

- 1- Install docker. done
- 2- List all running containers
- 3- List all containers in your system
- 4- List all images in your system

```
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker ps
[sudo] password for dina:
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
60a887dee087   nginx    "/docker-entrypoint.    2 minutes ago Up 2 minutes   80/tcp       nginx_3
939a3aa047a6   nginx    "/docker-entrypoint.    11 hours ago   Up 13 minutes 80/tcp       nginx_test
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
60a887dee087   nginx    "/docker-entrypoint.    3 minutes ago Up 3 minutes   80/tcp       nginx_3
4f5171c7d30e   nginx    "/docker-entrypoint.    11 hours ago   Exited (0) 10 hours ago          nginx_2
939a3aa047a6   nginx    "/docker-entrypoint.    11 hours ago   Up 15 minutes 80/tcp       nginx_test
00b5ea976c29   nginx    "/docker-entrypoint.    11 hours ago   Exited (0) 11 hours ago          amazing_brahmagupta
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
<none>        <none>    4ad7ca4deb63   6 minutes ago 142MB
nginx         latest    c316d5a335a5   2 weeks ago   142MB
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$
```

- 5- Pull nginx image and give it a name
- 6- Try to run nginx.

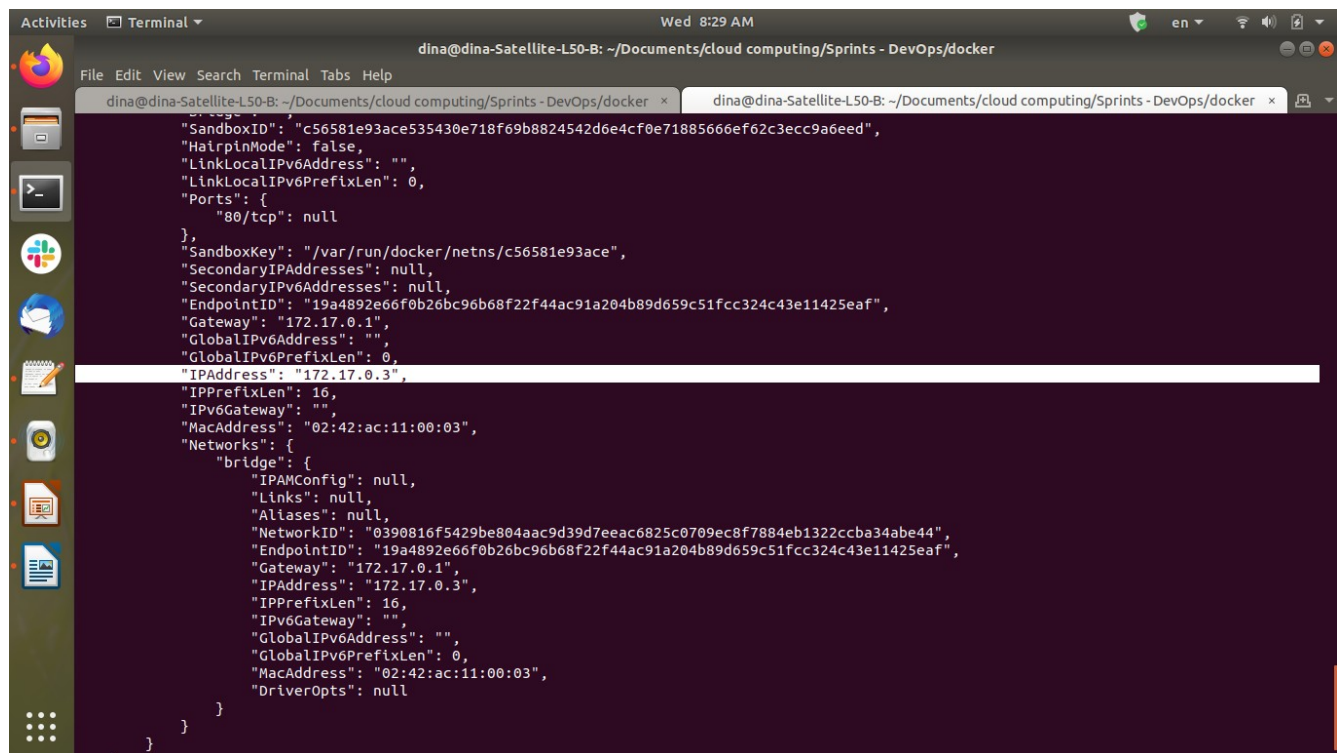
- \* Did it work? Yes.
- \* Why? Nginx runs by default on port 80 which is reserved in linux.
- \* How to make it work? we can try to map to a port, other than 80, for example 8100

```
(base) dina@dina-Satellite-L50-B:~$ sudo docker run -it -p 8100:80 --name nginx_test nginx
/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: 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
2022/02/17 15:02:11 [notice] 1#1: using the "epoll" event method
2022/02/17 15:02:11 [notice] 1#1: nginx/1.21.6
2022/02/17 15:02:11 [notice] 1#1: built by gcc 10.2.1 20210110 (Debian 10.2.1-6)
2022/02/17 15:02:11 [notice] 1#1: OS: Linux 5.4.0-99-generic
2022/02/17 15:02:11 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2022/02/17 15:02:11 [notice] 1#1: start worker processes
2022/02/17 15:02:11 [notice] 1#1: start worker process 32
2022/02/17 15:02:11 [notice] 1#1: start worker process 33
2022/02/17 15:02:11 [notice] 1#1: start worker process 34
2022/02/17 15:02:11 [notice] 1#1: start worker process 35
2022/02/17 15:02:11 [notice] 35#35: signal 28 (SIGWINCH) received
2022/02/17 15:02:11 [notice] 34#34: signal 28 (SIGWINCH) received
2022/02/17 15:02:11 [notice] 32#32: signal 28 (SIGWINCH) received
2022/02/17 15:02:11 [notice] 1#1: signal 28 (SIGWINCH) received
2022/02/17 15:02:11 [notice] 33#33: signal 28 (SIGWINCH) received
172.17.0.1 - - [17/Feb/2022:15:02:31 +0000] "GET / HTTP/1.1" 200 615 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:97.0) Gecko/20100101 Firefox/97.0" "-"
2022/02/17 15:02:31 [error] 32#32: *1 open() "/usr/share/nginx/html/favicon.ico" failed (2: No such file or directory), client: 172.17.0.1, server: localhost, request: "GET /favicon.ico HTTP/1.1", host: "localhost:8100", referer: "http://localhost:8100/"
172.17.0.1 - - [17/Feb/2022:15:02:31 +0000] "GET /favicon.ico HTTP/1.1" 404 153 "http://localhost:8100/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:97.0) Gecko/20100101 Firefox/97.0" "-"
□
```

## 7- Watch container logs

```
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker logs nginx_3
/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: 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
2022/02/16 06:12:24 [notice] 1#1: using the "epoll" event method
2022/02/16 06:12:24 [notice] 1#1: nginx/1.21.6
2022/02/16 06:12:24 [notice] 1#1: built by gcc 10.2.1 20210110 (Debian 10.2.1-6)
2022/02/16 06:12:24 [notice] 1#1: OS: Linux 5.4.0-99-generic
2022/02/16 06:12:24 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2022/02/16 06:12:24 [notice] 1#1: start worker processes
2022/02/16 06:12:24 [notice] 1#1: start worker process 31
2022/02/16 06:12:24 [notice] 1#1: start worker process 32
2022/02/16 06:12:24 [notice] 1#1: start worker process 33
2022/02/16 06:12:24 [notice] 1#1: start worker process 34
2022/02/16 06:13:04 [notice] 1#1: signal 28 (SIGWINCH) received
2022/02/16 06:13:04 [notice] 32#32: signal 28 (SIGWINCH) received
2022/02/16 06:13:04 [notice] 1#1: signal 28 (SIGWINCH) received
2022/02/16 06:13:04 [notice] 34#34: signal 28 (SIGWINCH) received
2022/02/16 06:13:04 [notice] 31#31: signal 28 (SIGWINCH) received
2022/02/16 06:13:04 [notice] 33#33: signal 28 (SIGWINCH) received
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$
```

## 8- Try inspect container ip



```
Activities Terminal
dina@dina-Satellite-L50-B: ~/Documents/cloud computing/Sprints - DevOps/docker
File Edit View Search Terminal Tabs Help
dina@dina-Satellite-L50-B: ~/Documents/cloud computing/Sprints - DevOps/docker x dina@dina-Satellite-L50-B: ~/Documents/cloud computing/Sprints - DevOps/docker x
{"SandboxID": "c56581e93ace535430e718f69b8824542d6e4cf0e71885666ef62c3ecc9a6eed",
 "HatrpinMode": false,
 "LinkLocalIPv6Address": "",
 "LinkLocalIPv6PrefixLen": 0,
 "Ports": {
   "80/tcp": null
 },
 "SandboxKey": "/var/run/docker/netns/c56581e93ace",
 "SecondaryIPAddresses": null,
 "SecondaryIPv6Addresses": null,
 "EndpointID": "19a4892e66f0b26bc96b68f22f44ac91a204b89d659c51fcc324c43e11425eaf",
 "Gateway": "172.17.0.1",
 "GlobalIPv6Address": "",
 "GlobalIPv6PrefixLen": 0,
 "IPAddress": "172.17.0.3",
 "IPPrefixLen": 16,
 "IPv6Gateway": "",
 "MacAddress": "02:42:ac:11:00:03",
 "Networks": {
   "bridge": {
     "IPAMConfig": null,
     "Links": null,
     "Aliases": null,
     "NetworkID": "0390816f5429be804aac9d39d7eeac6825c0709ec8f7884eb1322ccba34abe44",
     "EndpointID": "19a4892e66f0b26bc96b68f22f44ac91a204b89d659c51fcc324c43e11425eaf",
     "Gateway": "172.17.0.1",
     "IPAddress": "172.17.0.3",
     "IPPrefixLen": 16,
     "IPv6Gateway": "",
     "GlobalIPv6Address": "",
     "GlobalIPv6PrefixLen": 0,
     "MacAddress": "02:42:ac:11:00:03",
     "DriverOpts": null
   }
 }
}
```

## 9- Try to execute inside nginx container

```
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker exec -it nginx_3
"docker exec" requires at least 2 arguments.
See 'docker exec --help'.

Usage: docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Run a command in a running container
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker exec -it nginx_3 bash
root@60a887dee087:/# ls
bin  dev  docker-entrypoint.sh  home  lib64  mnt  proc  run  srv  tmp  var
boot  docker-entrypoint.d  etc  lib  media  opt  root  sbin  sys  usr
root@60a887dee087:/# touch newfile
root@60a887dee087:/# ls
bin  dev  docker-entrypoint.sh  home  lib64  mnt  proc  run  srv  tmp  var
boot  docker-entrypoint.d  etc  lib  media  newfile  opt  root  sbin  sys  usr
root@60a887dee087:/# exit
exit
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker commit nginx_3
sha256:6abb52c2efc69cede7912a439fac278aceabe537e9e16625a932e6f298707b56
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker exec -it nginx_3 bash
root@60a887dee087:/# ls
bin  dev  docker-entrypoint.sh  home  lib64  mnt  opt  root  sbin  sys  usr
boot  docker-entrypoint.d  etc  lib  media  newfile  proc  run  srv  tmp  var
root@60a887dee087:/#
```

## 10- Try to remove nginx image.

- \* Did it work? No.
- \* Why? There are containers based on this image.
- \* How to solve it? Remove all relative containers.

```
Activities Terminal Wed 8:42 AM
dina@dina-Satellite-L50-B: ~/Documents/cloud computing/Sprints - DevOps/docker

File Edit View Search Terminal Tabs Help

dina@dina-Satellite-L50-B: ~/Documents/cloud computing/Sprints - DevOps/docker x dina@dina-Satellite-L50-B: ~/Documents/cloud computing/Sprints - DevOps/docker x
nginx latest c316d5a335a5 2 weeks ago 142MB
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker image ls
REPOSITORY TAG IMAGE ID CREATED SIZE
<none> <none> 6abb52c2efc6 6 minutes ago 142MB
<none> <none> 4ad7ca4deb63 27 minutes ago 142MB
nginx latest c316d5a335a5 2 weeks ago 142MB
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker rmi nginx
Error response from daemon: conflict: unable to remove repository reference "nginx" (must force) - container 939a3aa047a6 is using its referen
ced image c316d5a335a5
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
60a887dee087 nginx "/docker-entrypoint..." 28 minutes ago Exited (0) 5 minutes ago nginx_3
4f5171c7d30e nginx "/docker-entrypoint..." 11 hours ago Exited (0) 11 hours ago nginx_2
939a3aa047a6 nginx "/docker-entrypoint..." 11 hours ago Exited (0) 4 minutes ago nginx_test
00b5ea976c29 nginx "/docker-entrypoint..." 12 hours ago Exited (0) 11 hours ago amazing_brahmagupta
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker rm nginx_test
nginx_test
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker rm nginx_2
nginx_2
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker rm nginx_3
nginx_3
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker rm amazing_brahmagupta
amazing_brahmagupta
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker rmi nginx
Untagged: nginx:latest
Untagged: nginx@sha256:2834dc507516af02784808c5f48b7cbe38b8ed5d0f4837f16e78d00deb7e7767
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
<none> <none> 6abb52c2efc6 11 minutes ago 142MB
<none> <none> 4ad7ca4deb63 32 minutes ago 142MB
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$
```

11- Try run ubuntu container.

\* Did it work? Yes.

\* Why?

\* How to make it work?

12- Create a file inside ubuntu container

13- Exit the container.

14- Try to start it again.

\* Did you find the file? Yes.

```
Activities Terminal Wed 8:50 AM
root@6fd6fcb50fef: /

(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
08c01a0ec47e: Pull complete
Digest: sha256:669e010b58baf5beb2836b253c1fd5768333f0d1dbcb834f7c07a4dc93f474be
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker run -it ubuntu_test ubuntu
Unable to find image 'ubuntu_test:latest' locally
docker: Error response from daemon: pull access denied for ubuntu_test, repository does not exist or may require 'docker login': denied: requested access to the resource is denied.
See 'docker run --help'.
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker run -it --name ubuntu_test ubuntu
root@6fd6fcb50fef:/# ls
bin boot dev etc home lib lib32 lib64 libx32 media mnt opt proc root run sbin srv sys tmp usr var
root@6fd6fcb50fef:/# ls home/
root@6fd6fcb50fef:/# touch newfile
root@6fd6fcb50fef:/# ls
bin boot dev etc home lib lib32 lib64 libx32 media mnt newfile opt proc root run sbin srv sys tmp usr var
root@6fd6fcb50fef:/# exit
exit
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker start -it ubuntu_test
unknown shorthand flag: 't' in -t
See 'docker start --help'.
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker start ubuntu_test
ubuntu_test
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker exec -it ubuntu_test
"docker exec" requires at least 2 arguments.
See 'docker exec --help'.

Usage: docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Run a command in a running container
(base) dina@dina-Satellite-L50-B:~/Documents/cloud computing/Sprints - DevOps/docker$ sudo docker exec -it ubuntu_test bash
root@6fd6fcb50fef:/# ls
bin boot dev etc home lib lib32 lib64 libx32 media mnt newfile opt proc root run sbin srv sys tmp usr var
root@6fd6fcb50fef:/#
```