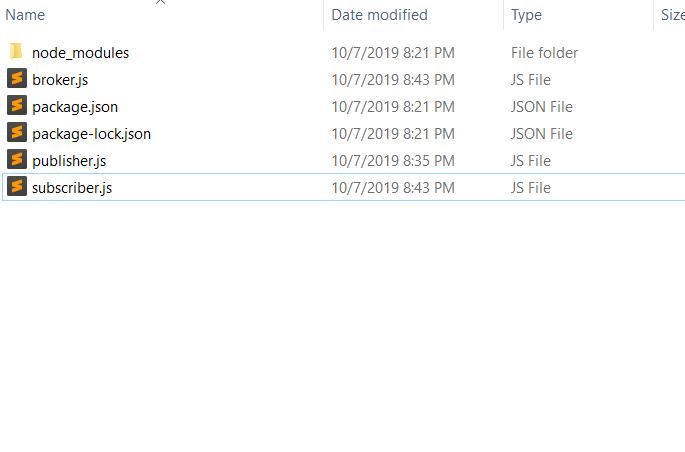
Tự dựng MQTT broker sử dụng Mosca bằng Node.js

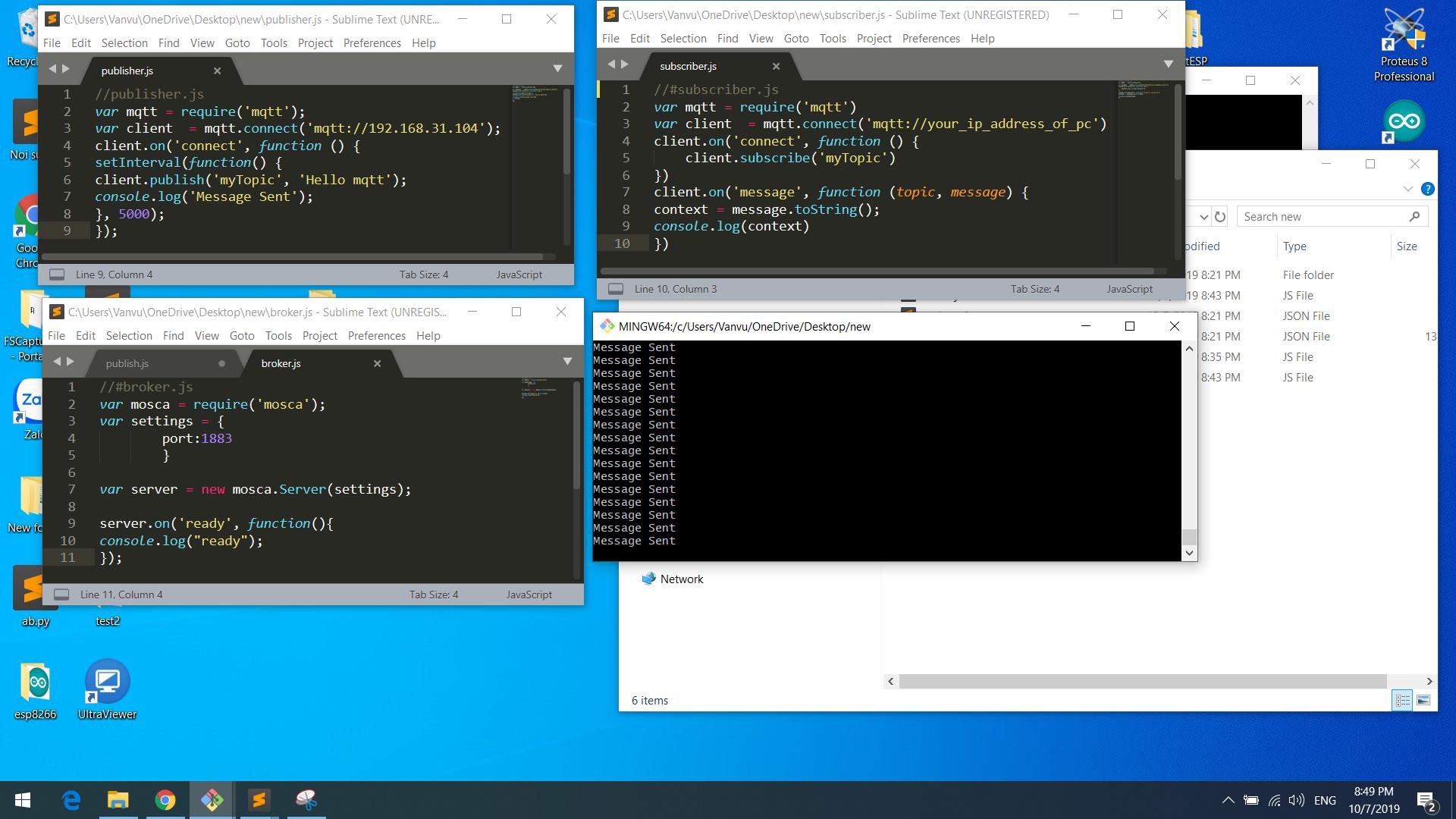
Bước 1: tạo 1 thư mục dự án mqtt

Bước 2: Cài đặt ban đầu

npm init

npm install mosca mqtt





code server:

var express = require("express");

var app = express();

var server = require("http").createServer(app);

var io = require("socket.io").listen(server);

var fs = require("fs");

server.listen(process.env.PORT || 3000);

console.log("server running");

io.sockets.on('connection', function(socket){

console.log("co thiet bi vua ket noi");

socket.on('disconnect', function(socket){

console.log("Ngat ket noi");

});

socket.on('plainString', function(data1){

console.log(data1);

io.sockets.emit('server-send-data', { noidung : data1 });

});

socket.on('client-send-data', function(data){

console.log("Server nhan: " + data);

io.sockets.emit('arduino', data);

io.sockets.emit('server-send-data', { noidung : data });

});

});

code esp8266:

[#include](https://www.facebook.com/hashtag/include?__eep__=6&__gid__=1090246617807474&__cft__%5b0%5d=AZV02KfxIGLwtutapHpEoYtD_vKkJPpm8q9xFdN_oXBK_7w_6RN7GA6_w--lKXzIMd3DnDK0_URxVLx82PINRCVWtT5-NOTh8tDRLynK5qjM-1IvPKEPJeWoXLIcs3RPaZTD3W7oDBe0XV5wyJl7nd93x835KKrNu6qb6QK24C5cZYqG-EU1R8tdpm-jHR1dA6OnW6LBzYkkgAQOlDq3B6qe&__tn__=*NK-R) <Arduino.h>

[#include](https://www.facebook.com/hashtag/include?__eep__=6&__gid__=1090246617807474&__cft__%5b0%5d=AZV02KfxIGLwtutapHpEoYtD_vKkJPpm8q9xFdN_oXBK_7w_6RN7GA6_w--lKXzIMd3DnDK0_URxVLx82PINRCVWtT5-NOTh8tDRLynK5qjM-1IvPKEPJeWoXLIcs3RPaZTD3W7oDBe0XV5wyJl7nd93x835KKrNu6qb6QK24C5cZYqG-EU1R8tdpm-jHR1dA6OnW6LBzYkkgAQOlDq3B6qe&__tn__=*NK-R) <stdlib.h>

[#include](https://www.facebook.com/hashtag/include?__eep__=6&__gid__=1090246617807474&__cft__%5b0%5d=AZV02KfxIGLwtutapHpEoYtD_vKkJPpm8q9xFdN_oXBK_7w_6RN7GA6_w--lKXzIMd3DnDK0_URxVLx82PINRCVWtT5-NOTh8tDRLynK5qjM-1IvPKEPJeWoXLIcs3RPaZTD3W7oDBe0XV5wyJl7nd93x835KKrNu6qb6QK24C5cZYqG-EU1R8tdpm-jHR1dA6OnW6LBzYkkgAQOlDq3B6qe&__tn__=*NK-R) <ESP8266WiFi.h>

[#include](https://www.facebook.com/hashtag/include?__eep__=6&__gid__=1090246617807474&__cft__%5b0%5d=AZV02KfxIGLwtutapHpEoYtD_vKkJPpm8q9xFdN_oXBK_7w_6RN7GA6_w--lKXzIMd3DnDK0_URxVLx82PINRCVWtT5-NOTh8tDRLynK5qjM-1IvPKEPJeWoXLIcs3RPaZTD3W7oDBe0XV5wyJl7nd93x835KKrNu6qb6QK24C5cZYqG-EU1R8tdpm-jHR1dA6OnW6LBzYkkgAQOlDq3B6qe&__tn__=*NK-R) <ESP8266WiFiMulti.h>

[#include](https://www.facebook.com/hashtag/include?__eep__=6&__gid__=1090246617807474&__cft__%5b0%5d=AZV02KfxIGLwtutapHpEoYtD_vKkJPpm8q9xFdN_oXBK_7w_6RN7GA6_w--lKXzIMd3DnDK0_URxVLx82PINRCVWtT5-NOTh8tDRLynK5qjM-1IvPKEPJeWoXLIcs3RPaZTD3W7oDBe0XV5wyJl7nd93x835KKrNu6qb6QK24C5cZYqG-EU1R8tdpm-jHR1dA6OnW6LBzYkkgAQOlDq3B6qe&__tn__=*NK-R) <SocketIoClient.h>

[#define](https://www.facebook.com/hashtag/define?__eep__=6&__gid__=1090246617807474&__cft__%5b0%5d=AZV02KfxIGLwtutapHpEoYtD_vKkJPpm8q9xFdN_oXBK_7w_6RN7GA6_w--lKXzIMd3DnDK0_URxVLx82PINRCVWtT5-NOTh8tDRLynK5qjM-1IvPKEPJeWoXLIcs3RPaZTD3W7oDBe0XV5wyJl7nd93x835KKrNu6qb6QK24C5cZYqG-EU1R8tdpm-jHR1dA6OnW6LBzYkkgAQOlDq3B6qe&__tn__=*NK-R) runEvery(t) for (static long \_lasttime;(uint16\_t)((uint16\_t)millis() - \_lasttime) >= (t);\_lasttime += (t))

[#define](https://www.facebook.com/hashtag/define?__eep__=6&__gid__=1090246617807474&__cft__%5b0%5d=AZV02KfxIGLwtutapHpEoYtD_vKkJPpm8q9xFdN_oXBK_7w_6RN7GA6_w--lKXzIMd3DnDK0_URxVLx82PINRCVWtT5-NOTh8tDRLynK5qjM-1IvPKEPJeWoXLIcs3RPaZTD3W7oDBe0XV5wyJl7nd93x835KKrNu6qb6QK24C5cZYqG-EU1R8tdpm-jHR1dA6OnW6LBzYkkgAQOlDq3B6qe&__tn__=*NK-R) USE\_SERIAL Serial

ESP8266WiFiMulti WiFiMulti;

SocketIoClient webSocket;

void event(const char \* payload, size\_t length) {

USE\_SERIAL.printf("LED: %s\n", payload);

}

void setup() {

USE\_SERIAL.begin(9800);

USE\_SERIAL.setDebugOutput(true);

USE\_SERIAL.println();

USE\_SERIAL.println();

USE\_SERIAL.println();

for(uint8\_t t = 4; t > 0; t--) {

USE\_SERIAL.printf("[SETUP] BOOT WAIT %d...\n", t);

USE\_SERIAL.flush();

delay(1000);

}

WiFiMulti.addAP("Gia Dinh T3", "1@2b3c4d3");

while(WiFiMulti.run() != WL\_CONNECTED) {

delay(100);

}

webSocket.on("arduino", event);

//------------------------------

webSocket.begin("192.168.31.104", 3000);

// use HTTP Basic Authorization this is optional remove if not needed

//webSocket.setAuthorization("username", "password");

}

void loop() {

webSocket.loop();

/\* runEvery(3000){

webSocket.loop();

int a =rand();;

char b[100];

sprintf(b, "\"Gia tri bien %d\"", a);

const char\* c=b;

webSocket.emit("plainString", c);

}

\*/

}

Hướng dẫn giao tiếp giữa Android với MQTT!

Bước 1: Vào Gradle Script - > bulid.gradle nhập code

repositories {  
maven {  
url **"**[**https://repo.eclipse.org/content/repositories/paho-releases/**](https://repo.eclipse.org/content/repositories/paho-releases/?fbclid=IwAR36yBtpRbGBG1DQltokVaOOTLRgoNaTTD1-H2UeK5eFNgmcZtp_PZAFsGM)**"**}  
}  
  
  
dependencies {  
implementation fileTree(**dir**: **'libs'**, **include**: [**'\*.jar'**])  
implementation **'androidx.appcompat:appcompat:1.0.2'**implementation **'androidx.constraintlayout:constraintlayout:1.1.3'**testImplementation **'junit:junit:4.12'**androidTestImplementation **'androidx.test:runner:1.1.1'**androidTestImplementation **'androidx.test.espresso:espresso-core:3.1.1'**implementation(**'org.eclipse.paho:org.eclipse.paho.android.service:1.0.2'**) {  
exclude **module**: **'support-v4'**}  
}

Bước 2: Vào app manifests -> AndroidManifest.xml nhập code

<**uses-permission android:name="android.permission.WAKE\_LOCK"**/>  
<**uses-permission android:name="android.permission.INTERNET"**/>  
<**uses-permission android:name="android.permission.ACCESS\_NETWORK\_STATE"**/>  
<**uses-permission android:name="android.permission.READ\_PHONE\_STATE"**/>  
  
<**application  
android:allowBackup="true"  
android:icon="@mipmap/ic\_launcher"  
android:label="@string/app\_name"  
android:roundIcon="@mipmap/ic\_launcher\_round"  
android:supportsRtl="true"  
android:theme="@style/AppTheme"**>  
<**activity android:name=".MainActivity"**>  
<**intent-filter**>  
<**action android:name="android.intent.action.MAIN"**/>  
  
<**category android:name="android.intent.category.LAUNCHER"**/>  
</**intent-filter**>  
</**activity**>  
<**service android:name="org.eclipse.paho.android.service.MqttService"**>  
</**service**>  
</**application**>

Bước 3: Vào activity\_main.xml nhập code

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="**[**http://schemas.android.com/apk/res/android**](https://l.facebook.com/l.php?u=https%3A%2F%2Fschemas.android.com%2Fapk%2Fres%2Fandroid%3Ffbclid%3DIwAR1nSAtuiyj-CLx-mFPTZxNgefa5_ZXInQJ-rk4F5zsMBFc4i_d_wK-U4hk&h=AT15OQ8y3iYG2mCs8ViOEja92lXhzqhXCUJUinfFDv1AVKtYJ4jOMDCeHVaM49-90UYzXuUrsVeKPutJXnCH1HbbT1KA4edEPnCYQskA0Tv2_ENsdD6Jv90Y-nG1HSje1HQUmW0810Y1o-pamo9p&__tn__=-U-UK-R&c%5b0%5d=AT01P7MWspVQ8D3fAiLwtnqx7qDPfOf9uRnlUEi2iIS37sIpKQfS3WtVlFgJNSOJpzxzCAMMsZOzBljWZ52X2TD0UeyW-ucZDhtav0rVk9jvPt5l_jNeHM5ySfdIZivmLc2qjYsiCwM86ZnEXKNe7VfvV3Eoqpx-svc1_tK4b3KutLp_LYAIsoB5h4rbkkFBT7wdw7mkOCdUs1vPaJRGn5U)**"  
xmlns:app="**[**http://schemas.android.com/apk/res-auto**](https://l.facebook.com/l.php?u=https%3A%2F%2Fschemas.android.com%2Fapk%2Fres-auto%3Ffbclid%3DIwAR02VOmObvQaoRCqnguc1qWMCst2zK7wmz3PQxR4MMnG-R9CxwAQLU5y5hM&h=AT00Mdeqfzhux_u2mrMGs9D8Jy4HM1mb7qvq82kDbr6C4o6cZNs4KJbEZcs_nJsY88i3pfAGyIVWQSaKGLo6p0hF2zK8C-7KUDRc3199pKu1wcIBoY6saOx3-ot3ppC0Lfzi5Sbh_XlDbyblK1NF&__tn__=-U-UK-R&c%5b0%5d=AT01P7MWspVQ8D3fAiLwtnqx7qDPfOf9uRnlUEi2iIS37sIpKQfS3WtVlFgJNSOJpzxzCAMMsZOzBljWZ52X2TD0UeyW-ucZDhtav0rVk9jvPt5l_jNeHM5ySfdIZivmLc2qjYsiCwM86ZnEXKNe7VfvV3Eoqpx-svc1_tK4b3KutLp_LYAIsoB5h4rbkkFBT7wdw7mkOCdUs1vPaJRGn5U)**"  
xmlns:tools="**[**http://schemas.android.com/tools**](https://l.facebook.com/l.php?u=https%3A%2F%2Fschemas.android.com%2Ftools%3Ffbclid%3DIwAR1nSAtuiyj-CLx-mFPTZxNgefa5_ZXInQJ-rk4F5zsMBFc4i_d_wK-U4hk&h=AT04WGKFR3XSdofDQVznuozo7eGB6yp8OhpotrHdQ3lTAKAtt4CQGMYNQ6m122zeVzT6NneUy6KJRramMWv8JYK3ZvMaRTXyWrhcmJQ4tsioDDJCQGaMSfzM_MVCa7m27zelHMqg6464ewDtLl-3&__tn__=-U-UK-R&c%5b0%5d=AT01P7MWspVQ8D3fAiLwtnqx7qDPfOf9uRnlUEi2iIS37sIpKQfS3WtVlFgJNSOJpzxzCAMMsZOzBljWZ52X2TD0UeyW-ucZDhtav0rVk9jvPt5l_jNeHM5ySfdIZivmLc2qjYsiCwM86ZnEXKNe7VfvV3Eoqpx-svc1_tK4b3KutLp_LYAIsoB5h4rbkkFBT7wdw7mkOCdUs1vPaJRGn5U)**"  
android:layout\_width="match\_parent"  
android:layout\_height="match\_parent"  
tools:context=".MainActivity"**>  
  
  
<**Button  
android:id="@+id/button\_On"  
android:layout\_width="wrap\_content"  
android:layout\_height="wrap\_content"  
android:layout\_marginStart="64dp"  
android:layout\_marginLeft="64dp"  
android:text="Bat"  
android:onClick="batDen"  
app:layout\_constraintBottom\_toTopOf="@+id/guideline2"  
app:layout\_constraintStart\_toStartOf="parent"  
app:layout\_constraintTop\_toTopOf="@+id/guideline2"**/>  
  
<**Button  
android:id="@+id/button\_Off"  
android:layout\_width="wrap\_content"  
android:layout\_height="wrap\_content"  
android:layout\_marginEnd="64dp"  
android:layout\_marginRight="64dp"  
android:text="Tat"  
android:onClick="tatDen"  
app:layout\_constraintBottom\_toTopOf="@+id/guideline2"  
app:layout\_constraintEnd\_toEndOf="parent"  
app:layout\_constraintTop\_toTopOf="@+id/guideline2"**/>  
  
<**androidx.constraintlayout.widget.Guideline  
android:id="@+id/guideline2"  
android:layout\_width="wrap\_content"  
android:layout\_height="wrap\_content"  
android:orientation="horizontal"  
app:layout\_constraintGuide\_percent="0.5"**/>  
  
<**TextView  
android:id="@+id/subText"  
android:layout\_width="wrap\_content"  
android:layout\_height="wrap\_content"  
android:layout\_marginEnd="176dp"  
android:layout\_marginRight="176dp"  
android:layout\_marginBottom="44dp"  
android:text="TextView"  
app:layout\_constraintBottom\_toTopOf="@+id/button\_On"  
app:layout\_constraintEnd\_toEndOf="parent"**/>  
  
</**androidx.constraintlayout.widget.ConstraintLayout**>

Bước 4: Vào MainActivity.java nhập code

**public class**MainActivity **extends**AppCompatActivity {  
**static**String *MQTTHOST*= **"tcp://m16.cloudmqtt.com:15879"**;  
**static**String *USERNAME*= **"crlyrryq"**;  
**static**String *PASSWORD*= **"J1fdZXSDRxq5"**;  
String **guiDl**= **"LED"**;  
String **nhanDl**= **"KQ"**;  
MqttAndroidClient **client**;  
TextView **subText**;  
  
@Override  
**protected void**onCreate(Bundle savedInstanceState) {  
**super**.onCreate(savedInstanceState);  
setContentView(R.layout.***activity\_main***);  
  
**subText**= (TextView)findViewById(R.id.***subText***);  
  
String clientId = MqttClient.*generateClientId*();  
**client**= **new**MqttAndroidClient(**this**.getApplicationContext(), *MQTTHOST*, clientId);  
MqttConnectOptions options = **new**MqttConnectOptions();  
options.setUserName(*USERNAME*);  
options.setPassword(*PASSWORD*.toCharArray());  
  
**try**{  
IMqttToken token = **client**.connect(options);  
token.setActionCallback(**new**IMqttActionListener() {  
@Override  
**public void**onSuccess(IMqttToken asyncActionToken) {  
Toast.*makeText*(MainActivity.**this**,**"Ket noi thanh cong!"**,Toast.***LENGTH\_SHORT***).show();  
setSubscription();  
}  
  
@Override  
**public void**onFailure(IMqttToken asyncActionToken, Throwable exception) {  
Toast.*makeText*(MainActivity.**this**,**"Ket noi khong thanh cong!"**,Toast.***LENGTH\_SHORT***).show();  
}  
});  
} **catch**(MqttException e){  
e.printStackTrace();  
}  
  
**client**.setCallback(**new**MqttCallback() {  
@Override  
**public void**connectionLost(Throwable cause) {  
  
}  
  
@Override  
**public void**messageArrived(String topic, MqttMessage message) **throws**Exception {  
**subText**.setText(**new**String(message.getPayload()));  
  
}  
  
@Override  
**public void**deliveryComplete(IMqttDeliveryToken token) {  
  
}  
});  
  
  
}  
**public void**batDen(View view){  
String topic = **guiDl**;  
String message = **"On"**;  
**try**{  
**client**.publish(topic, message.getBytes(), 0, **false**);  
} **catch**(MqttException e){  
e.printStackTrace();  
}  
}  
  
  
**public void**tatDen(View view){  
String topic = **guiDl**;  
String message = **"Off"**;  
**try**{  
**client**.publish(topic, message.getBytes(), 0, **false**);  
} **catch**(MqttException e){  
e.printStackTrace();  
}  
}  
  
**private void**setSubscription(){  
**try**{  
**client**.subscribe(**nhanDl**, 0);  
} **catch**(MqttException e){  
e.printStackTrace();  
}  
}  
}

Chúc các bạn thành công!

