HW2 SIOT

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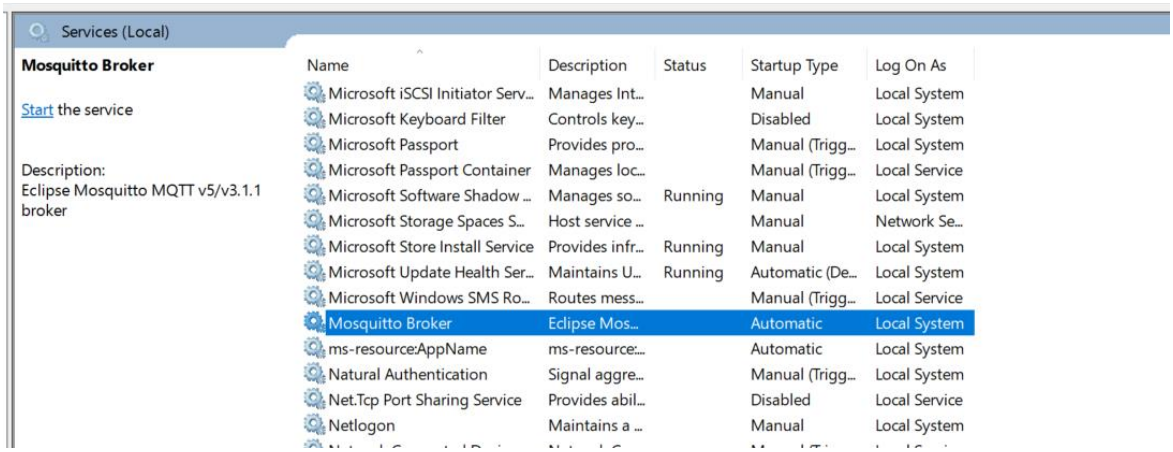
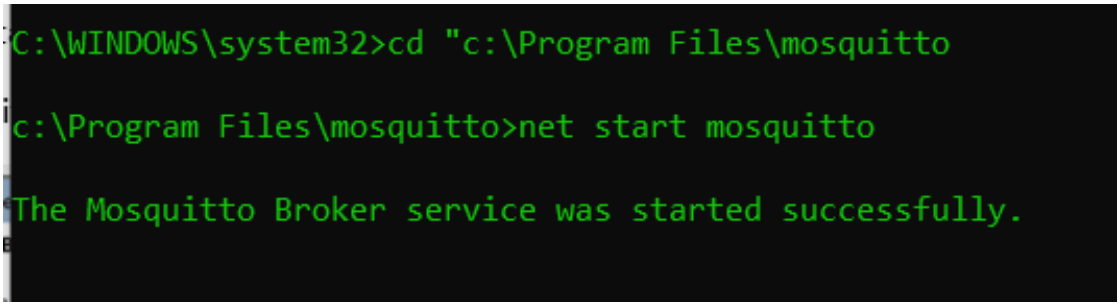
DR SIAVASH AHMADI

First we install the mosquitto

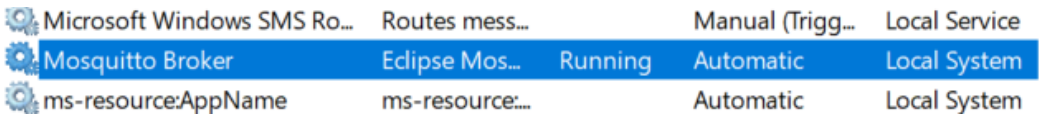
First mosquitto isnt started so we start mosquitto by command below



First we have to run cmd with run as adminstator then you can see what we should do:



We can see in services brooker is running

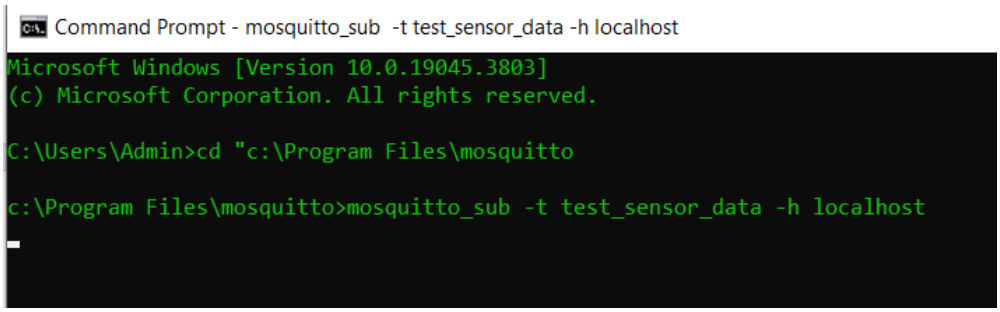


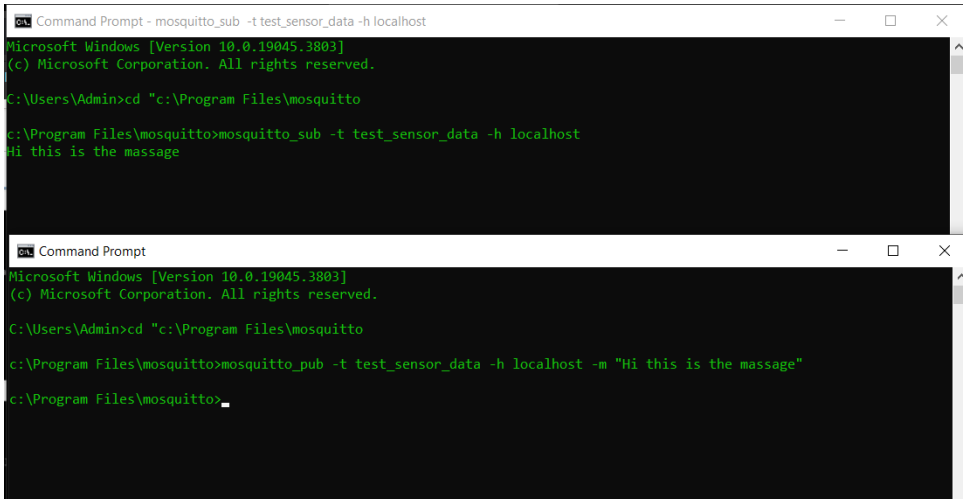
To verify that the investigator service is running we execute the netstat command:

```
c:\Program Files\mosquitto>netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            bs:0                   LISTENING
  TCP    0.0.0.0:445            bs:0                   LISTENING
  TCP    0.0.0.0:1947           bs:0                   LISTENING
  TCP    0.0.0.0:2638           bs:0                   LISTENING
  TCP    0.0.0.0:5040           bs:0                   LISTENING
  TCP    0.0.0.0:5357           bs:0                   LISTENING
  TCP    0.0.0.0:5426           bs:0                   LISTENING
  TCP    0.0.0.0:7070           bs:0                   LISTENING
  TCP    0.0.0.0:7680           bs:0                   LISTENING
  TCP    0.0.0.0:49664          bs:0                   LISTENING
  TCP    0.0.0.0:49665          bs:0                   LISTENING
  TCP    0.0.0.0:49666          bs:0                   LISTENING
  TCP    0.0.0.0:49667          bs:0                   LISTENING
  TCP    0.0.0.0:49668          bs:0                   LISTENING
  TCP    0.0.0.0:49688          bs:0                   LISTENING
  TCP    0.0.0.0:54235          bs:0                   LISTENING
  TCP    0.0.0.0:54236          bs:0                   LISTENING
  TCP    127.0.0.1:1001         bs:0                   LISTENING
  TCP    127.0.0.1:1337         bs:0                   LISTENING
  TCP    127.0.0.1:1883         bs:0                   LISTENING
  TCP    127.0.0.1:4410         bs:0                   LISTENING
  TCP    127.0.0.1:7980         bs:0                   LISTENING
  TCP    127.0.0.1:13339        bs:0                   LISTENING
  TCP    127.0.0.1:13340        bs:0                   LISTENING
  TCP    127.0.0.1:13344        bs:0                   LISTENING
  TCP    127.0.0.1:64203        bs:0                   LISTENING
  TCP    192.168.1.109:139      bs:0                   LISTENING
  TCP    192.168.1.109:49406    20.250.77.142:https    ESTABLISHED
  TCP    192.168.1.109:49697    a23-15-178-179:https   CLOSE_WAIT
```

Now we are going to start testing:

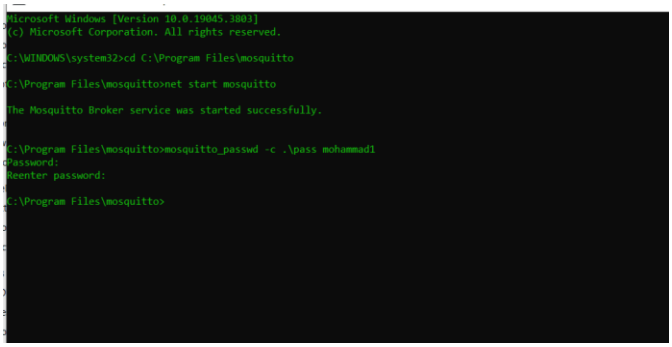
We are going to use mosquitto_sub command (https://mosquitto.org/man/mosquitto_sub-1.html)

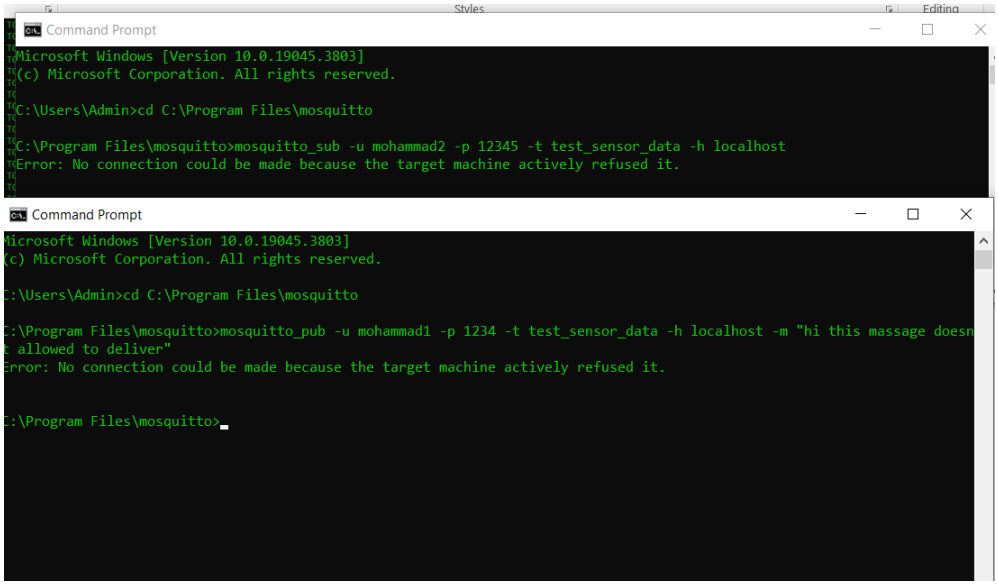


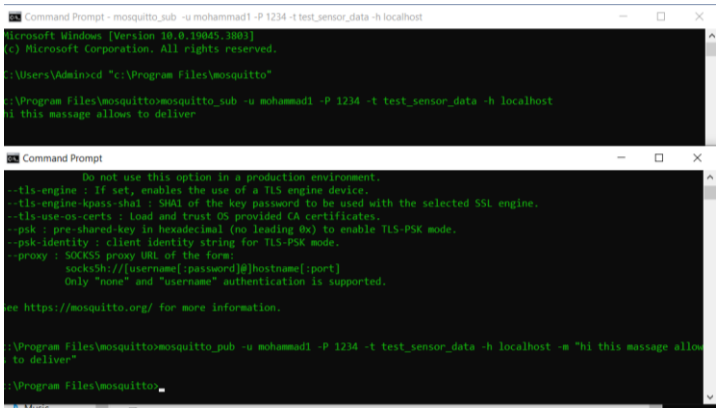


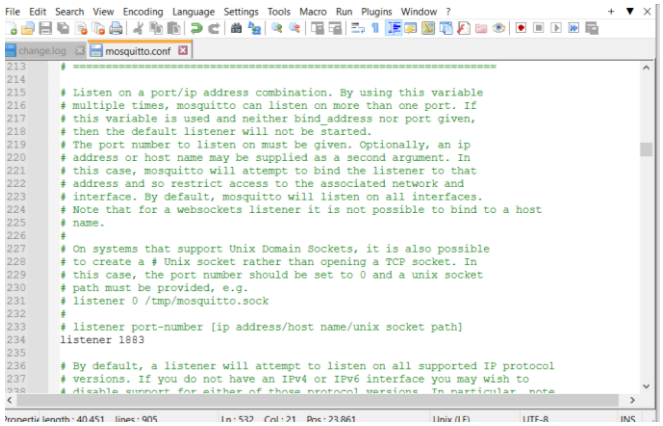
`[-h hostname] , [-t message-topic...] [-m message ]`

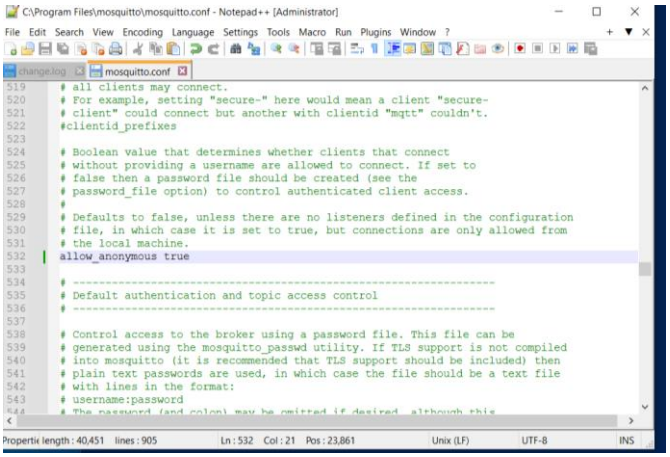
Aut

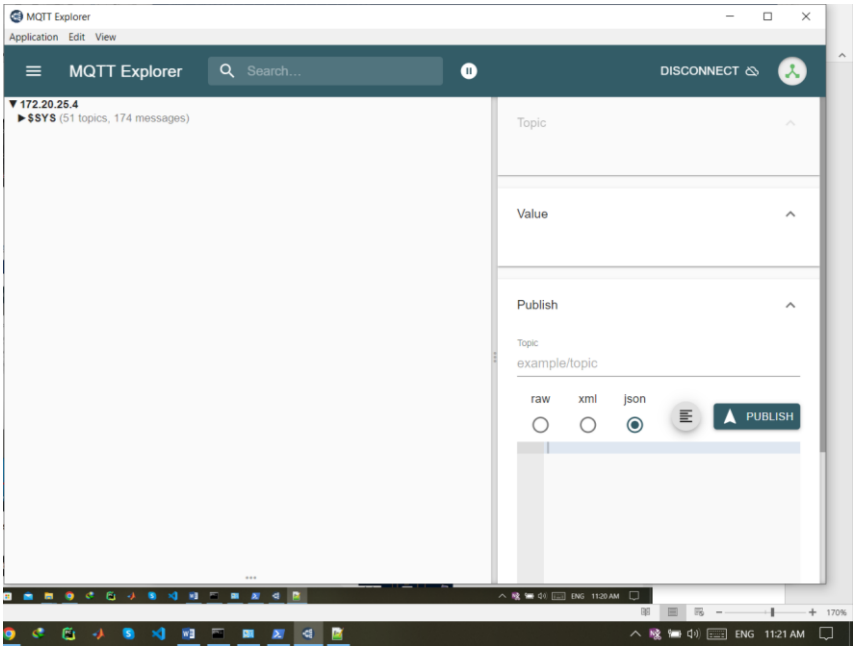


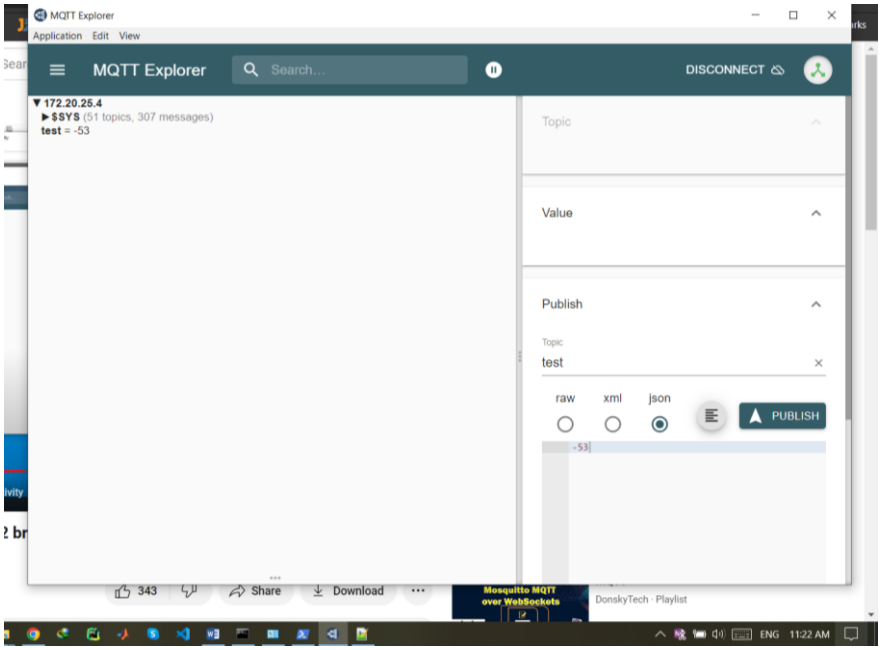


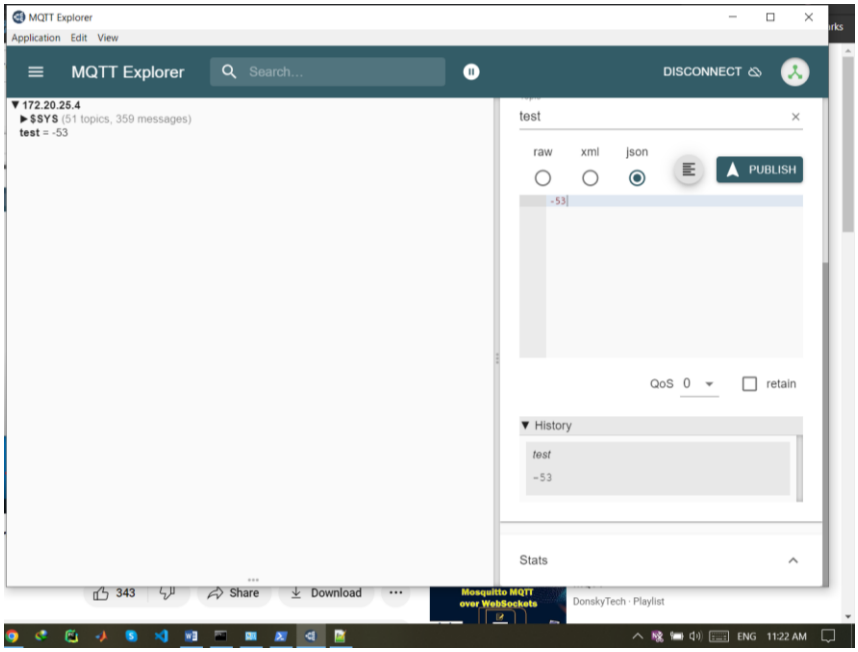


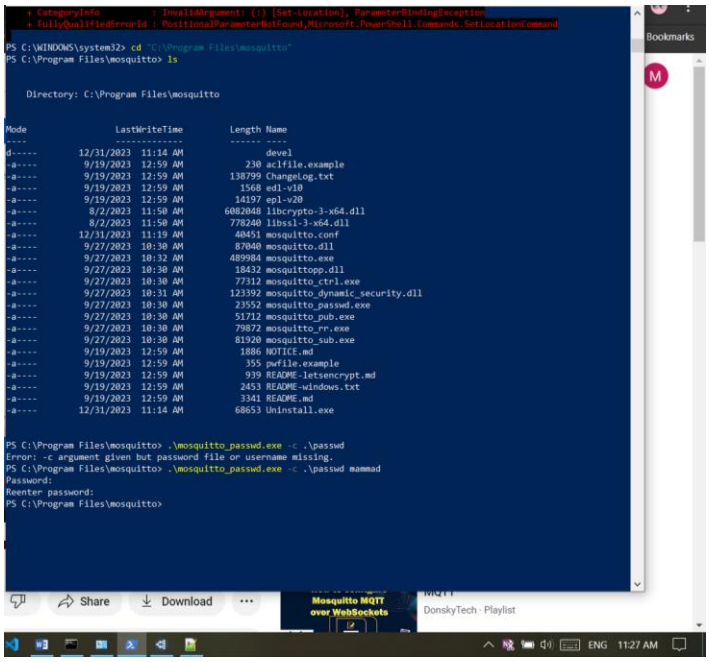

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
change.log
mosquitto.conf
Listen on a port/ip address combination. By using this variable
multiple times, mosquitto can listen on more than one port. If
this variable is used and neither bind_address nor port given,
then the default listener will not be started.
The port number to listen on must be given. Optionally, an ip
address or host name may be supplied as a second argument. In
this case, mosquitto will attempt to bind the listener to that
address and so restrict access to the associated network and
interface. By default, mosquitto will listen on all interfaces.
Note that for a websockets listener it is not possible to bind to a host
name.
#
On systems that support Unix Domain Sockets, it is also possible
to create a # Unix socket rather than opening a TCP socket. In
this case, the port number should be set to 0 and a unix socket
path must be provided, e.g.
listener 0 /tmp/mosquitto.sock
#
listener port-number [ip address/host name/unix socket path]
listener 1883
By default, a listener will attempt to listen on all supported IP protocol
versions. If you do not have an IPv4 or IPv6 interface you may wish to

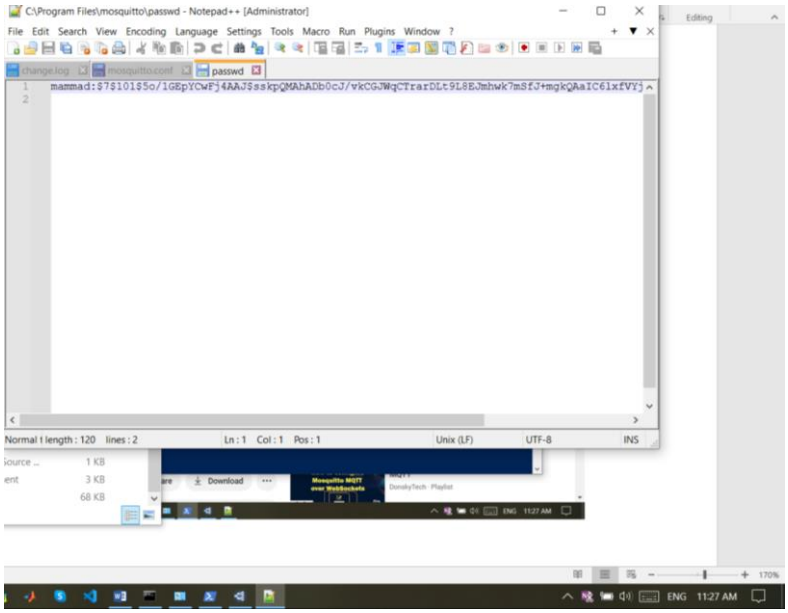

C:\Program Files\mosquitto\mosquitto.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
change.log
mosquitto.conf
all clients may connect.
For example, setting "secure-" here would mean a client "secure-
client" could connect but another with clientid "mqtt" couldn't.
#clientid_prefixes
Boolean value that determines whether clients that connect
without providing a username are allowed to connect. If set to
false then a password file should be created (see the
password_file option) to control authenticated client access.
#
Defaults to false, unless there are no listeners defined in the configuration
file, in which case it is set to true, but connections are only allowed from
the local machine.
allow_anonymous true
Default authentication and topic access control
Control access to the broker using a password file. This file can be
generated using the mosquitto_passwd utility. If TLS support is not compiled
into mosquitto (it is recommended that TLS support should be included) then
plain text passwords are used, in which case the file should be a text file
with lines in the format:
username:password
Propertie length : 40,451 lines : 905
Ln : 532 Col : 21 Pos : 23,861
Unix (LF)
UTF-8
INS

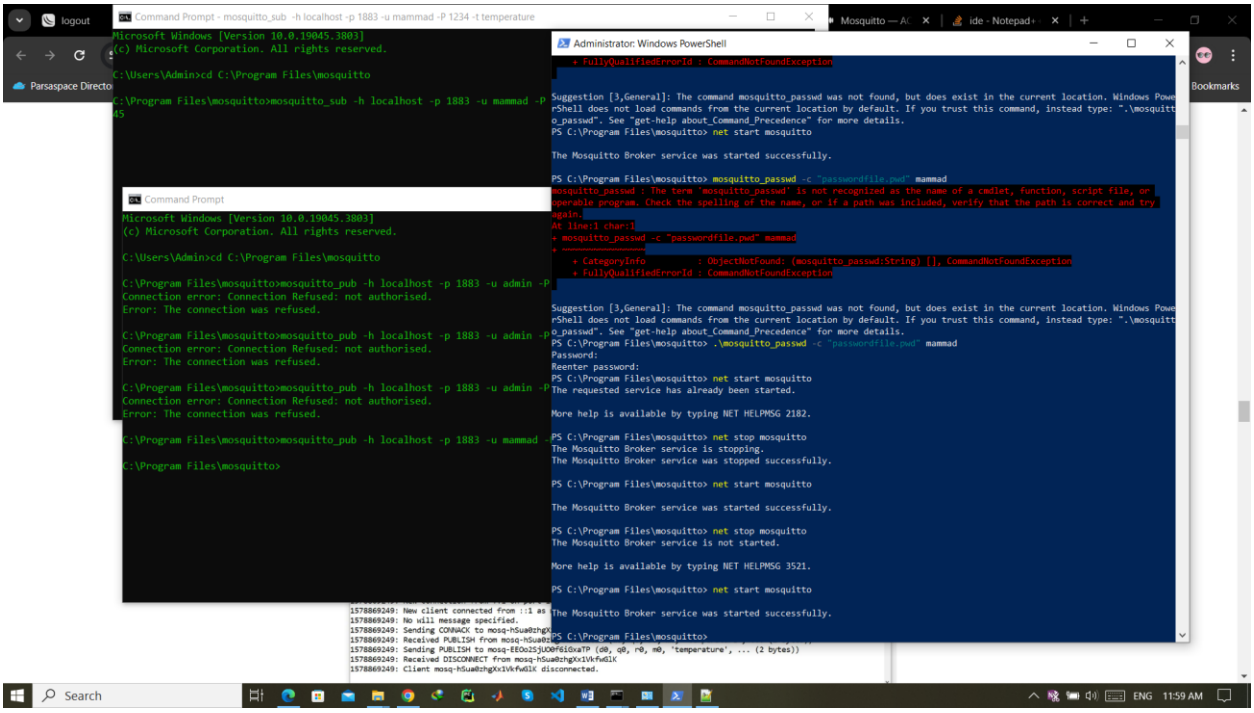

MQTT Explorer
Application Edit View
MQTT Explorer
Search...
DISCONNECT
172.20.25.4
$SYS (51 topics, 174 messages)
Topic
Value
Publish
Topic
example/topic
raw
xml
json
PUBLISH
ENG 11:21 AM


MQTT Explorer
Application Edit View
MQTT Explorer
Search...
DISCONNECT
172.20.25.4
$SYS (51 topics, 307 messages)
test = -53
Topic
Value
Publish
Topic
test
raw
xml
json
PUBLISH
-53
343
Share
Download
Mosquitto MQTT over WebSockets
DonskyTech · Playlist
ENG 11:22 AM

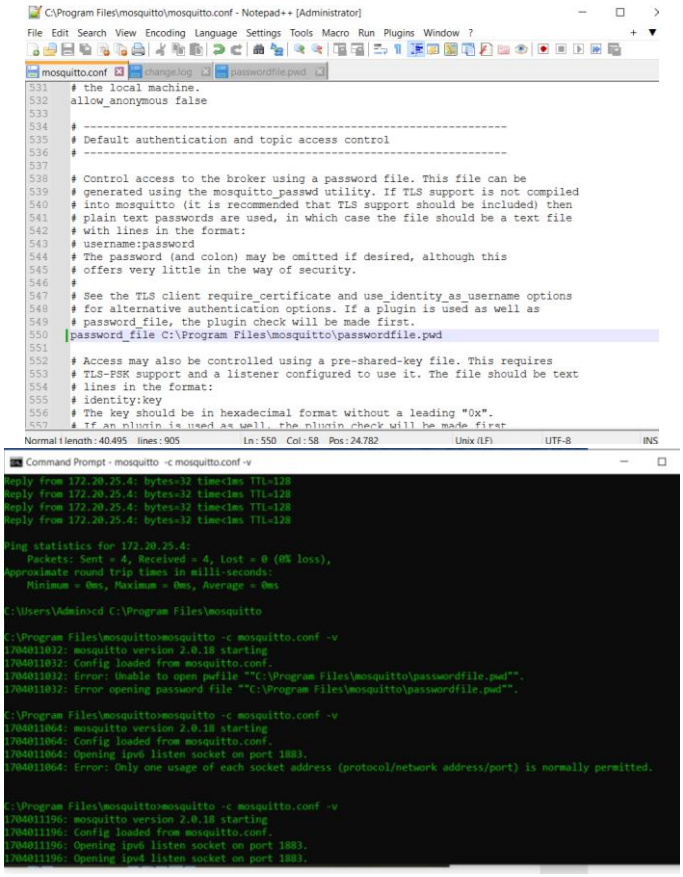

MQTT Explorer
Application Edit View
MQTT Explorer
Search...
DISCONNECT
172.20.25.4
$SYS (51 topics, 359 messages)
test = -53
test
raw
xml
json
PUBLISH
-53
QoS 0
retain
History
test
-53
Stats
343
Share
Download
Mosquitto MQTT over WebSockets
DonskyTech · Playlist
ENG 11:22 AM

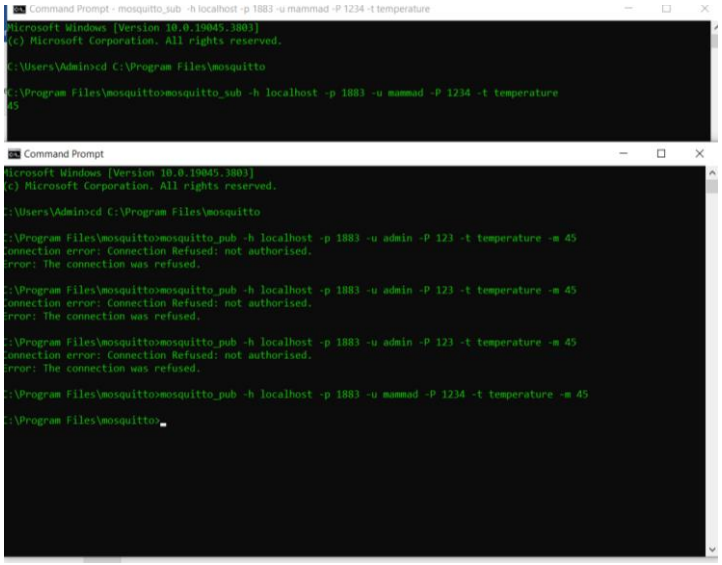

+ CategoryInfo : InvalidArgument: (:) [Set-Location], ParameterBindingException
+ FullyQualifiedErrorId : PositionalParameterNotFound,Microsoft.PowerShell.Commands.SetLocationCommand
PS C:\WINDOWS\system32> cd "C:\Program Files\mosquitto"
PS C:\Program Files\mosquitto> ls
Directory: C:\Program Files\mosquitto
Mode LastWriteTime Length Name
d----- 12/31/2023 11:14 AM devel
-a---- 9/19/2023 12:59 AM 230 aclfile.example
-a---- 9/19/2023 12:59 AM 138799 ChangeLog.txt
-a---- 9/19/2023 12:59 AM 1568 ed1-v10
-a---- 9/19/2023 12:59 AM 14197 epl-v20
-a---- 8/2/2023 11:50 AM 6082048 libcrypto-3-x64.dll
-a---- 8/2/2023 11:50 AM 778240 libssl-3-x64.dll
-a---- 12/31/2023 11:19 AM 40451 mosquitto.conf
-a---- 9/27/2023 10:30 AM 87040 mosquitto.dll
-a---- 9/27/2023 10:32 AM 489984 mosquitto.exe
-a---- 9/27/2023 10:30 AM 18432 mosquittopp.dll
-a---- 9/27/2023 10:30 AM 77312 mosquitto_ctrl.exe
-a---- 9/27/2023 10:31 AM 123392 mosquitto_dynamic_security.dll
-a---- 9/27/2023 10:30 AM 23552 mosquitto_passwd.exe
-a---- 9/27/2023 10:30 AM 51712 mosquitto_pub.exe
-a---- 9/27/2023 10:30 AM 79872 mosquitto_rr.exe
-a---- 9/27/2023 10:30 AM 81920 mosquitto_sub.exe
-a---- 9/19/2023 12:59 AM 1886 NOTICE.md
-a---- 9/19/2023 12:59 AM 355 pwfile.example
-a---- 9/19/2023 12:59 AM 939 README-letsencrypt.md
-a---- 9/19/2023 12:59 AM 2453 README-windows.txt
-a---- 9/19/2023 12:59 AM 3341 README.md
-a---- 12/31/2023 11:14 AM 68653 Uninstall.exe
PS C:\Program Files\mosquitto> .\mosquitto_passwd.exe -c .\passwd
Error: -c argument given but password file or username missing.
PS C:\Program Files\mosquitto> .\mosquitto_passwd.exe -c .\passwd mammad
Password:
Reenter password:
PS C:\Program Files\mosquitto>
Bookmarks
Share
Download
Mosquitto MQTT over WebSockets
DonskyTech · Playlist
ENG 11:27 AM


C:\Program Files\mosquitto\passwd - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
change.log
mosquitto.conf
passwd
1 mammad:$7$101$5o/1GEpYCwFj4AAJ$sskpQMAhADb0cJ/vkCGJWqCTrarDLt9L8EJmhwk7mSfJ+mgkQAaIC6lxfVYj
2
Normal t length : 120 lines : 2
Ln : 1 Col : 1 Pos : 1
Unix (LF)
UTF-8
INS
Editing
ENG 11:27 AM



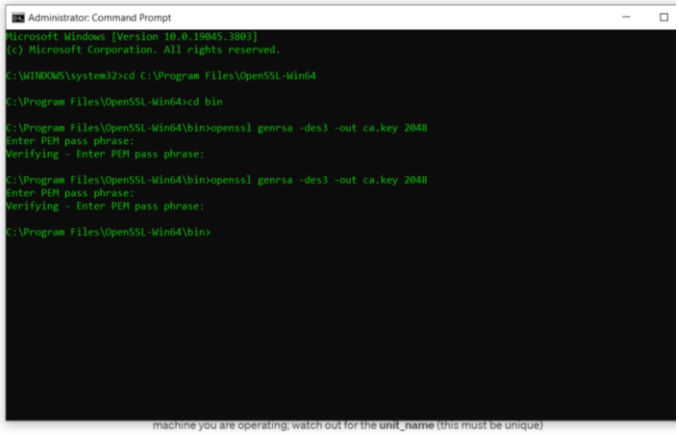
Error happens so:

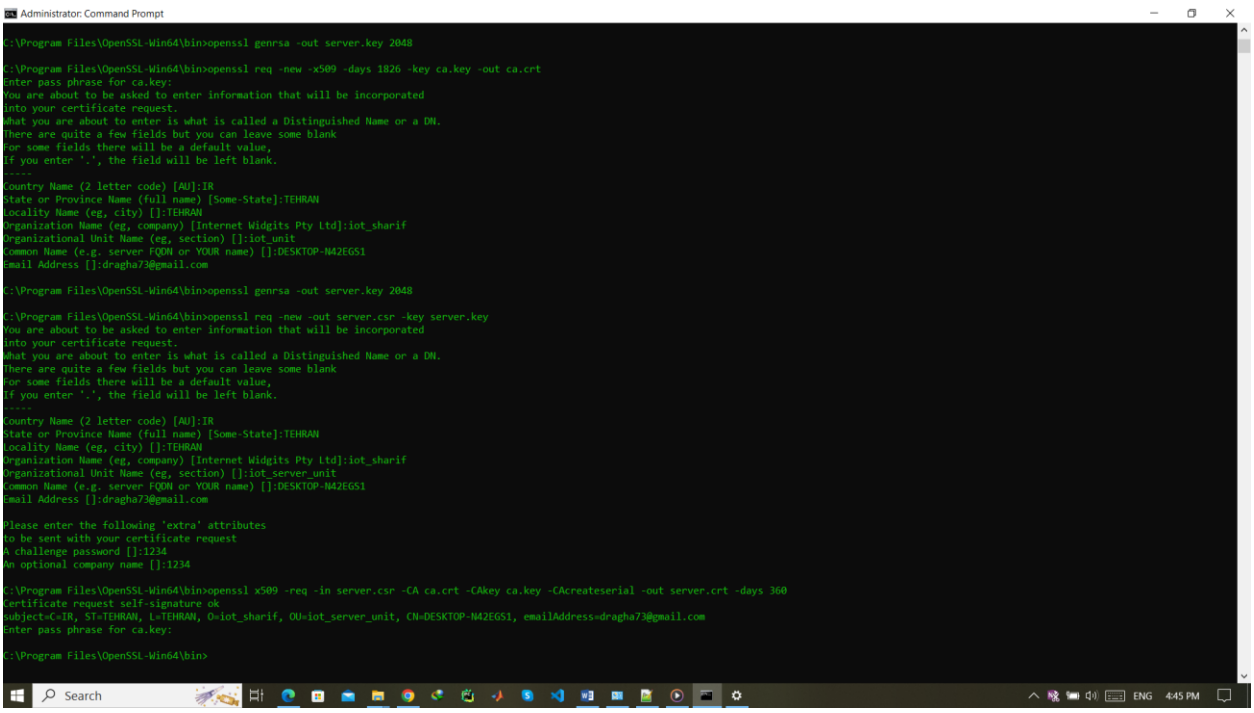




TSL:

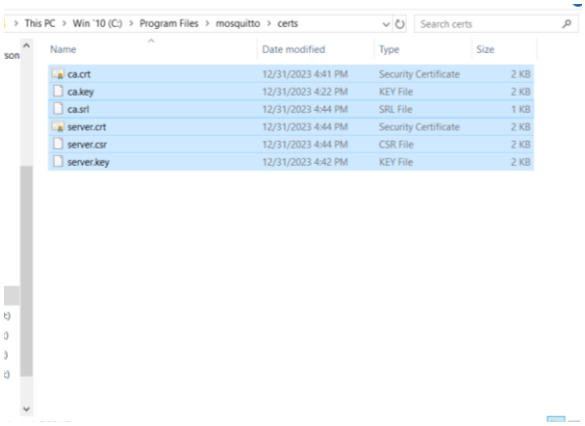
First we install open ssl



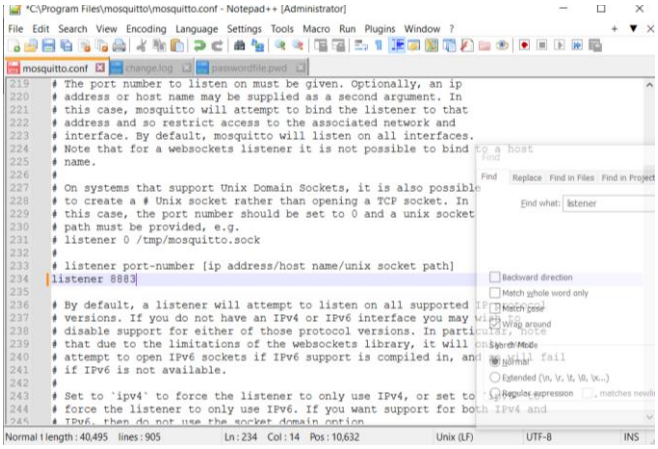


Transfer

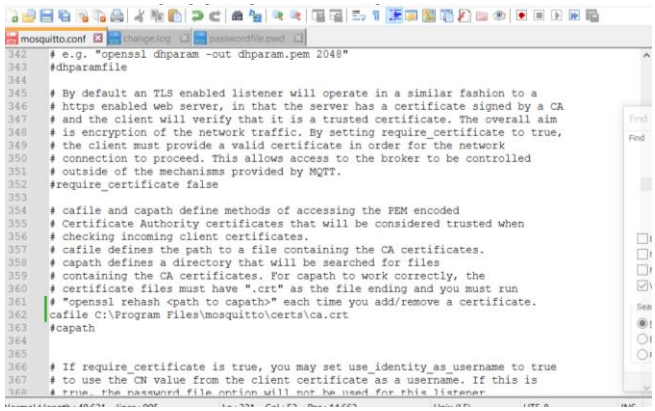
We transfer certificates file to mosquitto\certs and give this address to config

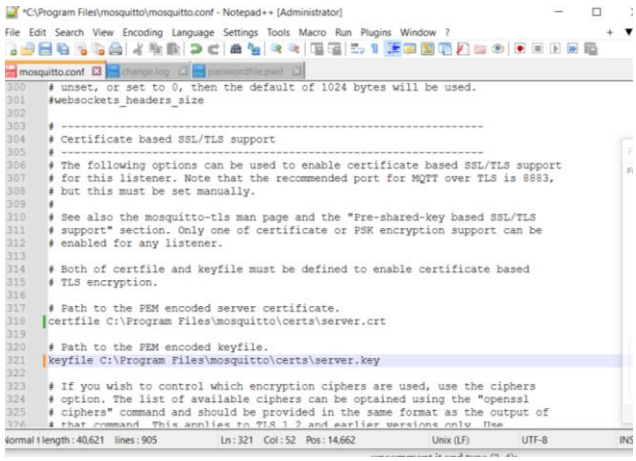


We change port to 8883 to test this in different port(other than 1883)

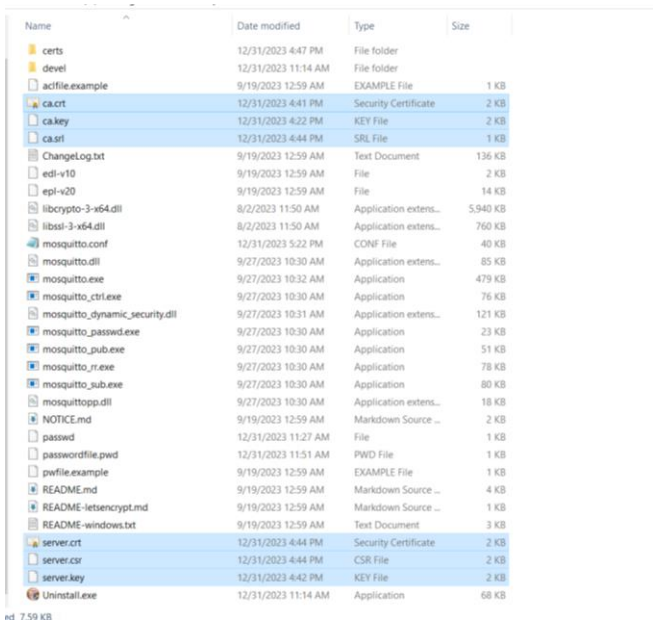


We define cafile C:\Program Files\mosquitto\certs\ca.crt, certfile C:\Program Files\mosquitto\certs\server.crt, keyfile C:\Program Files\mosquitto\certs\server.key in mosquito.conf



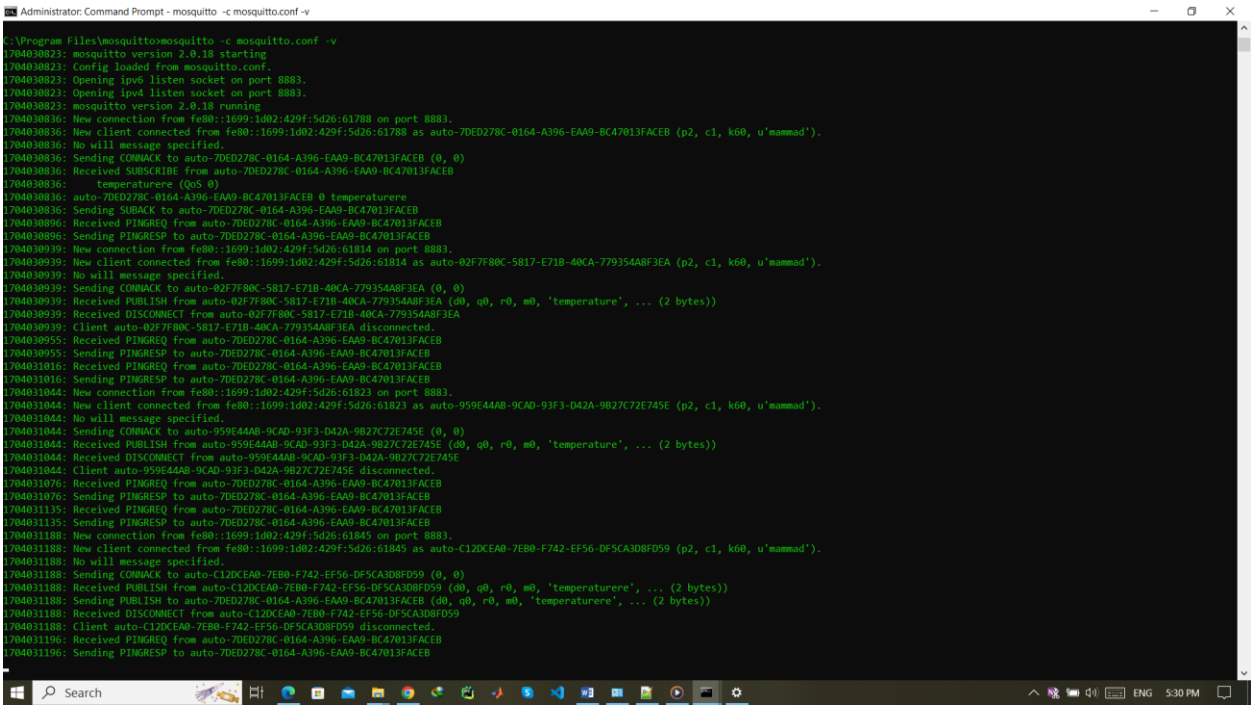


And due to this fact our mosquito_sub command is in mosquitto file we have to have a copy of certificate in mosquitto file (especially ca.crt others are ptional)

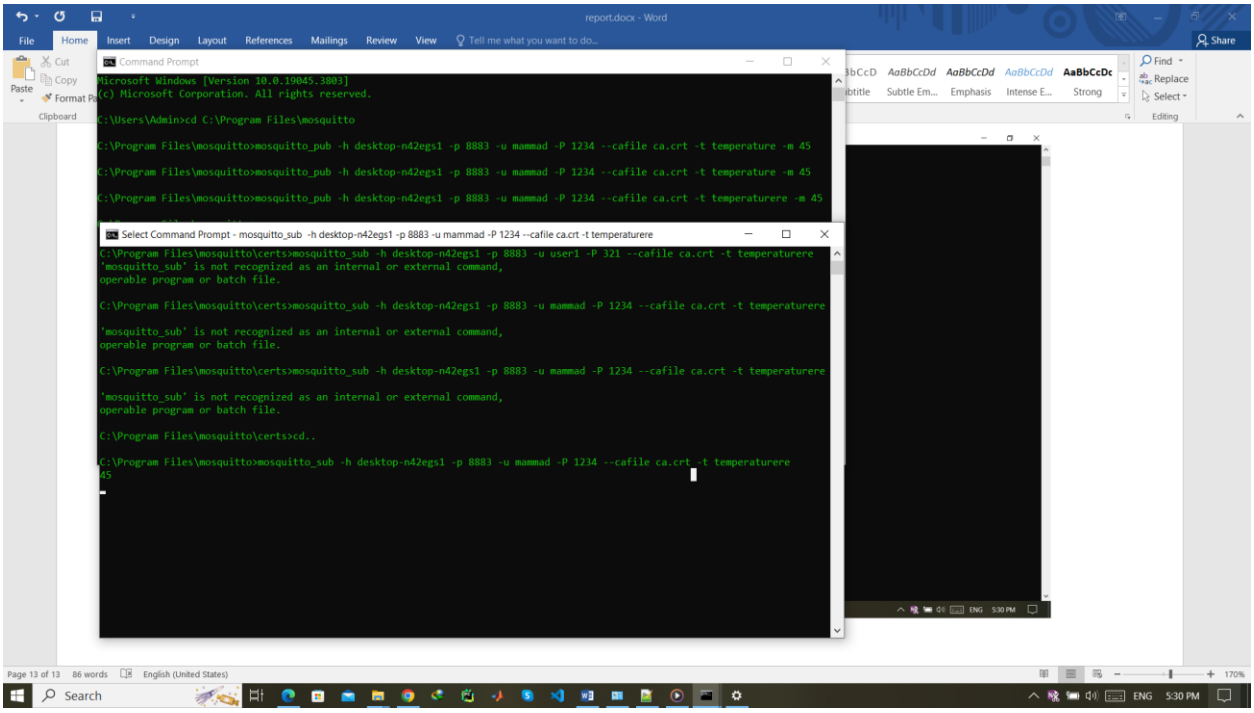


Name	Date modified	Type	Size
certs	12/31/2023 4:47 PM	File folder	
devel	12/31/2023 11:14 AM	File folder	
aclfile.example	9/19/2023 12:59 AM	EXAMPLE File	1 KB
ca.crt	12/31/2023 4:41 PM	Security Certificate	2 KB
ca.key	12/31/2023 4:22 PM	KEY File	2 KB
ca.srl	12/31/2023 4:44 PM	SRL File	1 KB
ChangeLog.txt	9/19/2023 12:59 AM	Text Document	136 KB
edl-v10	9/19/2023 12:59 AM	File	2 KB
epl-v20	9/19/2023 12:59 AM	File	14 KB
libcrypto-3-x64.dll	8/2/2023 11:50 AM	Application extens...	5,940 KB
libssl-3-x64.dll	8/2/2023 11:50 AM	Application extens...	760 KB
mosquitto.conf	12/31/2023 5:22 PM	CONF File	40 KB
mosquitto.dll	9/27/2023 10:30 AM	Application extens...	85 KB
mosquitto.exe	9/27/2023 10:32 AM	Application	479 KB
mosquitto_ctrl.exe	9/27/2023 10:30 AM	Application	76 KB
mosquitto_dynamic_security.dll	9/27/2023 10:31 AM	Application extens...	121 KB
mosquitto_passwd.exe	9/27/2023 10:30 AM	Application	23 KB
mosquitto_pub.exe	9/27/2023 10:30 AM	Application	51 KB
mosquitto_rr.exe	9/27/2023 10:30 AM	Application	78 KB
mosquitto_sub.exe	9/27/2023 10:30 AM	Application	80 KB
mosquittopp.dll	9/27/2023 10:30 AM	Application extens...	18 KB
NOTICE.md	9/19/2023 12:59 AM	Markdown Source ...	2 KB
passwd	12/31/2023 11:27 AM	File	1 KB
passwordfile.pwd	12/31/2023 11:51 AM	PWD File	1 KB
pwfile.example	9/19/2023 12:59 AM	EXAMPLE File	1 KB
README.md	9/19/2023 12:59 AM	Markdown Source ...	4 KB
README-letsencrypt.md	9/19/2023 12:59 AM	Markdown Source ...	1 KB
README-windows.txt	9/19/2023 12:59 AM	Text Document	3 KB
server.crt	12/31/2023 4:44 PM	Security Certificate	2 KB
server.csr	12/31/2023 4:44 PM	CSR File	2 KB
server.key	12/31/2023 4:42 PM	KEY File	2 KB
Uninstall.exe	12/31/2023 11:14 AM	Application	68 KB

ed 7.59 KB



Two first commands because the topic is different

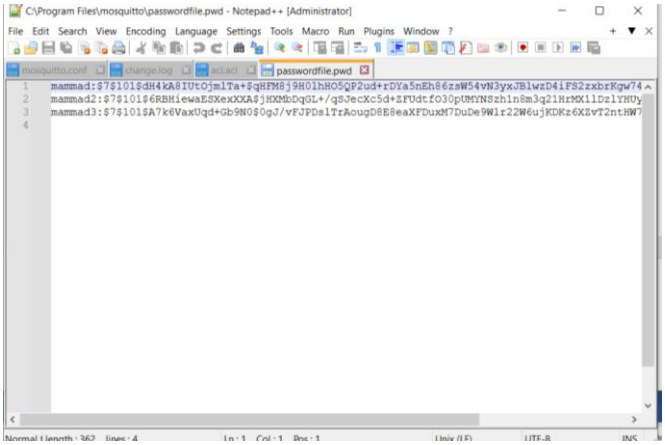


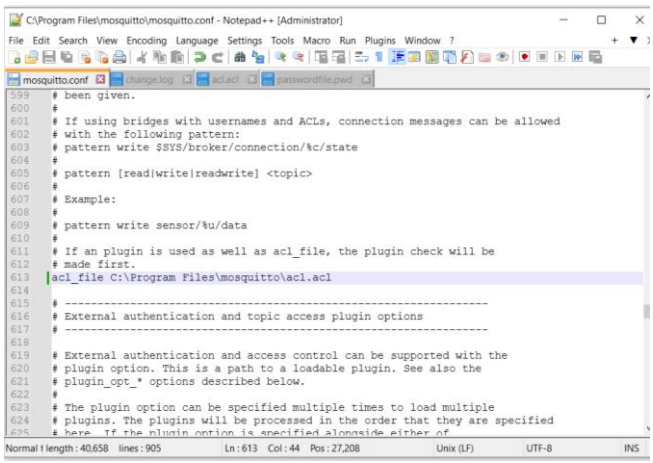
Acl:

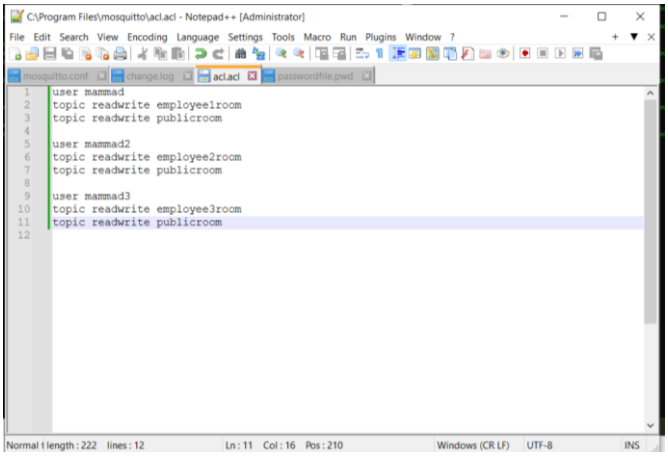
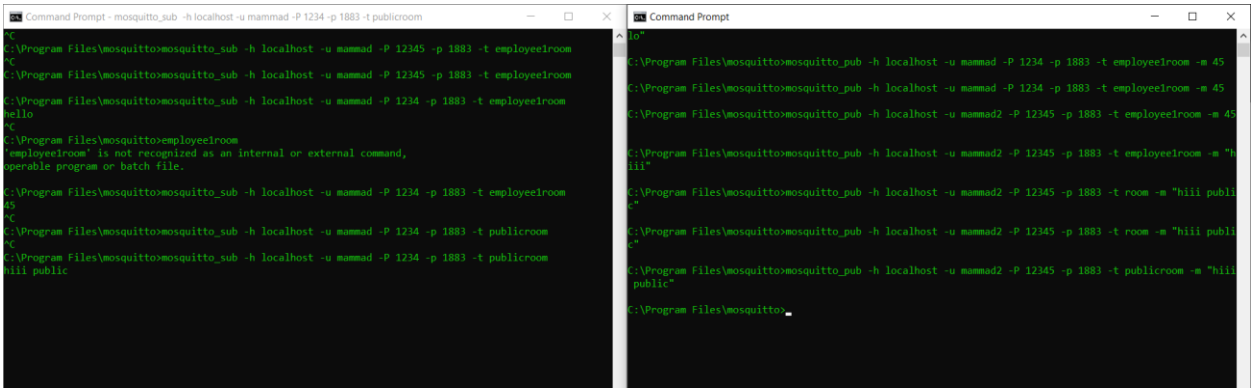
Mammad ->1234

Mammad2->12345

Mammad3->1234







For first massage (45) I didn’t save the config file so in the second pub we get the answer then I published with “mammad2” and I didn’t receive so I expected then I tried to publish in publicroom then I recognized I defined “topic read public room” then I changed that to “readwrite” after that I published in publicroom and I received the massage in public room