Docker Swarm

1. What are the basic commands to manage Docker Swarm?

- Initialize a Swarm: docker swarm init
- Join a Swarm as a Worker: docker swarm join --token <worker-token> <manager-ip>:<port>
- Join a Swarm as a Manager: docker swarm join --token <manager-token> <manager-ip>:<port>
- Leave the Swarm: docker swarm leave
- Promote a Node to Manager: docker node promote <node-id>
- Demote a Node to Worker: docker node demote <node-id>
- List Nodes in the Swarm: docker node ls
- Inspect a Node: docker node inspect <node-id>

2. How do you find a service in a manager?

Using **docker service ls**

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ls
ID              NAME            MODE          REPLICAS    IMAGE                   PORTS
z1atc5dpg4qt    hello_world     replicated    0/1         hello_world:latest
y2i4j1ajyfnp    nginx-service   replicated    3/3         nginx:latest            *:80->80/tcp
mikelgarcia@DESKTOP-G8P12E7:~$
```


3. How do you list a service in a certain host?

First access the node list with **docker node ls** and the service list with **docker service ls**

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker node ls
ID                              HOSTNAME          STATUS    AVAILABILITY    MANAGER STATUS    ENGINE VERSION
t94by6qfdxghyiw7qlpe3bl4f *     docker-desktop    Ready     Active          Leader            26.1.4
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ls
ID              NAME            MODE          REPLICAS    IMAGE                   PORTS
z1atc5dpg4qt    hello_world     replicated    0/1         hello_world:latest
y2i4j1ajyfnp    nginx-service   replicated    3/3         nginx:latest            *:80->80/tcp
```

Then to find the service ngix-service in the node docker-desktop for example:
use **docker service ps nginx-service --filter "node=docker-desktop"**

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker node ls
ID                              HOSTNAME          STATUS    AVAILABILITY    MANAGER STATUS    ENGINE VERSION
t94by6qfdxghyiw7qlpe3bl4f *     docker-desktop    Ready     Active          Leader            26.1.4
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ls
ID              NAME            MODE          REPLICAS    IMAGE                   PORTS
z1atc5dpg4qt    hello_world     replicated    0/1         hello_world:latest
y2i4j1ajyfnp    nginx-service   replicated    3/3         nginx:latest            *:80->80/tcp
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ps nginx-service --filter "node=docker-desktop"
ID              NAME             IMAGE           NODE             DESIRED STATE    CURRENT STATE             ERROR
s
no8c8jve8muj    nginx-service.1  nginx:latest    docker-desktop   Running          Running 13 minutes ago
7zpkopyrkqo8    nginx-service.2  nginx:latest    docker-desktop   Running          Running 13 minutes ago
mhzuuh56bit2    nginx-service.3  nginx:latest    docker-desktop   Running          Running 13 minutes ago
```

4. How do you access a container?

First use **docker ps** to show the list of containers and the **docker exec -it eae058dd59d4 sh**
And access the shell

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker ps
CONTAINER ID   IMAGE                          COMMAND                 CREATED          STATUS             PORTS
               NAMES
8428cc7b447a   nginx:latest                   "/docker-entrypoint..." About an hour ago Up About an hour   80/tcp
               nginx-service.3.mhzuuh56bit22qx5tt933viti
dab927a58429   nginx:latest                   "/docker-entrypoint..." About an hour ago Up About an hour   80/tcp
               nginx-service.1.no0c8jve8mujjf0qj03vf9bdn
cf6d8090768c   nginx:latest                   "/docker-entrypoint..." About an hour ago Up About an hour   80/tcp
               nginx-service.2.7zpkopyrkqo8ptm32uzq3pwti
eae058dd59d4   docker/welcome-to-docker:latest "/docker-entrypoint..." 27 hours ago     Up 2 hours         0.0.0.
:8088->80/tcp  welcome-to-docker
mikelgarcia@DESKTOP-G8P12E7:~$ docker exec -it eae058dd59d4 sh
/ # _
```

5. How do you retrieve the logs from a container and get the logs live?

To retrieve the logs, use **docker logs and the id** of the container and to get the logs live using
docker logs -f and the id

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker logs eae058dd59d4
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2024/06/24 10:26:45 [notice] 1#1: using the "epoll" event method
2024/06/24 10:26:45 [notice] 1#1: nginx/1.25.3
2024/06/24 10:26:45 [notice] 1#1: built by gcc 12.2.1 20220924 (Alpine 12.2.1_git20220924-r10)
2024/06/24 10:26:45 [notice] 1#1: OS: Linux 5.15.133.1-microsoft-standard-WSL2
2024/06/24 10:26:45 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2024/06/24 10:26:45 [notice] 1#1: start worker processes
2024/06/24 10:26:45 [notice] 1#1: start worker process 30
2024/06/24 10:26:45 [notice] 1#1: start worker process 31
2024/06/24 10:26:45 [notice] 1#1: start worker process 32
2024/06/24 10:26:45 [notice] 1#1: start worker process 33
```

6. How do you restart a service in Docker Swarm?

In order to restart a service first list the services using **docker service ls** to identify the service
and then use **docker service update --force nginx-service**

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ls
ID             NAME           MODE         REPLICAS   IMAGE                 PORTS
z1atc5dpg4qt   hello_world    replicated   0/1        hello_world:latest
y2i4j1ajyfnp   nginx-service  replicated   3/3        nginx:latest          *:80->80/tcp
mikelgarcia@DESKTOP-G8P12E7:~$ docker service update --force nginx-service
nginx-service
overall progress: 3 out of 3 tasks
1/3: running   [==================================================>]
2/3: running   [==================================================>]
3/3: running   [==================================================>]
verify: Service nginx-service converged
```

7. How do you update/create an environment variable for a certain service?

First list of services with **docker service ls** and the using **docker service update --env-add APP_VERSION=v1.0 nginx-service.** In this case its called **APP_VERSION=v1.0**

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ls
ID              NAME           MODE         REPLICAS   IMAGE                PORTS
z1atc5dpg4qt    hello_world    replicated   0/1        hello_world:latest
y2i4j1ajyfnp    nginx-service  replicated   3/3        nginx:latest         *:80->80/tcp
mikelgarcia@DESKTOP-G8P12E7:~$ docker service update --env-add APP_VERSION=v1.0 nginx-service
nginx-service
overall progress: 3 out of 3 tasks
1/3: running   [==================================================>]
2/3: running   [==================================================>]
3/3: running   [==================================================>]
verify: Service nginx-service converged
```

Then update to a new version using **docker service update --env-add APP_VERSION=v2.0 --env-rm APP_VERSION nginx-service**

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker service update --env-add APP_VERSION=v2.0 --env-rm APP_VERSION nginx-service
nginx-service
overall progress: 3 out of 3 tasks
1/3: running   [==================================================>]
2/3: running   [==================================================>]
3/3: running   [==================================================>]
verify: Service nginx-service converged
```

8. How do you scale a service?

First check the current status using **docker service ps**, then using docker **service scale nginx-service=**5 with the number of services you need.

```
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ps nginx-service
ID              NAME               IMAGE          NODE             DESIRED STATE   CURRENT STATE
anpcskb3uv9j    nginx-service.1    nginx:latest   docker-desktop   Running         Running 4 minutes ago
lvyeoo9joz2v    \_ nginx-service.1 nginx:latest   docker-desktop   Shutdown        Shutdown 4 minutes ago
pj7mo2i1rtb7    \_ nginx-service.1 nginx:latest   docker-desktop   Shutdown        Shutdown 10 minutes ago
no0c8jve8muj    \_ nginx-service.1 nginx:latest   docker-desktop   Shutdown        Shutdown 18 minutes ago
8rsu515uim10    nginx-service.2    nginx:latest   docker-desktop   Running         Running 4 minutes ago
fjwtl912t5rd    \_ nginx-service.2 nginx:latest   docker-desktop   Shutdown        Shutdown 4 minutes ago
ytmfxocu1qst    \_ nginx-service.2 nginx:latest   docker-desktop   Shutdown        Shutdown 10 minutes ago
7zpkopyrkqo8    \_ nginx-service.2 nginx:latest   docker-desktop   Shutdown        Shutdown 18 minutes ago
pnmtg5pyz1ea    nginx-service.3    nginx:latest   docker-desktop   Running         Running 4 minutes ago
80qkec1fo0v5    \_ nginx-service.3 nginx:latest   docker-desktop   Shutdown        Shutdown 4 minutes ago
nrbgnztfznfa    \_ nginx-service.3 nginx:latest   docker-desktop   Shutdown        Shutdown 10 minutes ago
mhzuuh56bit2    \_ nginx-service.3 nginx:latest   docker-desktop   Shutdown        Shutdown 18 minutes ago
mikelgarcia@DESKTOP-G8P12E7:~$ docker service scale nginx-service=5
nginx-service scaled to 5
overall progress: 5 out of 5 tasks
1/5: running   [==================================================>]
2/5: running   [==================================================>]
3/5: running   [==================================================>]
4/5: running   [==================================================>]
5/5: running   [==================================================>]
verify: Service nginx-service converged
mikelgarcia@DESKTOP-G8P12E7:~$ docker service ps nginx-service
ID              NAME               IMAGE          NODE             DESIRED STATE   CURRENT STATE
anpcskb3uv9j    nginx-service.1    nginx:latest   docker-desktop   Running         Running 5 minutes ago
lvyeoo9joz2v    \_ nginx-service.1 nginx:latest   docker-desktop   Shutdown        Shutdown 5 minutes ago
pj7mo2i1rtb7    \_ nginx-service.1 nginx:latest   docker-desktop   Shutdown        Shutdown 10 minutes ago
no0c8jve8muj    \_ nginx-service.1 nginx:latest   docker-desktop   Shutdown        Shutdown 18 minutes ago
8rsu515uim10    nginx-service.2    nginx:latest   docker-desktop   Running         Running 5 minutes ago
fjwtl912t5rd    \_ nginx-service.2 nginx:latest   docker-desktop   Shutdown        Shutdown 5 minutes ago
ytmfxocu1qst    \_ nginx-service.2 nginx:latest   docker-desktop   Shutdown        Shutdown 10 minutes ago
7zpkopyrkqo8    \_ nginx-service.2 nginx:latest   docker-desktop   Shutdown        Shutdown 18 minutes ago
pnmtg5pyz1ea    nginx-service.3    nginx:latest   docker-desktop   Running         Running 5 minutes ago
80qkec1fo0v5    \_ nginx-service.3 nginx:latest   docker-desktop   Shutdown        Shutdown 5 minutes ago
nrbgnztfznfa    \_ nginx-service.3 nginx:latest   docker-desktop   Shutdown        Shutdown 10 minutes ago
mhzuuh56bit2    \_ nginx-service.3 nginx:latest   docker-desktop   Shutdown        Shutdown 18 minutes ago
yunhp41ody90    nginx-service.4    nginx:latest   docker-desktop   Running         Running 7 seconds ago
u4k116hsbrix    nginx-service.5    nginx:latest   docker-desktop   Running         Running 7 seconds ago
mikelgarcia@DESKTOP-G8P12E7:~$
```