

Exercises

Exercise 1

1. Install Docker Engine using the official Docker APT repository. [sudo apt-get update,]

```
ubuntu@k8s-instance-6:~$ sudo apt-get update
Get:1 https://download.docker.com/linux/ubuntu noble InRelease [48.8 kB]
Hit:2 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:3 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Get:6 https://download.docker.com/linux/ubuntu noble/stable amd64 Packages [24.0 kB]
Fetched 72.8 kB in 1s (77.5 kB/s)
Reading package lists... Done
ubuntu@k8s-instance-6:~$ sudo apt-get install docker-ce
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  containerd.io docker-ce-cli
Suggested packages:
  cgroupfs-mount | cgroup-lite
Recommended packages:
  docker-ce-rootless-extras libltdl7 pigz docker-buildx-plugin docker-compose-plugin
The following NEW packages will be installed:
  containerd.io docker-ce docker-ce-cli
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 65.5 MB of archives.
After this operation, 256 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 https://download.docker.com/linux/ubuntu noble/stable amd64 containerd.io amd64 1.7.27-1 [17.8 MB]
Get:2 https://download.docker.com/linux/ubuntu noble/stable amd64 docker-ce-cli amd64 5:28.0.0-1 [12.5 MB]
Get:3 https://download.docker.com/linux/ubuntu noble/stable amd64 docker-ce amd64 5:28.0.0-1 [35.2 MB]
Fetched 65.5 MB in 2s (38.0 MB/s)
Selecting previously unselected package containerd.io.
(Reading database ... 61503 files and directories currently installed.)
Preparing to unpack .../containerd.io_1.7.27-1_amd64.deb ...
Unpacking containerd.io (1.7.27-1) ...
```

2. Enable and start the Docker service.

```
ubuntu@k8s-instance-6:~$ sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable docker
ubuntu@k8s-instance-6:~$
```

```
ubuntu@k8s-instance-6:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
   Active: inactive (dead) since Tue 2025-04-22 21:20:55 -04; 2s ago
     Duration: 9min 5.197s
   TriggeredBy: ● docker.socket
      Docs: https://docs.docker.com
    Process: 115910 ExecStart=/usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
   Main PID: 115910 (code=exited, status=0/SUCCESS)
      CPU: 674ms
```

3. Print the info of the Docker Client and Server.

```
ubuntu@k8s-instance-6:~$ sudo docker info
Client: Docker Engine - Community
 Version: 28.1.1
 Context: default
 Debug Mode: false

Server:
 Containers: 0
  Running: 0
  Paused: 0
  Stopped: 0
 Images: 0
 Server Version: 28.1.1
 Storage Driver: overlay2
  Backing Filesystem: extfs
  Supports d_type: true
  Using metacopy: false
  Native Overlay Diff: true
  userxattr: false
 Logging Driver: json-file
 Cgroup Driver: systemd
 Cgroup Version: 2
 Plugins:
  Volume: local
  Network: bridge host ipvlan macvlan null overlay
  Log: awslogs fluentd gcplogs gelf journald json-file local splunk syslog
 Swarm: inactive
 Runtimes: io.containerd.runc.v2 runc
 Default Runtime: runc
 Init Binary: docker-init
 containerd version: 05044ec0a9a75232cad458027ca83437aae3f4da
 runc version: v1.2.5-0-g59923ef
 init version: de40ad0
 Security Options:
  apparmor
  seccomp
   Profile: builtin
  cgroupns
 Kernel Version: 6.8.0-52-generic
 Operating System: Ubuntu 24.04.2 LTS
 OSType: linux
 Architecture: x86_64
 CPUs: 4
 Total Memory: 7.749GiB
 Name: k8s-instance-6
 ID: f3d65c0b-af65-4818-9f09-a0fd633c2653
 Docker Root Dir: /var/lib/docker
 Debug Mode: false
 Experimental: false
 Insecure Registries:
  ::1/128
  127.0.0.0/8
 Live Restore Enabled: false
```

Exercise 2

1. Search for the official repos of Ubuntu, Alpine, Nginx.

```
ubuntu@k8s-instance-6:~$ sudo docker search --filter is-official=true Ubuntu
NAME                DESCRIPTION                STARS     OFFICIAL
ubuntu              Ubuntu is a Debian-based Linux operating sys... 17551     [OK]
ubuntu@k8s-instance-6:~$ sudo docker search --filter is-official=true Alpine
NAME                DESCRIPTION                STARS     OFFICIAL
alpine              A minimal Docker image based on Alpine Linux... 11265     [OK]
ubuntu@k8s-instance-6:~$ sudo docker search --filter is-official=true Nginx
NAME                DESCRIPTION                STARS     OFFICIAL
nginx               Official build of Nginx    28756     [OK]
```

2. Run an Nginx container using the image from the official repo.

```
ubuntu@k8s-instance-6:~$ sudo docker container list -a
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS          PORTS          NAMES
a422350df3ce   nginx    "/docker-entrypoint..." About a minute ago Created          80/tcp         dazzling_jackson
c23c355ec1ca   nginx    "/docker-entrypoint..." 3 minutes ago   Exited (0) 2 minutes ago                        pedantic_galois
9a3f6eec02f9   nginx    "/docker-entrypoint..." 3 minutes ago   Created                                admiring_varahamihiraubuntu
ubuntu@k8s-instance-6:~$ sudo docker start dazzling_jackson
dazzling_jackson
ubuntu@k8s-instance-6:~$ sudo docker container list
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS          PORTS          NAMES
a422350df3ce   nginx    "/docker-entrypoint..." 2 minutes ago   Up 10 seconds   80/tcp         dazzling_jackson
ubuntu@k8s-instance-6:~$
```

Exercise 3

1. Check Docker daemon status
2. Stop the Docker daemon
3. Run a container while it's stopped.
4. Restart the Docker daemon and run a container again


```

run 'docker run --help' for more information
ubuntu@k8s-instance-6:~$ systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
   Active: active (running) since Wed 2025-04-23 20:06:30 -04; 1min 18s ago
 TriggeredBy: ● docker.socket
    Docs: https://docs.docker.com
   Main PID: 131246 (dockerd)
     Tasks: 18
    Memory: 23.3M (peak: 23.9M)
       CPU: 901ms
    CGroup: /system.slice/docker.service
            └─131246 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Apr 23 20:06:29 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:29.051005549-04:00" level=info msg="
Apr 23 20:06:29 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:29.978280810-04:00" level=warning ms
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.075663355-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.123322722-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.123532186-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.166064632-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.175001824-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.175115109-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 systemd[1]: Started docker.service - Docker Application Container Engine.
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.663804162-04:00" level=info msg="
ubuntu@k8s-instance-6:~$ sudo systemctl stop docker
Stopping 'docker.service', but its triggering units are still active:
docker.socket
ubuntu@k8s-instance-6:~$ sudo systemctl stop docker.socket
ubuntu@k8s-instance-6:~$ systemctl status docker
o docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
   Active: inactive (dead) since Wed 2025-04-23 20:07:58 -04; 13s ago
 Duration: 1min 28.322s
 TriggeredBy: o docker.socket
    Docs: https://docs.docker.com
   Process: 131246 ExecStart=/usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock (code=
 Main PID: 131246 (code=exited, status=0/SUCCESS)
       CPU: 915ms

Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.175001824-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.175115109-04:00" level=info msg="
Apr 23 20:06:30 k8s-instance-6 systemd[1]: Started docker.service - Docker Application Container Engine.
Apr 23 20:06:30 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:06:30.663804162-04:00" level=info msg="
Apr 23 20:07:58 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:07:58.497712410-04:00" level=info msg="
Apr 23 20:07:58 k8s-instance-6 systemd[1]: Stopping docker.service - Docker Application Container Engine...
Apr 23 20:07:58 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:07:58.500517066-04:00" level=info msg="
Apr 23 20:07:58 k8s-instance-6 dockerd[131246]: time="2025-04-23T20:07:58.500959667-04:00" level=info msg="
Apr 23 20:07:58 k8s-instance-6 systemd[1]: docker.service: Deactivated successfully.
Apr 23 20:07:58 k8s-instance-6 systemd[1]: Stopped docker.service - Docker Application Container Engine.
ubuntu@k8s-instance-6:~$
ubuntu@k8s-instance-6:~$ docker run --name alpine10 alpine
docker: Cannot connect to the Docker daemon at unix:///var/run/docker.sock. Is the docker daemon running?

Run 'docker run --help' for more information
ubuntu@k8s-instance-6:~$ sudo systemctl start docker
ubuntu@k8s-instance-6:~$ docker run --name alpine10 alpine

```

Exercise 4

1. Run an Ubuntu container interactively.
2. Use apt update && apt install curl inside the container.
3. Exit the container.

```

ubuntu@k8s-instance-6:~$ docker run -it ubuntu
root@4281c2cf4192:/# apt update && apt install curl
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [2
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [1

```

```

root@4281c2cf4192:/# curl http://10.26.32.56/
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
root@4281c2cf4192:/# exit
ubuntu@k8s-instance-6:~$

```

Exercise 5

1. List running containers:
2. List all containers (including exited)

```

ubuntu@k8s-instance-6:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
9dd6ba176924   nginx    "/docker-entrypoint..." 40 minutes ago Up 40 minutes 0.0.0.0:8080->80/tcp, [::]:8080->80/tcp webserver4
644995d24af9   nginx    "/docker-entrypoint..." About an hour ago Up 54 minutes 0.0.0.0:8080->80/tcp, [::]:8080->80/tcp webserver3
6422358df3ce   nginx    "/docker-entrypoint..." 22 hours ago   Up 22 hours   80/tcp                             dazzling_jackson

ubuntu@k8s-instance-6:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS              PORTS                               NAMES
9dd6ba176924   nginx    "/docker-entrypoint..." 40 minutes ago Up 40 minutes       0.0.0.0:8080->80/tcp, [::]:8080->80/tcp webserver4
644995d24af9   nginx    "/docker-entrypoint..." About an hour ago Up 54 minutes       0.0.0.0:8080->80/tcp, [::]:8080->80/tcp webserver3
deb5be64892b   nginx    "/docker-entrypoint..." About an hour ago Exited (0) 55 minutes ago                                     webserver2
6422358df3ce   nginx    "/docker-entrypoint..." 22 hours ago   Up 22 hours         80/tcp                             dazzling_jackson
6322358df3ce   nginx    "/docker-entrypoint..." 22 hours ago   Exited (0) 22 hours ago                                     podantic_galeis

```

Exercise 6

1. Run a container in the background (option -d)

```

REPOSITORY TAG IMAGE ID CREATED SIZE
ubuntu@k8s-instance-6:~$ docker run -d --name nginx nginx
b8ab2c5f74d26067c0a3b7624d684480915adf21828931d92cd2851e2de0c37b
ubuntu@k8s-instance-6:~$ docker images ps -a
REPOSITORY TAG IMAGE ID CREATED SIZE
ubuntu@k8s-instance-6:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 10 seconds ago Up 9 seconds   80/tcp                             nginx

```

2. Then Pause it

```

ubuntu@k8s-instance-6:~$ docker container ls
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." About a minute ago Up About a minute 80/tcp                             nginx
ubuntu@k8s-instance-6:~$ docker pause nginx
nginx
ubuntu@k8s-instance-6:~$ docker container ls
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS              PORTS                               NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 4 minutes ago Up 4 minutes (Paused) 80/tcp                             nginx
ubuntu@k8s-instance-6:~$ docker container b8ab2c5f74d2

```


3. Unpause it:

```
ubuntu@k8s-instance-6:~$ docker container pause b8ab2c5f74d2
ubuntu@k8s-instance-6:~$ docker unpause nginx
nginx
ubuntu@k8s-instance-6:~$ docker container ls
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS      PORTS      NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 7 minutes ago  Up 7 minutes  80/tcp     nginx
ubuntu@k8s-instance-6:~$
```

4. Stop it

5. Restart it

```
ubuntu@k8s-instance-6:~$ docker stop nginx
nginx
ubuntu@k8s-instance-6:~$ docker container ls
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS      PORTS      NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 10 minutes ago Exited (0) 6 seconds ago  80/tcp     nginx
9014feaa98a0   alpine    "/bin/sh"               21 hours ago  Exited (0) 21 hours ago  alpine10
7ef1874973fe   alpine    "/bin/sh"               21 hours ago  Exited (0) 21 hours ago  alpine0
4281c2c4192    ubuntu    "/bin/bash"             22 hours ago  Exited (0) 22 hours ago  xenodochial_joliot
6408ac4e0b1c    ubuntu    "/bin/bash"             22 hours ago  Exited (0) 22 hours ago  ubuntu1
a61bf6529bca    alpine    "echo 'hello from al..." 22 hours ago  Exited (0) 22 hours ago  alpine2
9ec8c17c0c2d    alpine    "/bin/sh"               22 hours ago  Exited (0) 22 hours ago  alpine
3dd6ba176924    nginx    "/docker-entrypoint..." 23 hours ago  Exited (0) 21 hours ago  webserver4
644995d24af9    nginx    "/docker-entrypoint..." 23 hours ago  Exited (0) 21 hours ago  webserver3
deb5be64892b    nginx    "/docker-entrypoint..." 23 hours ago  Exited (0) 23 hours ago  sebserver2
a422350df3ce    nginx    "/docker-entrypoint..." 44 hours ago  Exited (0) 21 hours ago  dazzling_jackson
c23c355ec1ca    nginx    "/docker-entrypoint..." 44 hours ago  Exited (0) 44 hours ago  pedantic_galois
9a3f6eec02f9    nginx    "/docker-entrypoint..." 44 hours ago  Created          admiring_varahamihira
ubuntu@k8s-instance-6:~$ docker restart nginx
nginx
ubuntu@k8s-instance-6:~$ docker container ls -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS      PORTS      NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 11 minutes ago Up 2 seconds  80/tcp     nginx
9014feaa98a0   alpine    "/bin/sh"               21 hours ago  Exited (0) 21 hours ago  alpine10
7ef1874973fe   alpine    "/bin/sh"               21 hours ago  Exited (0) 21 hours ago  alpine0
```

6. Kill it

```
ubuntu@k8s-instance-6:~$ docker kill nginx
nginx
ubuntu@k8s-instance-6:~$ docker container ls -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS      PORTS      NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 12 minutes ago Exited (137) 4 seconds ago  80/tcp     nginx
9014feaa98a0   alpine    "/bin/sh"               21 hours ago  Exited (0) 21 hours ago  alpine10
7ef1874973fe   alpine    "/bin/sh"               21 hours ago  Exited (0) 21 hours ago  alpine0
```

Exercise 7

Remove a running container.

```
ubuntu@k8s-instance-6:~$ docker container ls -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS      NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 20 minutes ago Up 34 seconds 80/tcp     nginx
9014feaa98a0   alpine   "/bin/sh"                21 hours ago   Exited (0)    21 hours ago
7ef1874973fe   alpine   "/bin/sh"                22 hours ago   Exited (0)    22 hours ago
4281c2cf4192   ubuntu   "/bin/bash"              22 hours ago   Exited (0)    22 hours ago
6408ac4e0b1c   ubuntu   "/bin/bash"              22 hours ago   Exited (0)    22 hours ago
a61bf6529bca   alpine   "echo 'hello from al..." 22 hours ago   Exited (0)    22 hours ago
9ec8c17c0c2d   alpine   "/bin/sh"                22 hours ago   Exited (0)    22 hours ago
3dd6ba176924   nginx    "/docker-entrypoint..." 23 hours ago   Exited (0)    22 hours ago
644995d24af9   nginx    "/docker-entrypoint..." 23 hours ago   Up 2 seconds
deb5be64892b   nginx    "/docker-entrypoint..." 24 hours ago   Exited (0)    23 hours ago
a422350df3ce   nginx    "/docker-entrypoint..." 44 hours ago   Exited (0)    22 hours ago
c23c355ec1ca   nginx    "/docker-entrypoint..." 44 hours ago   Exited (0)    44 hours ago
9a3f6eec02f9   nginx    "/docker-entrypoint..." 44 hours ago   Created
ubuntu@k8s-instance-6:~$ docker container ls
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS      NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 20 minutes ago Up 40 seconds 80/tcp     nginx
644995d24af9   nginx    "/docker-entrypoint..." 23 hours ago   Up 8 seconds
ubuntu@k8s-instance-6:~$ docker rm -f webserver3
webserver3
ubuntu@k8s-instance-6:~$ docker container ls
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS      NAMES
b8ab2c5f74d2   nginx    "/docker-entrypoint..." 20 minutes ago Up About a minute 80/tcp     nginx
ubuntu@k8s-instance-6:~$ docker stop nginx | docker rm nginx
Error response from daemon: cannot remove container "/nginx": container is running: stop the container before removing or force
ubuntu@k8s-instance-6:~$ docker stop nginx && docker rm nginx
nginx
nginx
ubuntu@k8s-instance-6:~$ docker container ls -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS      NAMES
9014feaa98a0   alpine   "/bin/sh"                21 hours ago   Exited (0)    21 hours ago
7ef1874973fe   alpine   "/bin/sh"                22 hours ago   Exited (0)    22 hours ago
4281c2cf4192   ubuntu   "/bin/bash"              22 hours ago   Exited (0)    22 hours ago
6408ac4e0b1c   ubuntu   "/bin/bash"              22 hours ago   Exited (0)    22 hours ago
a61bf6529bca   alpine   "echo 'hello from al..." 22 hours ago   Exited (0)    22 hours ago
9ec8c17c0c2d   alpine   "/bin/sh"                22 hours ago   Exited (0)    22 hours ago
3dd6ba176924   nginx    "/docker-entrypoint..." 23 hours ago   Exited (0)    22 hours ago
deb5be64892b   nginx    "/docker-entrypoint..." 24 hours ago   Exited (0)    23 hours ago
a422350df3ce   nginx    "/docker-entrypoint..." 44 hours ago   Exited (0)    22 hours ago
c23c355ec1ca   nginx    "/docker-entrypoint..." 44 hours ago   Exited (0)    44 hours ago
9a3f6eec02f9   nginx    "/docker-entrypoint..." 44 hours ago   Created
ubuntu@k8s-instance-6:~$
```

Exercise 8

1. Pull the alpine and ubuntu images.

```
ubuntu@k8s-instance-6:~$ docker pull alpine
Using default tag: latest
latest: Pulling from library/alpine
Digest: sha256:a8560b36e8b8210634f77d9f7f9efd7ffa463e380b75e2e74aff4511df3ef88c
Status: Image is up to date for alpine:latest
docker.io/library/alpine:latest
ubuntu@k8s-instance-6:~$ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
Digest: sha256:1e622c5f073b4f6bfad6632f2616c7f59ef256e96fe78bf6a595d1dc4376ac02
Status: Image is up to date for ubuntu:latest
docker.io/library/ubuntu:latest
```

2. List all the container images in your Docker Host.

```
ubuntu@k8s-instance-6:~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
nginx         latest   4e1b6bae1e48   7 days ago    192MB
ubuntu       latest   602eb6fb314b   2 weeks ago    78.1MB
alpine       latest   aded1e1a5b37   2 months ago    7.83MB
ubuntu@k8s-instance-6:~$ docker container ls
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS      NAMES
3dd6ba176924   nginx    "/docker-entrypoint..." 58 minutes ago Up 57 minutes 0.0.0.0:8080->80/tcp, [::]:8080->80/tcp webserver4
644995d24af9   nginx    "/docker-entrypoint..." About an hour ago Up About an hour 80/tcp     webserver3
a422350df3ce   nginx    "/docker-entrypoint..." 22 hours ago   Up 22 hours   80/tcp     dazzling_jackson
```


Exercise 9

1. Run alpine and execute
2. Run echo "hello from alpine" busybox and execute uname -a
3. List all the container.

```
ubuntu@k8s-instance-6:~$ docker run --name alpine alpine
Unable to find image 'alpine:latest' locally
latest: Pulling from library/alpine
f18232174bc9: Pull complete
Digest: sha256:a8560b36e8b8210634f77d9f7f9efd7ffa463e380b75e2e74aff4511df3ef88c
Status: Downloaded newer image for alpine:latest

ubuntu@k8s-instance-6:~$ docker run --name alpine2 alpine echo "hello from alpine" && uname -a
hello from alpine
Linux k8s-instance-6 6.8.0-52-generic #53-Ubuntu SMP PREEMPT_DYNAMIC Sat Jan 11 00:06:25 UTC 2025 x86_64 x86_64 GNU/Linux

ubuntu@k8s-instance-6:~$ docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
a61bf6529bca	alpine	"echo 'hello from al..."	45 seconds ago	Exited (0) 44 seconds ago		alpine2
9ec8c17c0c2d	alpine	"/bin/sh"	10 minutes ago	Exited (0) 10 minutes ago		alpine
3dd6ba176924	nginx	"/docker-entrypoint..."	53 minutes ago	Up 53 minutes	0.0.0.0:8080->80/tcp, [::]:8080->80/tcp	webserver4
644995d24af9	nginx	"/docker-entrypoint..."	About an hour ago	Up About an hour		webserver3
deb5be64892b	nginx	"/docker-entrypoint..."	2 hours ago	Exited (0) About an hour ago		webserver2
a422350df3ce	nginx	"/docker-entrypoint..."	22 hours ago	Up 22 hours	80/tcp	dazzling_jackson
c23c355ec1ca	nginx	"/docker-entrypoint..."	22 hours ago	Exited (0) 22 hours ago		pedantic_galois
9a3f6eec02f9	nginx	"/docker-entrypoint..."	22 hours ago	Created		admiring_varahamihira

Exercise 10

1. Remove all stopped containers.

```
ubuntu@k8s-instance-6:~$ docker container ls -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
9014feaa98a0	alpine	"/bin/sh"	22 hours ago	Exited (0) 22 hours ago		alpine10
7ef1874973fe	alpine	"/bin/sh"	22 hours ago	Exited (0) 22 hours ago		alpine0
4281c2cf4192	ubuntu	"/bin/bash"	22 hours ago	Exited (0) 22 hours ago		xenodochial_jol
6408ac4e0b1c	ubuntu	"/bin/bash"	22 hours ago	Exited (0) 22 hours ago		ubuntu1
a61bf6529bca	alpine	"echo 'hello from al..."	22 hours ago	Exited (0) 22 hours ago		alpine2
9ec8c17c0c2d	alpine	"/bin/sh"	22 hours ago	Exited (0) 22 hours ago		alpine
3dd6ba176924	nginx	"/docker-entrypoint..."	23 hours ago	Exited (0) 22 hours ago		webserver4
deb5be64892b	nginx	"/docker-entrypoint..."	24 hours ago	Exited (0) 23 hours ago		webserver2
a422350df3ce	nginx	"/docker-entrypoint..."	44 hours ago	Exited (0) 22 hours ago		dazzling_jackson
c23c355ec1ca	nginx	"/docker-entrypoint..."	44 hours ago	Exited (0) 44 hours ago		pedantic_galois
9a3f6eec02f9	nginx	"/docker-entrypoint..."	44 hours ago	Created		admiring_varahamihira

```
ubuntu@k8s-instance-6:~$ docker rm $(docker ps -a -q -f status=exited)
9014feaa98a0
7ef1874973fe
4281c2cf4192
6408ac4e0b1c
a61bf6529bca
9ec8c17c0c2d
3dd6ba176924
deb5be64892b
a422350df3ce
c23c355ec1ca
ubuntu@k8s-instance-6:~$ docker container ls -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
9a3f6eec02f9	nginx	"/docker-entrypoint..."	44 hours ago	Created		admiring_varahamihira

```
ubuntu@k8s-instance-6:~$ docker container prune -f
Deleted Containers:
9a3f6eec02f962436c17276e9740cb9789372360134887253c8155a91be60f5f

Total reclaimed space: 0B
ubuntu@k8s-instance-6:~$ docker container ls -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
9a3f6eec02f9	nginx	"/docker-entrypoint..."	44 hours ago	Created		admiring_varahamihira

2. Remove unused images.

```
ubuntu@k8s-instance-6:~$ docker image prune -a
WARNING! This will remove all images without at least one container associated to them.
Are you sure you want to continue? [y/N] y
Deleted Images:
untagged: ubuntu:latest
untagged: ubuntu@sha256:1e622c5f073b4f6bfad6632f2616c7f59ef256e96fe78bf6a595d1dc4376ac02
deleted: sha256:602eb6fb314b5fafad376a32ab55194e535e533dec6552f82b70d7ac0e554b1c
deleted: sha256:3abdd8a5e7a8909e1509f1d36dcc8b85a0f95c68a69e6d86c6e9e3c1059d44b3

Total reclaimed space: 78.1MB
ubuntu@k8s-instance-6:~$ docker container ls -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
--------------	-------	---------	---------	--------

#container

```
ubuntu@k8s-instance-6:~$ docker container ls -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
fbd289996bb6	alpine	"/bin/sh"	3 minutes ago	Exited (0) 3 minutes ago		alpine0
786b9961c76a	nginx	"/docker-entrypoint..."	3 minutes ago	Up 3 minutes	80/tcp	nginx2
2e03bfcffc2	nginx	"/docker-entrypoint..."	5 minutes ago	Up 3 minutes	80/tcp	nginx

```
ubuntu@k8s-instance-6:~$ docker container prune
WARNING! This will remove all stopped containers.
Are you sure you want to continue? [y/N] y
Deleted Containers:
fbd289996bb6f5bdfb253067f996a42e855fb25106e2fad2d7dc6429c3a62b13

Total reclaimed space: 0B
ubuntu@k8s-instance-6:~$ docker container ls -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
786b9961c76a	nginx	"/docker-entrypoint..."	4 minutes ago	Up 3 minutes	80/tcp	nginx2
2e03bfcffc2	nginx	"/docker-entrypoint..."	5 minutes ago	Up 3 minutes	80/tcp	nginx

```
ubuntu@k8s-instance-6:~$
```

3. Inspect Docker disk usage

```
ubuntu@k8s-instance-6:~$ docker system df
```

TYPE	TOTAL	ACTIVE	SIZE	RECLAIMABLE
Images	2	2	200.3MB	0B (0%)
Containers	3	2	2.19kB	0B (0%)
Local Volumes	0	0	0B	0B
Build Cache	0	0	0B	0B

```
ubuntu@k8s-instance-6:~$ docker ps -s
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES	SIZE
786b9961c76a	nginx	"/docker-entrypoint..."	10 minutes ago	Up 10 minutes	80/tcp	nginx2	1.09kB (virtual 192MB)
2e03bfcffc2	nginx	"/docker-entrypoint..."	12 minutes ago	Up 10 minutes	80/tcp	nginx	1.09kB (virtual 192MB)

```
ubuntu@k8s-instance-6:~$ docker history nginx
```

IMAGE	CREATED	CREATED BY	SIZE	COMMENT
4e1b6bae1e48	8 days ago	CMD ["nginx" "-g" "daemon off;"]	0B	buildkit.dockerfile.v0
<missing>	8 days ago	STOPSIGNAL SIGQUIT	0B	buildkit.dockerfile.v0
<missing>	8 days ago	EXPOSE map[80/tcp:{}]	0B	buildkit.dockerfile.v0
<missing>	8 days ago	ENTRYPOINT ["/docker-entrypoint.sh"]	0B	buildkit.dockerfile.v0
<missing>	8 days ago	COPY 30-tune-worker-processes.sh /docker-ent...	4.62kB	buildkit.dockerfile.v0
<missing>	8 days ago	COPY 20-envsubst-on-templates.sh /docker-ent...	3.02kB	buildkit.dockerfile.v0
<missing>	8 days ago	COPY 15-local-resolvers.envsh /docker-entryp...	389B	buildkit.dockerfile.v0
<missing>	8 days ago	COPY 10-listen-on-ipv6-by-default.sh /docker...	2.12kB	buildkit.dockerfile.v0
<missing>	8 days ago	COPY docker-entrypoint.sh / # buildkit	1.62kB	buildkit.dockerfile.v0
<missing>	8 days ago	RUN /bin/sh -c set -x && groupadd --syst...	118MB	buildkit.dockerfile.v0
<missing>	8 days ago	ENV DYNPKG_RELEASE=1~bookworm	0B	buildkit.dockerfile.v0
<missing>	8 days ago	ENV PKG_RELEASE=1~bookworm	0B	buildkit.dockerfile.v0
<missing>	8 days ago	ENV NJS_RELEASE=1~bookworm	0B	buildkit.dockerfile.v0
<missing>	8 days ago	ENV NJS_VERSION=0.8.10	0B	buildkit.dockerfile.v0
<missing>	8 days ago	ENV NGINX_VERSION=1.27.5	0B	buildkit.dockerfile.v0
<missing>	8 days ago	LABEL maintainer=NGINX Docker Maintainers <d...	0B	buildkit.dockerfile.v0
<missing>	2 weeks ago	# debian.sh --arch 'amd64' out/ 'bookworm' '...	74.8MB	debuerreotype 0.15

```
ubuntu@k8s-instance-6:~$ docker volume inspect nginx
```