

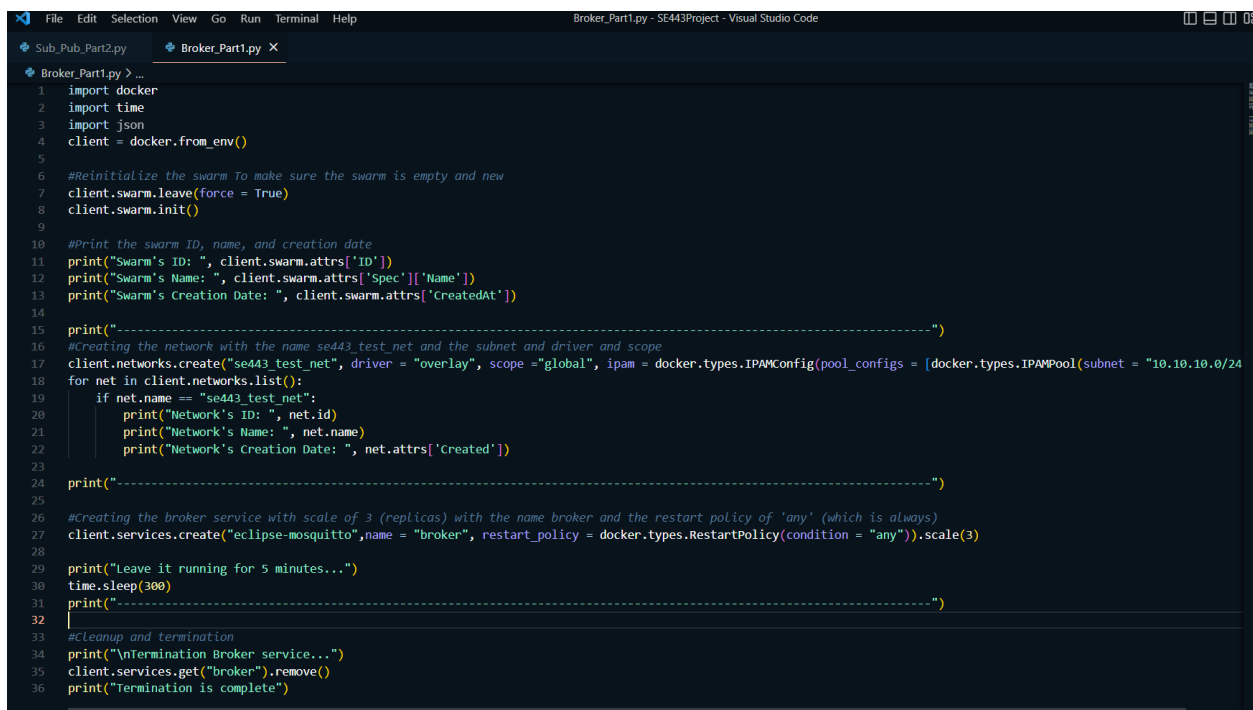
Meteb Almadi

200304

Github link: [https://github.com/metebalmadi/SE443Project\\_meteb\\_200304.git](https://github.com/metebalmadi/SE443Project_meteb_200304.git)

Screenshots:

Part 1 Code and output:



```
1 import docker
2 import time
3 import json
4 client = docker.from_env()
5
6 #Reinitialize the swarm To make sure the swarm is empty and new
7 client.swarm.leave(force = True)
8 client.swarm.init()
9
10 #Print the swarm ID, name, and creation date
11 print("Swarm's ID: ", client.swarm.attrs['ID'])
12 print("Swarm's Name: ", client.swarm.attrs['Spec']['Name'])
13 print("Swarm's Creation Date: ", client.swarm.attrs['CreatedAt'])
14
15 print("-----")
16 #Creating the network with the name se443_test_net and the subnet and driver and scope
17 client.networks.create("se443_test_net", driver = "overlay", scope = "global", ipam = docker.types.IPAMConfig(pool_configs = [docker.types.IPAMPool(subnet = "10.10.10.0/24
18 for net in client.networks.list():
19     if net.name == "se443_test_net":
20         print("Network's ID: ", net.id)
21         print("Network's Name: ", net.name)
22         print("Network's Creation Date: ", net.attrs['Created'])
23
24 print("-----")
25
26 #Creating the broker service with scale of 3 (replicas) with the name broker and the restart policy of 'any' (which is always)
27 client.services.create("eclipse-mosquitto", name = "broker", restart_policy = docker.types.RestartPolicy(condition = "any")).scale(3)
28
29 print("Leave it running for 5 minutes...")
30 time.sleep(300)
31 print("-----")
32
33 #Cleanup and termination
34 print("\nTermination Broker service...")
35 client.services.get("broker").remove()
36 print("Termination is complete")
```

Output:

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

```










PS C:\Users\meteb\OneDrive\Desktop\SE443Project> & C:\Users\meteb\AppData\Local\Microsoft\WindowsApps/python3.10.exe C:\Users\meteb\OneDrive\Desktop\SE443Project\Broker_Part1.py
Swarm's ID: vagt1xgzj6ug5pdr8zccjwjd
Swarm's Name: default
Swarm's Creation Date: 2022-12-22T18:48:35.6038218Z
-----
Network's ID: j71xyaxbm45gf2e3t8wodpng
Network's Name: se443_test_net
Network's Creation Date: 2022-12-22T18:48:36.1541525Z
-----
Leave it running for 5 minutes...
[]

```

```

ackaging-22.0 pywin32-305 requests-2.28.1 urllib3-1.26.13 websocket-client-1.4.2
PS C:\Users\meteb\OneDrive\Desktop\SE443Project>
History restored
PS C:\Users\meteb\OneDrive\Desktop\SE443Project> C:\Users\meteb\AppData\Local\Microsoft\WindowsApps/python3.10.exe c:\Users\meteb\OneDrive\Desktop\SE443Project\Sub_Pub_Part2.py
Network ID: j71xyaxbm45gf2e3t8wodpng
Network Name: se443_test_net
Network Creation Date: 2022-12-22T18:48:36.1541525Z
-----
Subscriber's ID: e6d1tpwi480wdhsaarvviwrf
Subscriber's Name: Subscriber
Subscriber's Creation Date: 2022-12-22T18:48:49.1959324Z
Subscriber's Number Of Replicas: 3
-----
Publisher's ID: e6d1tpwi480wdhsaarvviwrf
Publisher's Name: Subscriber
Publisher's Creation Date: 2022-12-22T18:48:49.1959324Z
Publisher's Number Of Replicas: 3
-----
Leave it running for 5 minutes...
[]

```

<input type="checkbox"/>	 <b>broker.1.i8qteouukcpoopcyu3rihu8pt</b> f96ce8059a42 	eclipse-mo	Running	5 seconds ago	
<input type="checkbox"/>	 <b>broker.2.acjz9lcnr2ik8hjjbmgj7hn8n</b> 088d9d69914f 	eclipse-mo	Running	5 seconds ago	
<input type="checkbox"/>	 <b>broker.3.zwdt36zk7gj1v9g4wlhs6badf</b> 75ddf6b7e99b 	eclipse-mo	Running	0 seconds ago	

Showing 11 items

## Part 2 Code:

File

Edit

Selection

View

Go

Run

Terminal

Help

Sub\_Pub\_Part2.py - SE443Project - Visual Studio Code

Sub\_Pub\_Part2.py

Broker\_Part1.py

```

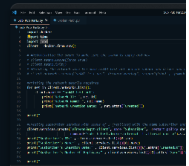
Sub_Pub_Part2.py > ...
1  import docker
2  import time
3  import json
4  client = docker.from_env()
5
6  # Reinitialize the swarm To make sure the swarm is empty and new
7  # client.swarm.leave(force=True)
8  # client.swarm.init()
9  # Creating the network with the name se443_test_net and the subnet and driver and scope
10 # client.networks.create("se443_test_net", driver="overlay", scope="global", ipam=docker.types.IPAMConfig(pool_configs=[docker.types.IPAMPool(subnet='10.10.10.0/24')]))
11
12 #Printing the network details required
13 for net in client.networks.list():
14     if net.name == "se443_test_net":
15         print("Network ID: ", net.id)
16         print("Network Name: ", net.name)
17         print("Network Creation Date: ", net.attrs['Created'])
18
19 print("-----")
20
21 #Creating subscriber service with scale of 3 (replicas) with the name Subscriber and the restart policy of 'any' (which is always) with the image efrecon/mqtt-client
22 client.services.create("efrecon/mqtt-client", name="Subscriber", restart_policy=docker.types.RestartPolicy(condition="any"), networks=["se443_test_net"],
23                         command='sub -h host.docker.internal -t alfaisal_uni -v').scale(3)
24 print("Subscriber's ID:", client.services.list()[0].id)
25 print("Subscriber's Name:", client.services.list()[0].name)
26 print("Subscriber's Creation Date:", client.services.list()[0].attrs['CreatedAt'])
27 print("Subscriber's Number Of Replicas:", client.services.list()[0].attrs['Spec']['Mode']['Replicated']['Replicas'])
28
29 print("-----")

```

```

30
31 #Creating publisher service with scale of 3 (replicas) with the name Publisher and the restart policy of 'any' (which is always) with the image efrecon/mqtt-client
32 client.services.create("efrecon/mqtt-client", name="Publisher", restart_policy=docker.types.RestartPolicy(condition="any"), networks=["se443_test_net"],
33 | | | | | command='pub -h host.docker.internal -t alfaisal_uni -m "<200304 - Meteb - Almadi - 0554271113>"').scale(3)
34 print("Publisher's ID:" , client.services.list()[0].id)
35 print("Publisher's Name:" , client.services.list()[0].name)
36 print("Publisher's Creation Date:" , client.services.list()[0].attrs['createdAt'])
37 print("Publisher's Number Of Replicas:" , client.services.list()[0].attrs['Spec']['Mode']['Replicated']['Replicas'])
38
39 print("-----")
40 print("Leave it running for 5 minutes...")
41 time.sleep(300)
42 print("-----\n")
43
44 #Cleanup and termination
45
46 print("Terminating Publisher, Subscriber, and Network services and finally leaving the swarm")
47
48 client.services.get("Publisher").remove()
49 print("Publisher Terminated....")
50
51 client.services.get("Subscriber").remove()
52 print("Subscriber Terminated....")
53
54 client.networks.get("se443_test_net").remove()
55 print("Network Terminated....")
56
57 client.swarm.leave(force=True)
58 print("Swarm Left Forcefully....")
59

```



Subscriber.2.ob58li9kqsigigukehzruxf33 efrecon/mqtt-client:latest  
RUNNING

Logs

Inspect

Terminal

Stats

```

2022-12-22 21:49:20 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:21 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:21 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:25 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:29 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:31 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:33 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:39 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:39 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:41 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:48 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:51 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:54 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:54 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:49:56 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:00 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:00 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:03 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:06 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:06 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:09 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:14 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:14 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:17 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:20 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>
2022-12-22 21:50:20 alfaisal_uni <200304 - Meteb - Almadi - 0554271113>

```

Output:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\meteb\OneDrive\Desktop\SE443Project> & C:/Users/meteb/AppData/Local/Microsoft/WindowsApps/python3.10.exe C:/Users/meteb/OneDrive/Desktop/SE443Project/Broker_Part1.py
Swarm's ID: vagtxgznj6ug5p0r8zccjwjpgd
Swarm's Name: default
Swarm's Creation Date: 2022-12-22T18:48:35.6038218Z
-----
Network's ID: j7ixyaxmhM45gf2e3t8wodpng
Network's Name: se443_test_net
Network's Creation Date: 2022-12-22T18:48:36.1541525Z
-----
Leave it running for 5 minutes...
[]

ackaging-22.0 pywin32-305 requests-2.28.1 urllib3-1.26.13 websocket-client-1.4.2
PS C:\Users\meteb\OneDrive\Desktop\SE443Project>
History restored

PS C:\Users\meteb\OneDrive\Desktop\SE443Project> C:/Users/meteb/AppData/Local/Microsoft/WindowsApps/python3.10.exe c:/Users/meteb/OneDrive/Desktop/SE443Project/Sub_Pub_Part2.py
Network ID: j7ixyaxmhM45gf2e3t8wodpng
Network Name: se443_test_net
Network Creation Date: 2022-12-22T18:48:36.1541525Z
-----
Subscriber's ID: e4wdtpwi480wdhsaarvviwrf
Subscriber's Name: Subscriber
Subscriber's Creation Date: 2022-12-22T18:48:49.1959324Z
Subscriber's Number Of Replicas: 3
-----
Publisher's ID: e4wdtpwi480wdhsaarvviwrf
Publisher's Name: Subscriber
Publisher's Creation Date: 2022-12-22T18:48:49.1959324Z
Publisher's Number Of Replicas: 3
-----
Leave it running for 5 minutes...
[]
```