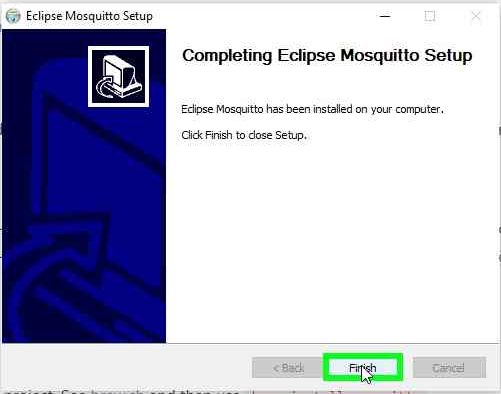
## Installations Procedures for Mosquitto

Mosquitto is highly portable and available for a wide range of platforms.

We will use **Windows 10** (Windows 10 Home Single Language — Version 10.0.18362 Compilation 18362). Please refer to [**mosquitto official page**](https://mosquitto.org/)first.

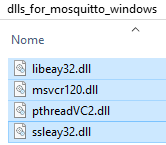
1° **Step** — Go to <https://mosquitto.org/download/> and for Windows get this file:

[mosquitto-1.6.8-install-windows-x64.exe](https://mosquitto.org/files/binary/win64/mosquitto-1.6.8-install-windows-x64.exe)

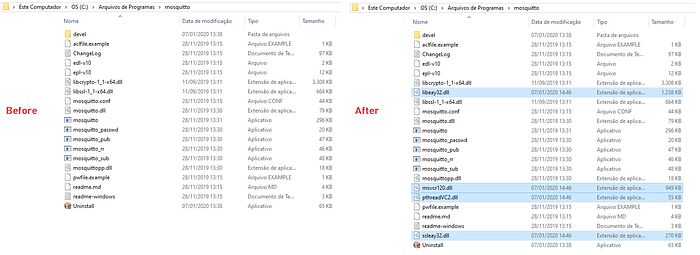


2° **Step** —**Adding Dependencies (Not Required)** files (.dll)

As you complete the Mosquitto installation, please copy/paste these dependencies files into the Mosquitto **root directory**

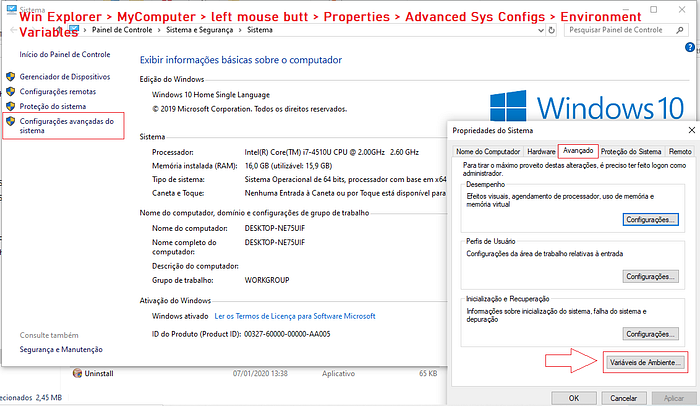


Administrator credentials might be asked as you are dealing with systems files;)

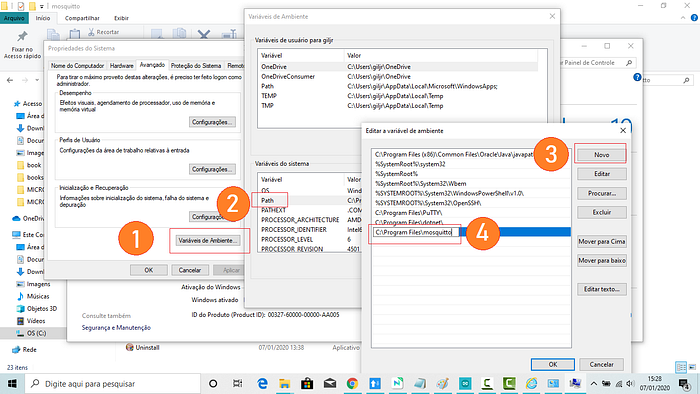


**mosquitto broker server** in my **windows 10 platform**; these extras .ddl files are related to **licenses policies** :/

3° **Step** — Go to **Windows Explorer** > **MyComputer**, left mouse click go to **Properties** > **Advanced Systems Configurations**



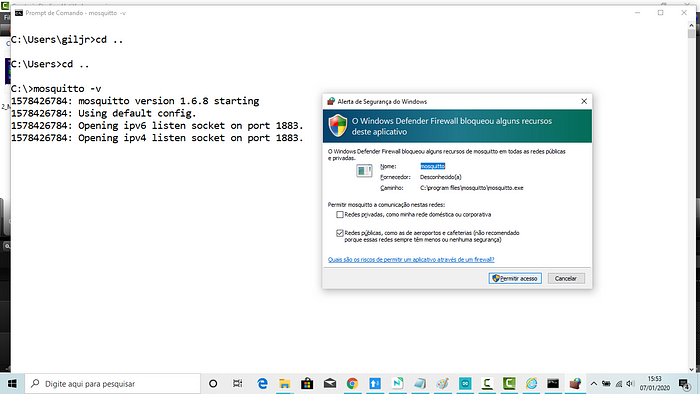
4° **Step** — Click **Environment Variables** (1), **Path** (2), **New** (3) and paste **C:\>Program Files\mosquitto** directory (4), **pointing to** mosquitto’s .**dll** & **.exe** files location. Click ok.



**Setting Environment pat**h: Now when you type at the console, mosquitto commands will be recognized;

5° **Step** — Open **Cmd Prompter**, go to **C:\>** and **type:**

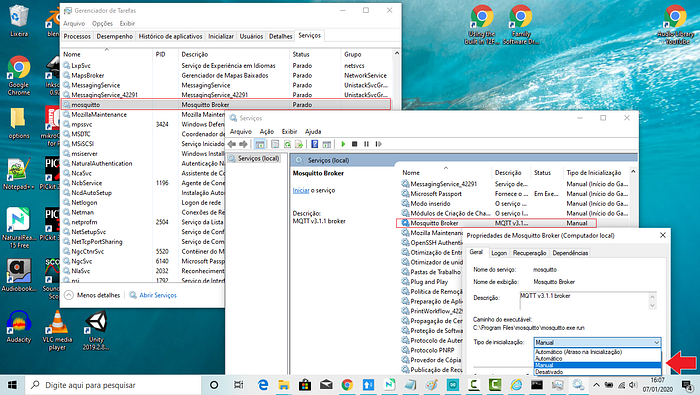
**C:\>mosquitto -v**



**MQTT** server runs at **PORT 1883**; If secure communication (**SLL/TLS**), it will run at **PORT 8883;**

6° **Step** —Set mosquitto service as **Manual**;

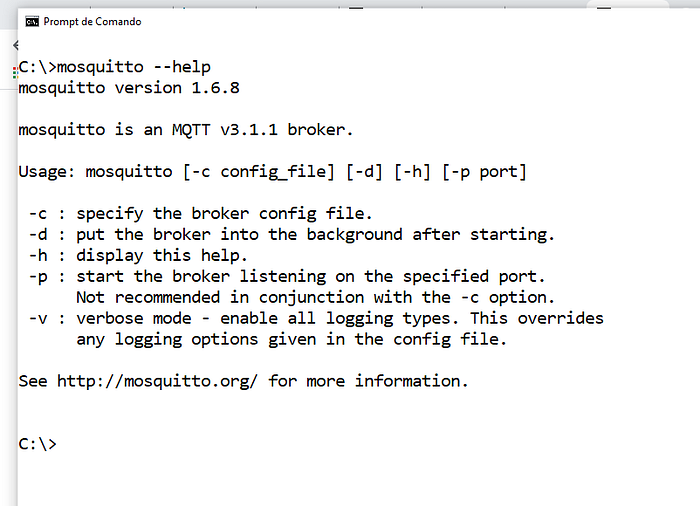
Go to Services > Properties > Initializations > and set it as **Manual**



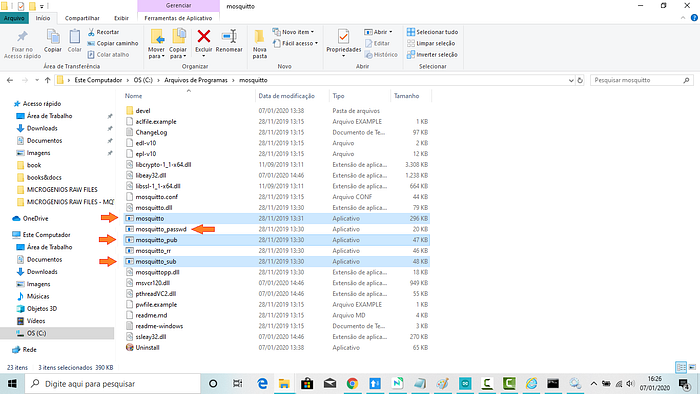
**Manual** Now we want to have control over **mosquitto broker** initialization. Click ok and save it all.

7° **Step** — Testing the installations; at the console, type:

**C:\mosquitto - -help**



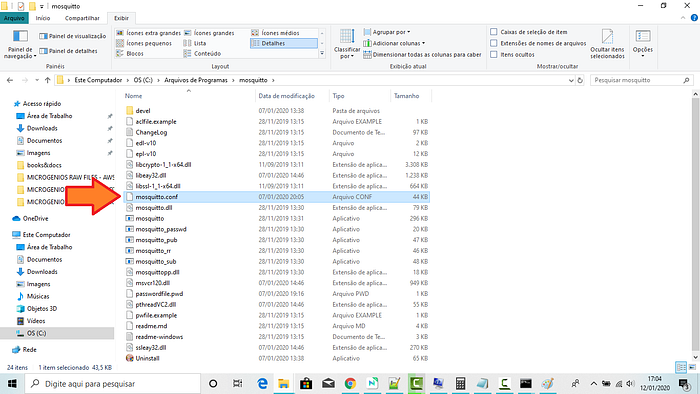
8° **Step** — As the broker’s clients can be **server**, **publisher**, **subscriber**, and **password services,** mosquitto API brings us these **four** executables **programs**.



**Mosquitto API** is composed of these **four** programs: **Broker**, **Publisher**, **Subscriber,** and **Password** Service.

9Step — **Communications test;**

The **mosquitto.conf** is the configuration file for mosquitto. In this first configuration, a similar internal file will be loaded by mosquito broker automatically, and its default configuration authorizes anonymous access:/



**C:\Program Files\mosquitto**

In **anonymous** access, we will **now up the default broker configuration**, remember, without modification of mosquitto.conf

Here are the steps:

10° Step — **Install mosquitto broker** in your machine & **reconfigure** its service in **Win10** so we can start & stop it **manually**;

Consider following [this](https://medium.com/jungletronics/mosquitto-intro-to-mqtt-ea4f7ea589ba) post:)

## Preparing 3 Prompters Terminals

Open **Three Terminals**; type these commands in each one:

**cd.. (2x)** // go to c:/> directory

**cd C:\Program Files\mosquitto** // change to mosquitto directory

**cls** // clear the screen;)

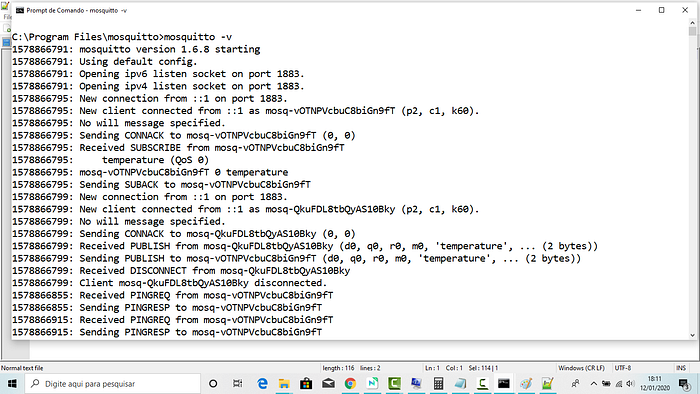
First, anonymous access:

## Anonymous Acess

111° Step —Let’s run the **server:**

On **Term1**, in **C:\Program Files\mosquitto\** directory, **type**:

**mosquitto -v**



**-v (verbose)** all event will be dump to the terminal

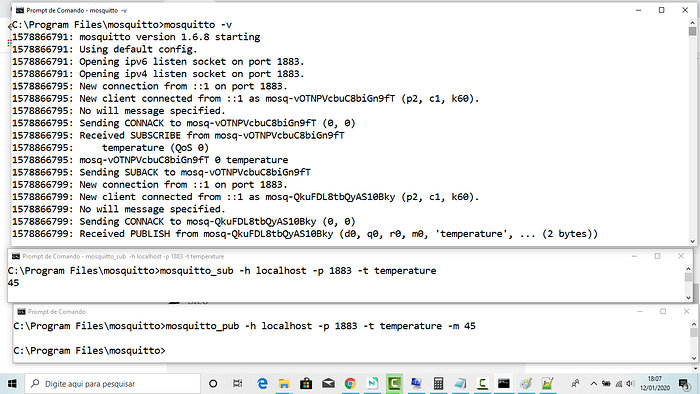
12Step — At others two terminals in sequence for **sub & pub clients**, type:

**Term\_2**, For **\_sub**, in **C:\Program Files\mosquitto\** directory, **type**:

**mosquitto\_sub -h localhost -p 1883 -t temperature**

**Term\_3**, For **\_pub,** in **C:\Program Files\mosquitto\** directory, **type**:

**mosquitto\_pub -h localhost -p 1883 -t temperature -m 45**



See the dump file in the admin broker terminal above. See that the clients are **anonymous** —this is very dangerous on the internet**:/**

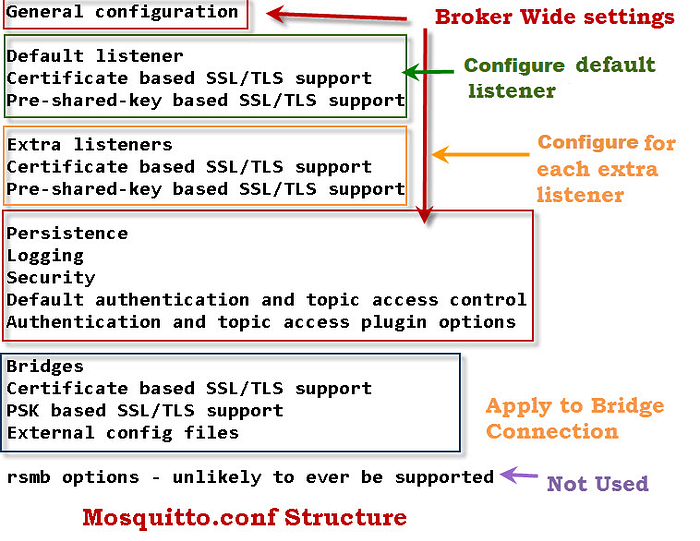
1578781497: New client connected from ::1 as mosq-5eKhup3oVmPBaNaZnW **(p2, c1, k60).**

# Simple Authentication Access (Not Required/Optional)

Now let’s fix anonymous access by setting a **login/passwd** connection.

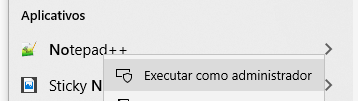
Anonymous clients will be refused to connect.

For this, we will have to edit, **as administrator credentials**, the **mosquitto.conf** file. Here is the structure of it:



[Quick Guide to The Mosquitto.conf File With Examples](http://www.steves-internet-guide.com/mossquitto-conf-file/))

As you know, this file is located **at system file**, so we need to open this file in [**notepad++**](https://notepad-plus-plus.org/downloads/) editor like administrator:



[notepad ++](https://notepad-plus-plus.org/downloads/) for mosquitto.conf editting — Note: You can configure a broker to listen on a port and **require SSL** and also to listen on another port and **not use SSL**.

To **create a password file** you need to use the **mosquitto\_passwd** utility that comes with the **client tools** when installing the mosquitto broker.

To initialize the configuration of authenticated access, at **Term\_01**, we will need to **stop the server** (ctrl + C) and use the command below to create **passwordfile.pwd** file that will be located at **C:\Program Files\mosquitto** directory; our administrator will be **admin** user and our **password** will be **123**;

13º Step —On Term 1, on **C:\Program Files\mosquitto\** directory, **type**:

[**mosquitto\_passwd**](https://mosquitto.org/man/mosquitto_passwd-1.html) **-c "C:\Program Files\mosquitto\passwordfile.pwd" admin**

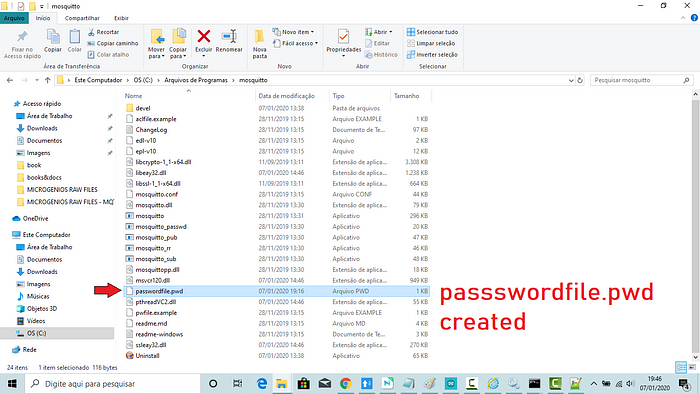
and hit **<enter>** and enter **2 x** the chosen **password (123)**;

This command creates **passwordfile.pwd** file and set as our administrator **admin** user, password **123**;)

Your file for user configuration is ready at C:\ProgramFiles\mosquitto\ directory!

**Admin** is the name of our first and our main **user**;

14° Step — Go to **C:\Program Files\mosquitto** directory and see the file created there:



**C:\Program Files\mosquitto\ directory**

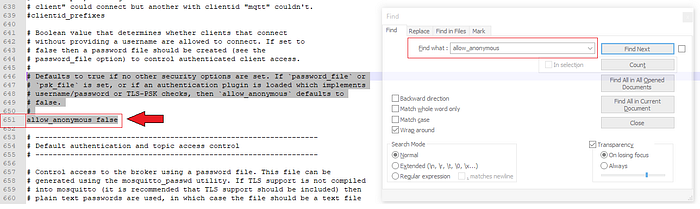
If we open this new file as text, **passwordfile.pwd,** we will see the **admin user** credentials:

**admin:$6$sEorGWHKkOfEI8qJ$nxEMynuvKuguXqbYq7TWBsSAxEDon/MuK0pFo4Cm0yOK29m/I0yi6y3zFzuJeFXRT9DgyVVLDS/wO72CADlIaw==**

15°Step — Now open C:\Program Files\mosquitto\**mosquitto.conf.**

At **line 651**, **uncomment** it and **set** it to **false,** like this:

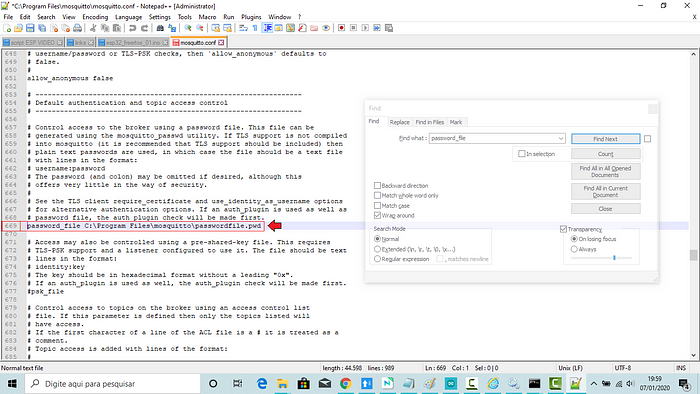
**allow\_anonymous false**



**allow\_anonymous false**

16°Step — Scrolling down enough until **line 669**, **uncomment it** and set it to the directory **location** of **password file config**, like this:

**password\_file "C:\Program Files\mosquitto\passwordfile.pwd"**



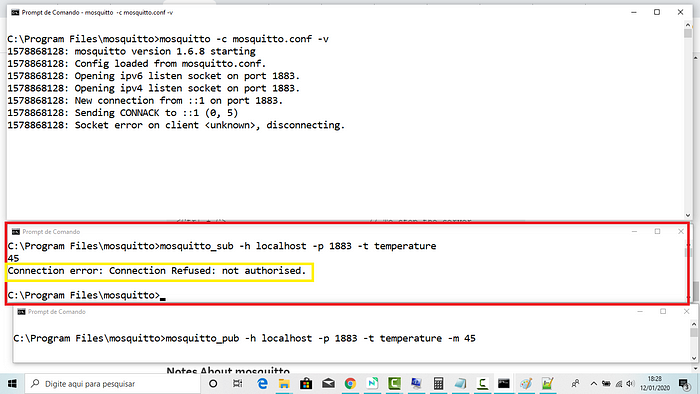
Save the file and now start the server again.

17°Step — At **Terminal 1**, **type** (run as Administrator, please):

<Ctrl + C> // To stop the server

**mosquitto -c mosquitto.conf -v** // to run it with loaded file

This will **break the connection of the anonymous client:**

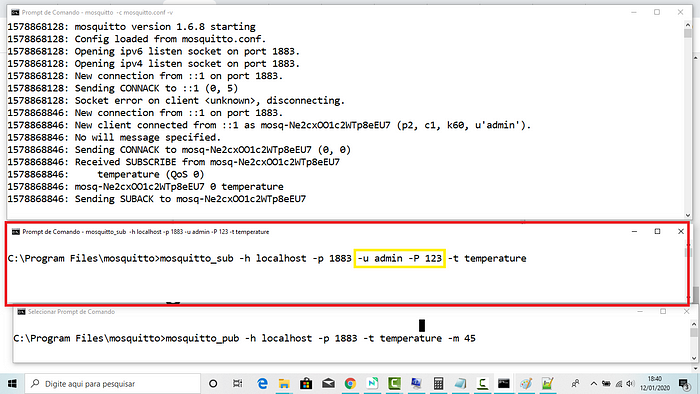


**Connection error: Connection Refused: not authorised.** (sic)

18°Step — Now let’s test if the admin user can **subscribe** topic:

At **Terminal 2**, **type**:

mosquitto**\_sub** -h localhost -p 1883 **-u admin -P 123** -t temperature

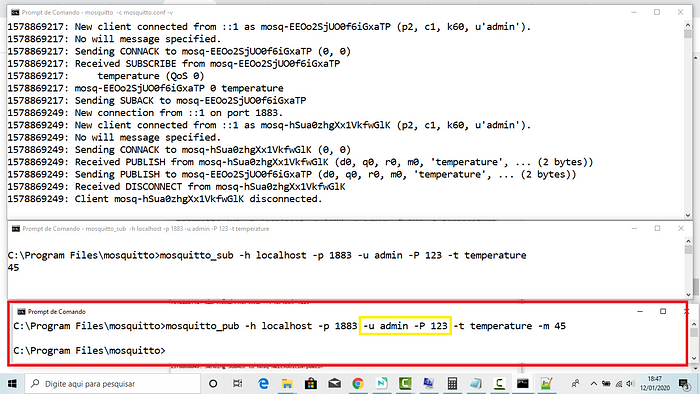


**subscribing** at the second terminal

19°Step — Now let’s test if the admin user can **publish** to the same topic.

At **Terminal 3**, **type** (run as Administrator, please):

mosquitto**\_pub** -h localhost -p 1883 **-u admin -P 123** -t temperature -m 45



**publishing** at the third terminal

And there you have it! **no more anonymous user!**

20°Step — On Windows, open three prompt Terminals (one as administrator) and type on Terminal #01 (I assumed you follow this MQTT series:)

mosquito - c mosquitto.conf -v

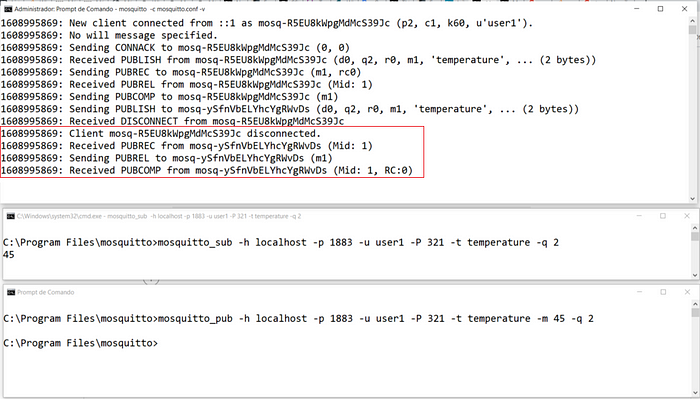
At Terminal #02:

mosquitto\_sub -h localhost -p 1883 -u user1 - P 321 -t temperature -q 2

And Finally at Terminal #03:

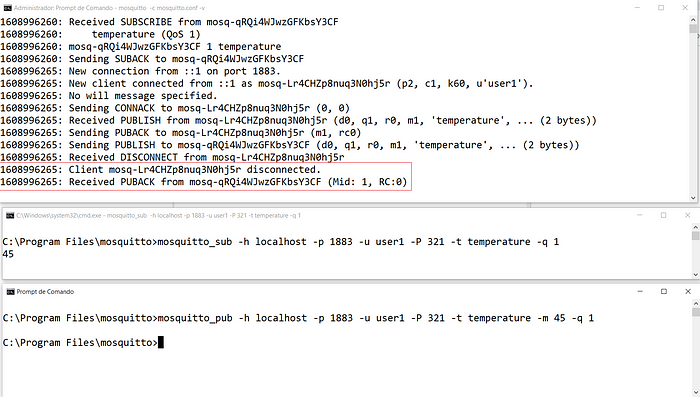
mosquitto\_pub -h localhost -p 1883 -u user1 - P 321 -t temperature -m 45 -q 2

See everything working below:



**PUBREC** = message received acknowledgement; **PUBREL** = message release ; **PUBCOMP** = the process is complete (the message can be deleted from the queue)

Now let’s set the level of QoS to 1:



**PUBACK** = message acknowledgement

Now the lowest possible level, QoS 0:

