Hands-On Exercise for Day16 of DevOps Professional training.

1. Create a folder for your activity. Check for availability of docker service:

```
osgdev@TG-DevOps-OS004:~$ mkdir dockerlab
osgdev@TG-DevOps-OS004:~$ cd dockerlab/
osgdev@TG-DevOps-OS004:~/dockerlab$

osgdev@TG-DevOps-OS004:~/dockerlab$ service docker status
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; disabled; vendor
preset:
   Active: inactive (dead)
     Docs: https://docs.docker.com
```

Note: Normally docker service is kept in stopped state in Topgear machine due to technical reasons. Hence you need to start it.

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2. Start docker service and check for its availability. For password use the same password you used to login into Topgear machine.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ service docker start
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ===
Authentication is required to start 'docker.socket'.
Authenticating as: osgdev,,, (osgdev)
Password:
==== AUTHENTICATION COMPLETE ===
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ===
Authentication is required to start 'docker.service'.
Authenticating as: osgdev,,, (osgdev)
Password:

osgdev@TG-DevOps-OS004:~/dockerlab$ service docker status
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; disabled; vendor preset:
   Active: active (running) since Tue 2018-04-10 19:09:18 IST; 58s ago
     Docs: https://docs.docker.com
 Main PID: 12229 (dockerd)
    Tasks: 17
   Memory: 96.8M
      CPU: 590ms
   CGroup: /system.slice/docker.service
           ├─12229 /usr/bin/dockerd -H fd://
           └─12261 docker-containerd --config /var/run/docker/containerd/contain

Apr 10 19:09:16 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:16.844263
Apr 10 19:09:16 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:16.844314
Apr 10 19:09:16 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:16.844324
Apr 10 19:09:16 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:16.845790
Apr 10 19:09:17 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:17.615721
Apr 10 19:09:17 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:17.672155
Apr 10 19:09:18 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:18.072070
Apr 10 19:09:18 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:18.075702
Apr 10 19:09:18 TG-DevOps-OS004 dockerd[12229]: time="2018-04-10T19:09:18.103994
Apr 10 19:09:18 TG-DevOps-OS004 systemd[1]: Started Docker Application Container

osgdev@TG-DevOps-OS004:~/dockerlab$ docker version
Client:
```

```
 Version:  17.12.1-ce
 API version:  1.35
 Go version:  go1.9.4
 Git commit:  7390fc6
 Built:  Tue Feb 27 22:17:40 2018
 OS/Arch:  linux/amd64

Server:
 Engine:
  Version:  17.12.1-ce
  API version:  1.35 (minimum version 1.12)
  Go version:  go1.9.4
  Git commit:  7390fc6
  Built:  Tue Feb 27 22:16:13 2018
  OS/Arch:  linux/amd64
  Experimental:  false
```

Another formal test of Docker working is the hello-world image provided by Docker itself.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working
correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker
Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which
runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which
sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
 $ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
 https://cloud.docker.com/

For more examples and ideas, visit:
 https://docs.docker.com/engine/userguide/
```

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3. List the docker images already available in the given machine.

Note: the output is edited, probably you may see lot more images.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker image ls
REPOSITORY                                  TAG                 IMAGE ID
CREATED             SIZE
tomcat                                      9                   4f88b8ccbcd0
2 months ago        714MB
tomcat                                      7                   d10641f583b3
2 months ago        456MB
```

```
ubuntu                                  16.04               2a4cca5ac898
2 months ago        111MB
hello-world                             latest              f2a91732366c
4 months ago        1.85kB
```

---

4. We shall use Ubuntu:16.04 image which is compatible for our Ubuntu:16.04 machine to see what is inside the container.

Note: -i flag is for interactive access to container in a new terminal (-t)

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container run -it
ubuntu:16.04
root@301a4c3c816c:/# ls
bin   dev  home  lib64  mnt  proc  run   srv  tmp  var
boot  etc  lib   media  opt  root  sbin  sys  usr
```

Note: we used linux list (ls) command to see the file system inside the container.
You may open another terminal windows and check the filesystem on the host machine.
Look for similarity in file system between host machine and file system within the container.

```
osgdev@TG-DevOps-OS004:~$ ls /
bin   home            lib64       opt   sbin  tmp      vmlinuz.old
boot  initrd.img      lost+found  proc  snap  usr
dev   initrd.img.old  media       root  srv   var
etc   lib             mnt         run   sys   vmlinuz
```

You can also see the running container on the host machine:

```
osgdev@TG-DevOps-OS004:~$ docker container ls
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES
301a4c3c816c        ubuntu:16.04        "/bin/bash"         4 minutes
ago       Up 4 minutes                            naughty_brown
```

---

5. Let us make some change to file system environment of the container. Let us create a folder and file.

```
root@301a4c3c816c:/# mkdir MASTER
root@301a4c3c816c:/# touch testfile
root@301a4c3c816c:/# ls
MASTER  boot  etc   lib    media  opt   root  sbin  sys       tmp  var
bin     dev   home  lib64  mnt    proc  run   srv   testfile  usr
root@301a4c3c816c:/# exit
exit
osgdev@TG-DevOps-OS004:~/dockerlab$
```

Note: After making the change to the container we exited from the container. Let us check the status of container. You can observe that the container is no longer running. Hence we used -a flag to list all containers, where the status is shown as Exited About a minute ago.

```
osgdev@TG-DevOps-OS004:~$ docker container ls
```

```
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES

osgdev@TG-DevOps-OS004:~$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND
CREATED             STATUS                          PORTS
NAMES
301a4c3c816c        ubuntu:16.04        "/bin/bash"              7
minutes ago       Exited (0) About a minute ago
naughty_brown
4f83d502a259        hello-world         "/hello"                 13
minutes ago      Exited (0) 13 minutes ago
pensive_hugle
```

---

6. We can start the Exited(Stopped) container and can access the same again.

Note: you may identify and work with a container either using "CONTAINER ID" (301a4c3c816c) or using NAMES (naughty_brown)

```
osgdev@TG-DevOps-OS004:~$ docker container start 301a4c3c816c
301a4c3c816c

osgdev@TG-DevOps-OS004:~$ docker container ls
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES
301a4c3c816c        ubuntu:16.04        "/bin/bash"         13 minutes
ago      Up 8 seconds                           naughty_brown

osgdev@TG-DevOps-OS004:~$ docker attach naughty_brown
root@301a4c3c816c:/#

root@301a4c3c816c:/# ls
MASTER  boot  etc   lib    media  opt   root  sbin  sys       tmp  var
bin     dev   home  lib64  mnt    proc  run   srv   testfile  usr
root@301a4c3c816c:/#
```

Note: You can observe that the content of the container is intact, while it is being stopped and started again. Check for folder MASTER and file testfile

---

7. You can also stop the container from the system, on which the container is running.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container stop 301a4c3c816c
301a4c3c816c
```

As you execute the above command, you can watch on the other window, where you are interacting with the running container automatically execute an "exit" command and comes out of container.

```
root@301a4c3c816c:/# ls
MASTER  boot  etc   lib    media  opt   root  sbin  sys       tmp  var
bin     dev   home  lib64  mnt    proc  run   srv   testfile  usr
root@301a4c3c816c:/# exit
```

```
osgdev@TG-DevOps-OS004:~$
```

Note: You can start and stop the container any number of times, but its content will remain intact.

---

8. We shall now extract the image of this container to recreate another container using this new image.

Note: The container may be either running or in stopped state, while we extract the image.

```
osgdev@TG-DevOps-OS004:~$ docker container commit 301a4c3c816c
testimage
sha256:50832d1acf4ca662ab438dc5ac43c5d8704a1e8b7ecdfe4398c8c722dde88794

osgdev@TG-DevOps-OS004:~$ docker image ls
REPOSITORY                                TAG                 IMAGE ID
CREATED             SIZE
testimage                                 latest
50832d1acf4c        27 seconds ago      111MB
tomcat                                    9
4f88b8ccbcd0        2 months ago        714MB
tomcat                                    7
d10641f583b3        2 months ago        456MB
ubuntu                                    16.04
2a4cca5ac898        2 months ago        111MB
hello-world                               latest
f2a91732366c        4 months ago        1.85kB
```

---

9. Create another container using the new "testimage", and check whether it is replica of the "naughty_brown" container, which we modified to add the folder "Master" and file "testfile"

Note: The command /bin/bash is to run bash shell inside the container.

```
osgdev@TG-DevOps-OS004:~$ docker container run -it testimage /bin/bash

root@a092c4f45d64:/# ls
MASTER  boot  etc   lib    media  opt   root  sbin  sys       tmp  var
bin     dev   home  lib64  mnt    proc  run   srv   testfile  usr

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND
CREATED             STATUS                          PORTS
NAMES
a092c4f45d64        testimage           "/bin/bash"              3
minutes ago       Up 3 minutes
keen_bhabha
301a4c3c816c        ubuntu:16.04        "/bin/bash"              41
minutes ago      Exited (0) 21 minutes ago
naughty_brown
```

Note: The newly created container "keen_bhabha" and "naughty_brown" are two different container using different image. But "keen_bhabha" as a container is replica of "naughty_brown" container, as we used the image extracted from that.

10. Container names were generated randomly and hence are irrelevant most of the times. We can rename these containers with more appropriate names.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container rename
naughty_brown original

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container rename keen_bhabha
replica

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND
CREATED             STATUS                          PORTS
NAMES
a092c4f45d64        testimage           "/bin/bash"             8
minutes ago       Up 8 minutes
replica
301a4c3c816c        ubuntu:16.04        "/bin/bash"             About
an hour ago   Exited (0) 26 minutes ago
original
```

11. Now we have created new image and created another container out of that. How can we share this image with others in the team. One way is we can archive the image in to a single tar file and can share this to team.

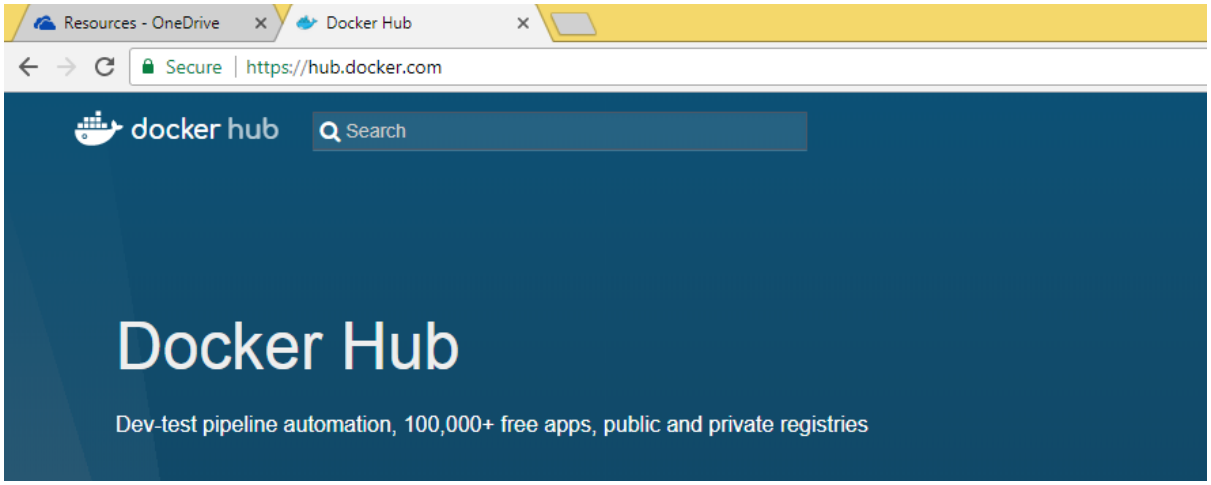
```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container export -o test.tar
original

osgdev@TG-DevOps-OS004:~/dockerlab$ ls
test.tar
```

You can get image of "original" container and can create another replica.

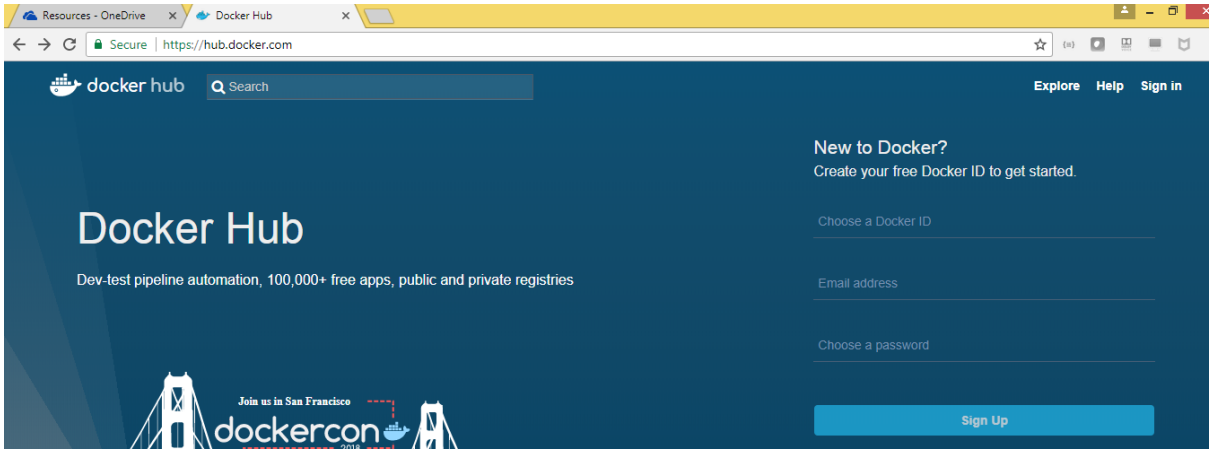
```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker image import ./test.tar
newimage
sha256:b03fc914fdcb021573bdc5c46fc538263d0365e130b398608345f664d97bca44
osgdev@TG-DevOps-OS004:~/dockerlab$ docker image ls
REPOSITORY                              TAG                 IMAGE ID
CREATED             SIZE
newimage                                latest
b03fc914fdcb        7 seconds ago       85.8MB
testimage                               latest
50832d1acf4c        20 minutes ago      111MB

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container run -it --name
replica2 newimage /bin/bash
root@d893a4d0e415:/# ls
MASTER  boot  etc   lib    media  opt   root  sbin  sys       tmp  var
bin     dev   home  lib64  mnt    proc  run   srv   testfile  usr
root@d893a4d0e415:/#
```

Note: Observe that we named the container this time at the time of creation itself.

12. Alternately we can make use of docker hub and upload the image and share the same with anyone.



Create an account for yourself choosing a unique ID, email address (for confirmation) and password (Creating public repo in cloud – No credit card required!). Click on Sign Up. Click on Sign in to access your account.

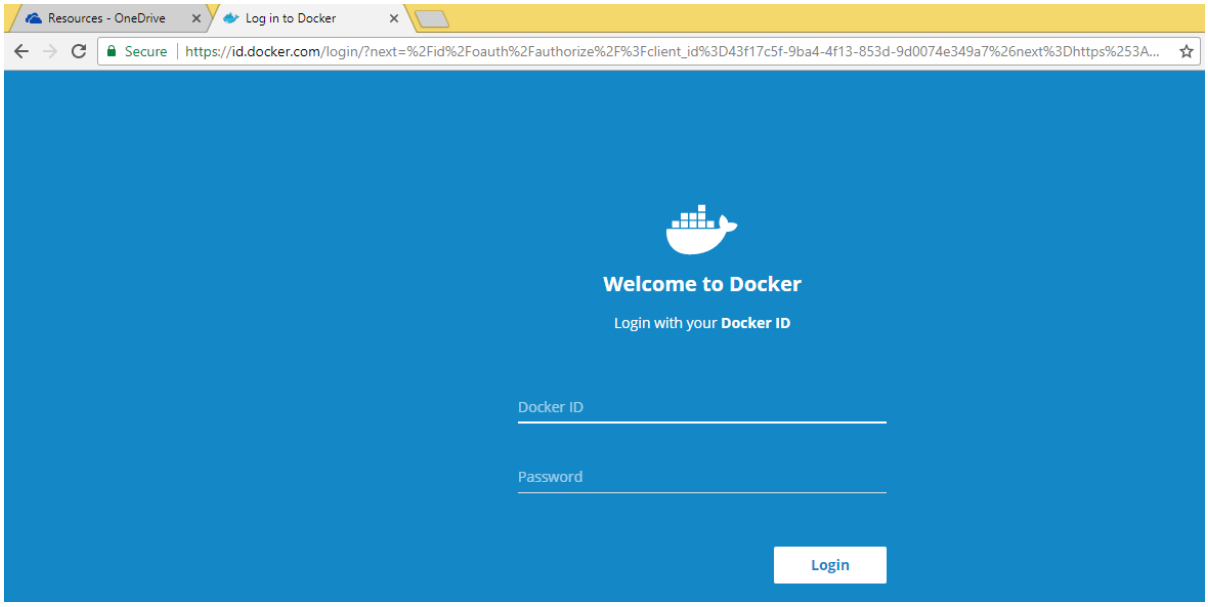



```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If
you don't have a Docker ID, head over to https://hub.docker.com to
create one.
Username: prakaram
Password:
Login Succeeded

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image tag testimage
prakaram/ti001

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image ls
REPOSITORY                                  TAG                 IMAGE ID
CREATED             SIZE
newimage                                    latest
b03fc914fdcb        7 minutes ago       85.8MB
```

```
testimage                                    latest
50832d1acf4c        27 minutes ago      111MB
prakaram/ti001                               latest
50832d1acf4c        27 minutes ago      111MB

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image push prakaram/ti001
The push refers to repository [docker.io/prakaram/ti001]
e8d14772d554: Pushed
8600ee70176b: Mounted from library/ubuntu
2bbb3cec611d: Mounted from library/ubuntu
d2bb1fc88136: Mounted from library/ubuntu
a6a01ad8b53f: Mounted from library/ubuntu
833649a3e04c: Pushed
Head https://registry-
1.docker.io/v2/prakaram/ti001/blobs/sha256:50832d1acf4ca662ab438dc5ac43
c5d8704a1e8b7ecdfe4398c8c722dde88794: read tcp 10.199.0.104:53484-
>35.169.231.249:443: read: connection reset by peer

osgdev@TG-DevOps-OS004:~/dockerlab$ docker logout
Removing login credentials for https://index.docker.io/v1/
```

Note: Here it failed and the image is not uploaded. It depends on the speed of internet connected to your machine.

Sign into your account to view the uploaded image:



---

13. Now anybody can pull this image, as the repository in which I had uploaded the image is a public repository.

Important Note: Make sure that whatever image you upload in this external repository has no important code relating to business, as you may need to explain what you pushed into this external public repository.

For a change I will pull some other image from docker official repository.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker image pull docker/whalesay
Using default tag: latest
latest: Pulling from docker/whalesay
e190868d63f8: Pull complete
909cd34c6fd7: Pull complete
0b9bfabab7c1: Pull complete
a3ed95caeb02: Pull complete
00bf65475aba: Pull complete
c57b6bcc83e3: Pull complete
8978f6879e2f: Pull complete
8eed3712d2cf: Pull complete
Digest:
sha256:178598e51a26abbc958b8a2e48825c90bc22e641de3d31e18aaf55f3258ba93b
Status: Downloaded newer image for docker/whalesay:latest

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image ls
REPOSITORY                                  TAG                 IMAGE ID
CREATED             SIZE
newimage                                    latest
b03fc914fdcb        15 minutes ago      85.8MB
testimage                                   latest
50832d1acf4c        35 minutes ago      111MB
prakaram/ti001                              latest
50832d1acf4c        35 minutes ago      111MB
tomcat                                      9
4f88b8ccbcd0        2 months ago        714MB
tomcat                                      7
d10641f583b3        2 months ago        456MB
ubuntu                                      16.04
2a4cca5ac898        2 months ago        111MB
hello-world                                 latest
f2a91732366c        4 months ago        1.85kB
docker/whalesay                             latest
6b362a9f73eb        2 years ago         247MB

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container run
docker/whalesay cowsay "Always an Important Message"

 _____________________________
< Always an Important Message >
 -----------------------------
    \
     \
      \
                    ##        .
              ## ## ##       ==
           ## ## ## ##      ===
       /""""""""""""""""___/ ===
  ~~~ {~~ ~~~~ ~~~ ~~~~ ~~ ~ /  ===- ~~~
       \______ o          __/
        \     \         __/
          \____\_______/
```

---

14. By this time we have too many containers. We shall remove few of them. But you can only remove stopped (Exited) containers.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND
CREATED             STATUS                          PORTS
NAMES
a6a9947065c8        docker/whalesay     "cowsay 'Always an I…"   3
minutes ago       Exited (0) 3 minutes ago
hardcore_nightingale
d893a4d0e415        newimage            "/bin/bash"              17
minutes ago      Exited (0) 15 minutes ago
replica2
a092c4f45d64        testimage           "/bin/bash"              34
minutes ago      Up 34 minutes
replica
301a4c3c816c        ubuntu:16.04        "/bin/bash"              About
an hour ago   Exited (0) About an hour ago
original
4f83d502a259        hello-world         "/hello"                 About
an hour ago   Exited (0) About an hour ago
pensive_hugle

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container rm replica2
replica2

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND
CREATED             STATUS                          PORTS
NAMES
a6a9947065c8        docker/whalesay     "cowsay 'Always an I…"   6
minutes ago       Exited (0) 6 minutes ago
hardcore_nightingale
a092c4f45d64        testimage           "/bin/bash"              37
minutes ago      Up 37 minutes
replica
301a4c3c816c        ubuntu:16.04        "/bin/bash"              About
an hour ago   Exited (0) About an hour ago
original
4f83d502a259        hello-world         "/hello"                 About
an hour ago   Exited (0) About an hour ago
pensive_hugle
```

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container rm replica
Error response from daemon: You cannot remove a running container a092c4f45d6468cedf5062782206ac00fefa39f39388ba2aa9141c8e752ecfc7. Stop the container before attempting removal or force remove

Note: If you want to remove multiple containers which are stopped (Exited)

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container prune
WARNING! This will remove all stopped containers.
Are you sure you want to continue? [y/N] y
Deleted Containers:
a6a9947065c82f4b031b0696285d127f87edac95f1a1c25599d223bf5c7e0b27
301a4c3c816ca4076d4836e52f544bafe891df2cca01ebeaaedf1f81b452f442
4f83d502a2598b6bb90fbb26d106a895c8b1276fa91c60c330de50a954463a6d
fb5b10542ea49648895de7ad3f712e98d847dc35e8d502b189ee20c892be09ca
3bcd41fa2a64acb60e2e81d735d68ba31b812ffee791c3a90bf88eb88eeb945f
91cf99b10039ddd32dab7c047ef41c494ca568629bc5cf763d37b9775cb058ae
```

```
Total reclaimed space: 47B
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES
a092c4f45d64        testimage           "/bin/bash"         38 minutes
ago      Up 38 minutes                           replica

Note: To remove the container "replica", you first need to stop it.

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container stop replica
replica

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container rm replica
replica

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES
```

---

15. We can also remove images in similar way. But if there is any image used in a container then it cannot be removed.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container run testimage

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image ls
REPOSITORY                                  TAG                 IMAGE ID
CREATED             SIZE
newimage                                    latest
b03fc914fdcb        2 hours ago         85.8MB
testimage                                   latest
50832d1acf4c        3 hours ago         111MB
prakaram/ti001                              latest
50832d1acf4c        3 hours ago         111MB

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image rm newimage
Untagged: newimage:latest
Deleted:
sha256:b03fc914fdcb021573bdc5c46fc538263d0365e130b398608345f664d97bca44
Deleted:
sha256:133188bd6d7b80d00f96de214b5d30a1b73aa39a02d7dcdc6b5d9afcd0619072

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image ls
REPOSITORY                                  TAG                 IMAGE ID
CREATED             SIZE
prakaram/ti001                              latest
50832d1acf4c        3 hours ago         111MB

osgdev@TG-DevOps-OS004:~/dockerlab$ docker container ls -a
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS                      PORTS               NAMES
7b352091bb4c        50832d1acf4c        "/bin/bash"         3 minutes
ago       Exited (0) 3 minutes ago
wizardly_kepler
```

```
06f4dfd5ddfb        ubuntu:16.04        "/bin/bash"         4 minutes
ago       Exited (0) 4 minutes ago
practical_shannon

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image rm prakaram/ti001
Error response from daemon: conflict: unable to remove repository
reference "prakaram/ti001" (must force) - container 7b352091bb4c is
using its referenced image 50832d1acf4c

sgdev@TG-DevOps-OS004:~/dockerlab$ docker container rm 7b352091bb4c
7b352091bb4c
osgdev@TG-DevOps-OS004:~/dockerlab$ docker image rm prakaram/ti001
Untagged: prakaram/ti001:latest
Deleted:
sha256:50832d1acf4ca662ab438dc5ac43c5d8704a1e8b7ecdfe4398c8c722dde88794
Deleted:
sha256:bc773095ee15bfa8022615c51f2d43f0b9f78dd7de650b251be6dc86f7b6f38e
```

To remove multiple unused images.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ 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: jenkinsnew01:lts
deleted: sha256:63a943d4cf285e6ced91f655f08e69ae9cfc00b5cb8aee101f34a11bc50903c1
untagged: jenkinsnew:lts
untagged: prakaram/jenkins:latest
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prakaram/jenkins@sha256:3e9a6518c0860aa8f340fa85a039444e81e4a749f148e53988dbd8e5b6e
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```

```
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untagged: jenkins/jenkins:lts
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```

```
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untagged: jenkinsnew02:lts
deleted: sha256:66be4f0b83b34f46be1e821979ae52c0fc0d0f6c4db1db816abaa2542aa9cbc6
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Total reclaimed space: 4.147GB
osgdev@TG-DevOps-OS004:~/dockerlab$

osgdev@TG-DevOps-OS004:~/dockerlab$ docker image ls
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
ubuntu              16.04               2a4cca5ac898        2 months
ago         111MB
osgdev@TG-DevOps-OS004:~/dockerlab$
```

---

16. Docker general subcommands. Track how many of them you know till now. Note that this is the old way of docker command line which makes no distinction between container or image specific commands.

Note: This training manual do not use this old style docker COMMAND. But similar activity is covered under the new docker container COMMAND and docker image COMMAND listed in the following two steps.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker

Usage:      docker COMMAND
```

A self-sufficient runtime for containers

```
Options:
      --config string      Location of client config files (default
                           "/home/osgdev/.docker")
  -D, --debug              Enable debug mode
  -H, --host list          Daemon socket(s) to connect to
  -l, --log-level string   Set the logging level
                           ("debug"|"info"|"warn"|"error"|"fatal")
                           (default "info")
      --tls                Use TLS; implied by --tlsverify
      --tlscacert string   Trust certs signed only by this CA (default
                           "/home/osgdev/.docker/ca.pem")
      --tlscert string     Path to TLS certificate file (default
                           "/home/osgdev/.docker/cert.pem")
      --tlskey string      Path to TLS key file (default
                           "/home/osgdev/.docker/key.pem")
      --tlsverify          Use TLS and verify the remote
  -v, --version            Print version information and quit

Management Commands:
  config      Manage Docker configs
  container   Manage containers
  image       Manage images
  network     Manage networks
```

```
  node        Manage Swarm nodes
  plugin      Manage plugins
  secret      Manage Docker secrets
  service     Manage services
  stack       Manage Docker stacks
  swarm       Manage Swarm
  system      Manage Docker
  trust       Manage trust on Docker images (experimental)
  volume      Manage volumes

Commands:
  attach      Attach local standard input, output, and error streams to
a running container
  build       Build an image from a Dockerfile
  commit      Create a new image from a container's changes
  cp          Copy files/folders between a container and the local
filesystem
  create      Create a new container
  diff        Inspect changes to files or directories on a container's
filesystem
  events      Get real time events from the server
  exec        Run a command in a running container
  export      Export a container's filesystem as a tar archive
  history     Show the history of an image
  images      List images
  import      Import the contents from a tarball to create a filesystem
image
  info        Display system-wide information
  inspect     Return low-level information on Docker objects
  kill        Kill one or more running containers
  load        Load an image from a tar archive or STDIN
  login       Log in to a Docker registry
  logout      Log out from a Docker registry
  logs        Fetch the logs of a container
  pause       Pause all processes within one or more containers
  port        List port mappings or a specific mapping for the
container
  ps          List containers
  pull        Pull an image or a repository from a registry
  push        Push an image or a repository to a registry
  rename      Rename a container
  restart     Restart one or more containers
  rm          Remove one or more containers
  rmi         Remove one or more images
  run         Run a command in a new container
  save        Save one or more images to a tar archive (streamed to
STDOUT by default)
  search      Search the Docker Hub for images
  start       Start one or more stopped containers
  stats       Display a live stream of container(s) resource usage
statistics
  stop        Stop one or more running containers
  tag         Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE
  top         Display the running processes of a container
  unpause     Unpause all processes within one or more containers
  update      Update configuration of one or more containers
  version     Show the Docker version information
```

```
  wait        Block until one or more containers stop, then print their
exit codes

Run 'docker COMMAND --help' for more information on a command.
```

---

17. Docker Container specific subcommands. Track how many of them you know till now.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker container

Usage:     docker container COMMAND

Manage containers

Options:


Commands:
  attach      Attach local standard input, output, and error streams to
a running container
  commit      Create a new image from a container's changes
  cp          Copy files/folders between a container and the local
filesystem
  create      Create a new container
  diff        Inspect changes to files or directories on a container's
filesystem
  exec        Run a command in a running container
  export      Export a container's filesystem as a tar archive
  inspect     Display detailed information on one or more containers
  kill        Kill one or more running containers
  logs        Fetch the logs of a container
  ls          List containers
  pause       Pause all processes within one or more containers
  port        List port mappings or a specific mapping for the
container
  prune       Remove all stopped containers
  rename      Rename a container
  restart     Restart one or more containers
  rm          Remove one or more containers
  run         Run a command in a new container
  start       Start one or more stopped containers
  stats       Display a live stream of container(s) resource usage
statistics
  stop        Stop one or more running containers
  top         Display the running processes of a container
  unpause     Unpause all processes within one or more containers
  update      Update configuration of one or more containers
  wait        Block until one or more containers stop, then print their
exit codes

Run 'docker container COMMAND --help' for more information on a
command.
```

---

18. Docker Image specific subcommands. Track how many of them you know till now.

```
osgdev@TG-DevOps-OS004:~/dockerlab$ docker image

Usage:     docker image COMMAND

Manage images

Options:


Commands:
  build       Build an image from a Dockerfile
  history     Show the history of an image
  import      Import the contents from a tarball to create a filesystem
image
  inspect     Display detailed information on one or more images
  load        Load an image from a tar archive or STDIN
  ls          List images
  prune       Remove unused images
  pull        Pull an image or a repository from a registry
  push        Push an image or a repository to a registry
  rm          Remove one or more images
  save        Save one or more images to a tar archive (streamed to
STDOUT by default)
  tag         Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE

Run 'docker image COMMAND --help' for more information on a command.
```

19.

20.

21.
