

Task 1: Running containers

- Pulling an image
 - Let's see what images we have currently on our machine, by running docker images:

```
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker images
REPOSITORY    TAG       IMAGE ID   CREATED   SIZE
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$
```

- When we pull images from DockerHub, we often use tags that are formatted like this: [repository]:[tag].

```
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
2ab09b027e7f: Pull complete
Digest: sha256:67211c14fa74f070d27cc59d69a7fa9aeff8e28ea118ef3babc295a0428a6d21
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker pull node:12
12: Pulling from library/node
f5196cdf2518: Pull complete
9bed1e86f01e: Pull complete
f44e4bdb3a6c: Pull complete
2f75d131f406: Pull complete
07dff4ad21eb: Pull complete
e0ac4f13b766: Pull complete
df2c3b2eb7cc: Pull complete
efe636eac583: Pull complete
fe17849545bb: Pull complete
Digest: sha256:01627afeb110b3054ba4a1405541ca095c8bfca1cb6f2be9479c767a2711879e
Status: Downloaded newer image for node:12
docker.io/library/node:12
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker pull busybox
Using default tag: latest
latest: Pulling from library/busybox
4b35f584bb4f: Pull complete
Digest: sha256:b5d6fe0712636ceb7430189de28819e195e8966372edfc2d9409d79402a0dc16
Status: Downloaded newer image for busybox:latest
docker.io/library/busybox:latest
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker images
REPOSITORY    TAG       IMAGE ID   CREATED   SIZE
busybox       latest    7cfbbec8963d  5 weeks ago  4.86MB
ubuntu        latest    08d22c0ceb15  6 weeks ago  77.8MB
node          12        6c8de432fc7f  12 months ago  918MB
```

- We can also pull different versions on the same image. We can search for images using `docker search <keyword>`

```

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
busybox       latest    7cfbbec8963d   5 weeks ago    4.86MB
ubuntu        latest    08d22c0ceb15   6 weeks ago    77.8MB
node          12        6c8de432fc7f   12 months ago  918MB
ubuntu        16.10     7d3f705d307c   5 years ago    107MB

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker search ubuntu
NAME                DESCRIPTION                                     STARS     OFFICIAL   AUTOMATED
ubuntu              Ubuntu is a Debian-based Linux operating sys... 15864     [OK]
websphere-liberty   WebSphere Liberty multi-architecture images ... 293       [OK]
open-liberty        Open Liberty multi-architecture images based... 59        [OK]
neurodebian         NeuroDebian provides neuroscience research s... 100       [OK]
ubuntu-debootstrap  DEPRECATED; use "ubuntu" instead               50        [OK]
ubuntu-upstart      DEPRECATED, as is Upstart (find other proces... 113       [OK]
ubuntu/nginx        Nginx, a high-performance reverse proxy & we... 84
ubuntu/cortex        Cortex provides storage for Prometheus. Long... 3
ubuntu/squid         Squid is a caching proxy for the Web. Long-t... 54
ubuntu/apache2       Apache, a secure & extensible open-source HT... 57
ubuntu/mysql         MySQL open source fast, stable, multi-thread... 45
ubuntu/kafka         Apache Kafka, a distributed event streaming ... 29
ubuntu/bind9         BIND 9 is a very flexible, full-featured DNS... 51
ubuntu/redis         Redis, an open source key-value store. Long-... 17
ubuntu/prometheus    Prometheus is a systems and service monitori... 40
ubuntu/postgres      PostgreSQL is an open source object-relatio... 27
ubuntu/zookeeper     ZooKeeper maintains configuration informatio... 5
ubuntu/grafana        Grafana, a feature rich metrics dashboard & ... 9
ubuntu/memcached      Memcached, in-memory keyvalue store for smal... 5
ubuntu/prometheus-alertmanager Alertmanager handles client alerts from Prom... 8
ubuntu/dotnet-deps    Chiselled Ubuntu for self-contained .NET & A... 7
ubuntu/dotnet-runtime Chiselled Ubuntu runtime image for .NET apps... 5
ubuntu/cassandra      Cassandra, an open source NoSQL distributed ... 2
ubuntu/dotnet-aspnet  Chiselled Ubuntu runtime image for ASP.NET a... 4
ubuntu/telegraf       Telegraf collects, processes, aggregates & w... 4

```

- As time passes, the machine may accumulate numerous images, making it beneficial to remove unnecessary ones. To delete the unused Ubuntu 16.10 image, execute the command `docker rmi <IMAGE ID>`.

```

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker images
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ubuntu        latest    08d22c0ceb15   6 weeks ago    77.8MB
node          12        6c8de432fc7f   12 months ago  918MB
ubuntu        16.10     7d3f705d307c   5 years ago    107MB

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker rmi 7d3f705d307c
Untagged: ubuntu:16.10
Untagged: ubuntu@sha256:8dc9652808dc091400d7d5983949043a9f9c7132b15c14814275d25f94bca18a
Deleted: sha256:7d3f705d307c7c225398e04d4c4f8512f64eb8a65959a1fb4514dfde18a047e7
Deleted: sha256:d9db289b9342d9617596cd6ee3bba988629e24d9afa5db4e4b0e4e491c65007d
Deleted: sha256:a87725e8597b97f2399bc3aa50b0e2eec903b8ce19055668d3befb012918205c
Deleted: sha256:38cf10a2801529348366953e9b933d3524360dedc91d3e4d5d7f941da0c973c9
Deleted: sha256:61172966249d43026dbd017eec3a9575e37bddf8a269a9f09ecb559d7bfe7fef
Deleted: sha256:57145c01eb80040fdd0a24cde20af4788605b49593188d4f7efab099af89a08e

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker images
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○ ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ 

```

- Running our container. We can use `docker run <options> <image_name>`

```

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker images
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ubuntu        latest    08d22c0ceb15   6 weeks ago    77.8MB
node          12        6c8de432fc7f   12 months ago  918MB
○ ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker run -it ubuntu
root@8e0048ffa99e:/# cat /etc/*release*
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=22.04
DISTRIB_CODENAME=jammy
DISTRIB_DESCRIPTION="Ubuntu 22.04.2 LTS"
PRETTY_NAME="Ubuntu 22.04.2 LTS"
NAME="Ubuntu"
VERSION_ID="22.04"
VERSION="22.04.2 LTS (Jammy Jellyfish)"
VERSION_CODENAME=jammy
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=jammy
root@8e0048ffa99e:/#

```

- After executing the above command, we can verify the list of containers by running `docker ps` for active containers or `docker ps -a` for all containers including the inactive ones.

```

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS   NAMES
8e0048ffa99e   ubuntu   "/bin/bash"             4 minutes ago Up 4 minutes   priceless_yonath
○ ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS   NAMES
1eb3f7bfab18   hello-world "/hello"                12 seconds ago Exited (0) 12 seconds ago   thirsty_zhukovsky
8e0048ffa99e   ubuntu   "/bin/bash"             5 minutes ago Up 4 minutes   priceless_yonath
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$

```

- When using the `docker run` command, the terminal is usually attached to the container by default. If you don't want to remain attached, you can use the `-d` or `--detach` flag to run the container in the background. To reattach to a running container, you can use the `docker exec` command followed by the container ID.

```

● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS   NAMES
8e0048ffa99e   ubuntu   "/bin/bash"             7 minutes ago Up 7 minutes   priceless_yonath
○ ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker exec -it 8e004 bash
root@8e0048ffa99e:/#

```

- To stop a running container, you can use the `docker stop` command followed by the container ID or name. For example, `docker stop container_name`.
- To remove a container, you can use the `docker rm` command followed by the container ID or name. For example, `docker rm container_name`.
- You can also remove a container immediately after it stops by using the `docker rm` command with the `-f` or `--force` flag. For example, `docker rm -f container_name`.

```
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS   NAMES
8e0048ffa99e   ubuntu   "/bin/bash"             9 minutes ago Up 9 minutes   priceless_yonath
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker stop 8e0048
8e0048
● ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ docker rm 8e0048
8e0048
○ ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$
```