Understand Docker Networking

Task 1: Create a Docker Network :

1. Create a user-defined bridge network :

```
sudo docker network create mynetwork
```

Task 2: Run Containers on "mynetwork" :

1. Run a container named `container1` and connect it to the mynetwork :

```
sudo docker run -d --name container1 --network mynetwork alpine sleep 1d
```

2. Run another container named container2 and connect it to the same network :

```
sudo docker run -d --name container2 --network mynetwork alpine sleep 1d
```

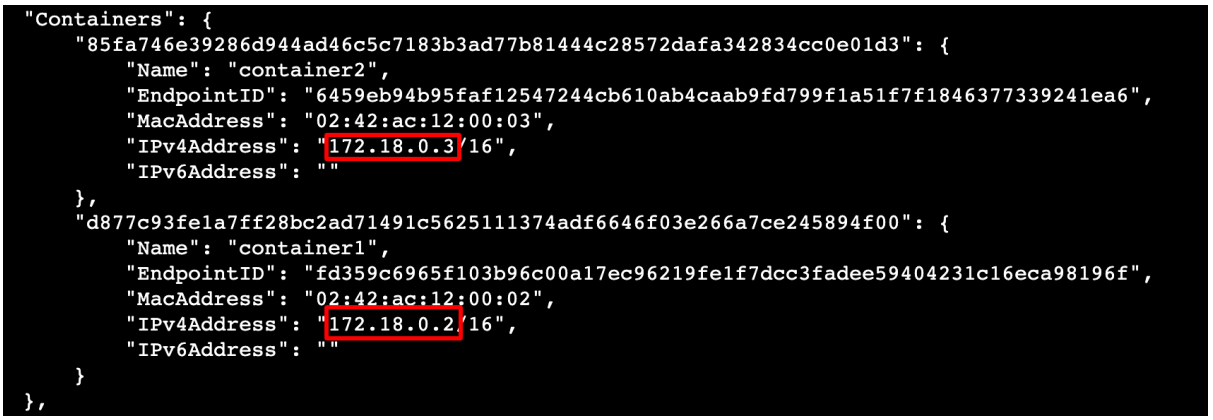
Task 3: Inspect the Bridge Network :

1. Check the network settings for the mynetwork :

```
sudo docker network inspect mynetwork
```


```
[ec2-user@ip-172-31-20-3 ~]$ sudo docker network inspect mynetwork
[
    {
        "Name": "mynetwork",
        "Id": "de37052dacb76594170cd97dab3054df36659fe427f0cd8c57e12ec978807c74",
        "Created": "2023-11-24T08:25:43.200159299Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
```

2. Copy the Ip Address of the containers and save it somewhere :



Task 4: Test Communication in the containers :

1. Let's go inside of one container and ping the other one:

```
sudo docker exec -it container1 sh
```

2. Now we are in the Container1 let's try to ping :

```
ping -c 4 <IP_of_container2>
```

Replace the <IP_of_container2> to the actual Ip address that we saved in previous task.

```
/ # ping -c 4 172.18.0.2
PING 172.18.0.2 (172.18.0.2): 56 data bytes
64 bytes from 172.18.0.2: seq=0 ttl=255 time=0.048 ms
64 bytes from 172.18.0.2: seq=1 ttl=255 time=0.059 ms
64 bytes from 172.18.0.2: seq=2 ttl=255 time=0.061 ms
64 bytes from 172.18.0.2: seq=3 ttl=255 time=0.059 ms

--- 172.18.0.2 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.048/0.056/0.061 ms
```

3. You can also ping the container through the name of container :

```
/ # ping -c 4 container2
PING container2 (172.18.0.3): 56 data bytes
64 bytes from 172.18.0.3: seq=0 ttl=255 time=0.088 ms
64 bytes from 172.18.0.3: seq=1 ttl=255 time=0.114 ms
64 bytes from 172.18.0.3: seq=2 ttl=255 time=0.073 ms
64 bytes from 172.18.0.3: seq=3 ttl=255 time=0.075 ms

--- container2 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.073/0.087/0.114 ms
```