Problem 1:

§ Run the container hello-world

§ Check the container status

§ Start the stopped container

§ Remove the container

§ Remove the image

```
[root@localhost docker-lab]# docker ps -a
CONTAINER ID   IMAGE         COMMAND    CREATED              STATUS                          PORTS     NAMES
bfa4438d4412   hello-world   "/hello"   About a minute ago   Exited (0) About a minute ago             agitated_sammet
[root@localhost docker-lab]#
```

```
[root@localhost docker-lab]# docker ps -a
CONTAINER ID   IMAGE         COMMAND    CREATED              STATUS                          PORTS     NAMES
bfa4438d4412   hello-world   "/hello"   About a minute ago   Exited (0) About a minute ago             agitated_sammet
[root@localhost docker-lab]# docker start bfa4438d4412
bfa4438d4412
[root@localhost docker-lab]# docker rm bfa4438d4412
bfa4438d4412
[root@localhost docker-lab]# docker rmi hello-world
Untagged: hello-world:latest
Deleted: sha256:ef54e839ef541993b4e87f25e752f7cf4238fa55f017957c2eb44077083d7a6a
[root@localhost docker-lab]#
```

Problem 2:

§ Run container centos or ubuntu in an interactive mode

§ Run the following command in the container “echo docker ”

§ Open a bash shell in the container and touch a file named hello-docker

§ Stop the container and remove it. Write your comment about the file hello-docker

§ Remove all stopped containers

```
[root@localhost problem2]# docker run -it --name myubuntu ubuntu
root@88f635d23ae1:/# echo docker
docker
root@88f635d23ae1:/# touch hello-docker
root@88f635d23ae1:/# ls
bin  boot  dev  etc  hello-docker  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
root@88f635d23ae1:/# exit
exit
[root@localhost problem2]# docker ps -a
CONTAINER ID   IMAGE     COMMAND       CREATED          STATUS                      PORTS     NAMES
88f635d23ae1   ubuntu    "/bin/bash"   58 seconds ago   Exited (0) 7 seconds ago              myubuntu
[root@localhost problem2]# docker rm myubuntu
myubuntu
[root@localhost problem2]# docker container prune
WARNING! This will remove all stopped containers.
Are you sure you want to continue? [y/N] y
Total reclaimed space: 0B
[root@localhost problem2]#
```

Problem 3: § Deploy a MySQL database called app-database. Use the mysql latest image, and use the -e flag to set MYSQL_ROOT_PASSWORD to P4sSw0rd0!. The container should run in the background.

```
[root@localhost problem3]# docker run -d \ --name app-database \ -e MYSQL_ROOT_PASSWORD=P4sSw0rd0! \ mysql:latest
docker: invalid reference format

Run 'docker run --help' for more information
[root@localhost problem3]# docker run -d \
--name app-database \
-e MYSQL_ROOT_PASSWORD=P4sSw0rd0! \
mysql:latest
Unable to find image 'mysql:latest' locally
latest: Pulling from library/mysql
4a629f1008ff: Pull complete
74a8e4bbd9fe: Pull complete
ab1b8ea72826: Pull complete
357926362d31: Pull complete
f3702ac323ca: Pull complete
658630c937c6: Pull complete
c89a19cdad3b: Pull complete
61941d436e88: Pull complete
8314ff001dec: Pull complete
00af5f73db53: Pull complete
b222ef59b124: Download complete
1dc8eadaef55: Download complete
Digest: sha256:e5dc14f6e01c3e577e669337d2855c6d1561b30d8ef2c592e63e4e8a9a52650a
Status: Downloaded newer image for mysql:latest
20c74d328a94d63c99cfa567a08035c87875cb8ccaf65fd36c03369157ba4971
[root@localhost problem3]# docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS                 NAMES
20c74d328a94   mysql:latest   "docker-entrypoint.s…"   30 seconds ago   Up 29 seconds   3306/tcp, 33060/tcp   app-database
[root@localhost problem3]# docker exec -it app-database mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 9.6.0 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> exit
Bye
[root@localhost problem3]#
```
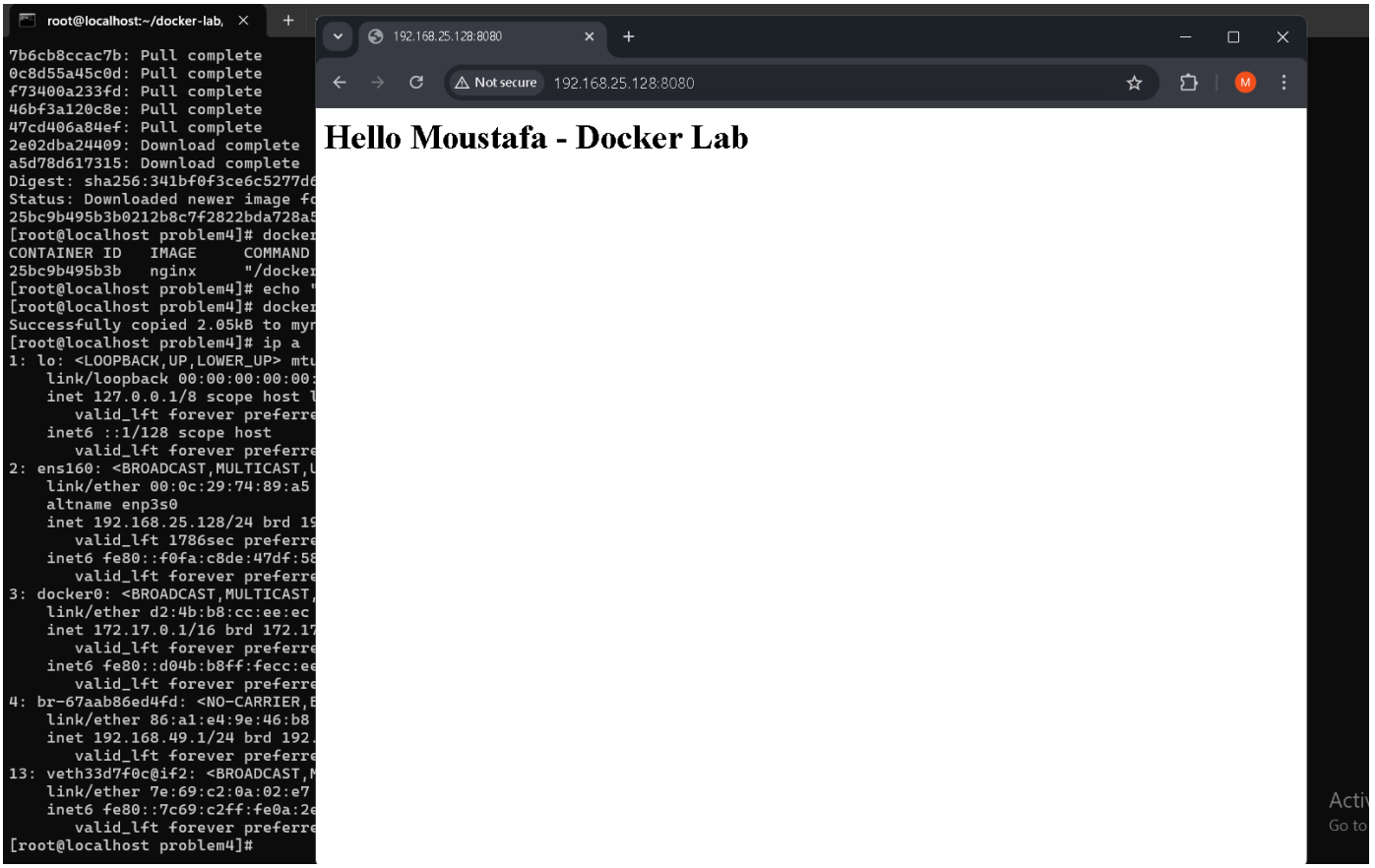

Problem 4:

§ Run the image Nginx

§ Add html static files to the container and make sure they are accessible

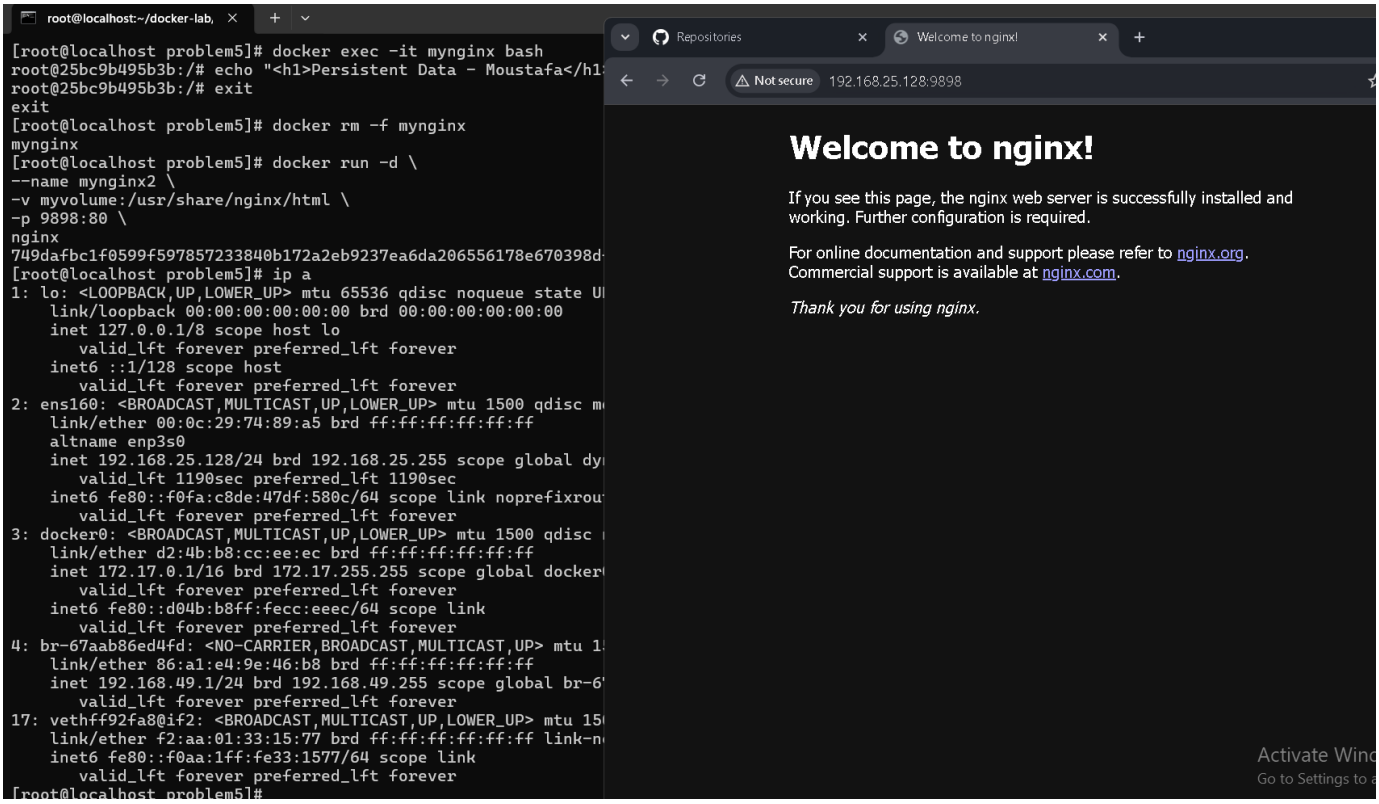
§ Commit the container with image name IMAGE_NAME



```
[root@localhost problem4]# docker run -d --name mynginx -p 8080:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
bae5a1799a80: Pull complete
4f4efe02d542: Pull complete
7b6cb8ccac7b: Pull complete
0c8d55a45c0d: Pull complete
f73400a233fd: Pull complete
46bf3a120c8e: Pull complete
47cd406a84ef: Pull complete
2e02dba24409: Download complete
a5d78d617315: Download complete
Digest: sha256:341bf0f3ce6c5277d6002cf6e1fb0319fa4252add24ab6a0e262e0056d313208
Status: Downloaded newer image for nginx:latest
25bc9b495b3b0212b8c7f2822bda728a59831e52a9d4137b0151a31d0d2f1c60
[root@localhost problem4]# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS          PORTS                                     NAMES
25bc9b495b3b   nginx     "/docker-entrypoint.…"   47 seconds ago   Up 46 seconds   0.0.0.0:8080->80/tcp, [::]:8080->80/tcp   mynginx
[root@localhost problem4]# echo "<h1>Hello Moustafa - Docker Lab</h1>" > index.html
[root@localhost problem4]# docker cp index.html mynginx:/usr/share/nginx/html/index.html
Successfully copied 2.05kB to mynginx:/usr/share/nginx/html/index.html
[root@localhost problem4]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:74:89:a5 brd ff:ff:ff:ff:ff:ff
    altname enp3s0
    inet 192.168.25.128/24 brd 192.168.25.255 scope global dynamic noprefixroute ens160
       valid_lft 1786sec preferred_lft 1786sec
    inet6 fe80::f0fa:c8de:47df:580c/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
3: docker0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default
    link/ether d2:4b:b8:cc:ee:ec brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
       valid_lft forever preferred_lft forever
    inet6 fe80::d04b:b8ff:fecc:eeec/64 scope link
       valid_lft forever preferred_lft forever
4: br-67aab86ed4fd: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 86:a1:e4:9e:46:b8 brd ff:ff:ff:ff:ff:ff
    inet 192.168.49.1/24 brd 192.168.49.255 scope global br-67aab86ed4fd
       valid_lft forever preferred_lft forever
```

```
[root@localhost problem4]# docker commit mynginx mynginx-custom
sha256:2166ebbaf3f125c32013176027244cab27bea0b1c1d79281e4230e93e30519c0
[root@localhost problem4]# docker images
                                                                                                                    i
IMAGE                                                                          ID             DISK USAGE   CONTENT SIZE   EXTRA
kicbase/stable:v0.0.49                                                         c7ddf4818024       1.91GB          539MB
kicbase/stable@sha256:e6daddbb1dc09ccd195c5605f65e2d38406c36ef36c5a492ffe805d9d36f4945   e6daddbb1dc0       1.91GB          539MB
mynginx-custom:latest                                                          2166ebbaf3f1        234MB         62.9MB
mysql:8.0.40-oracle                                                            d58ac93387f6        820MB          186MB
mysql:latest                                                                   e5dc14f6e01c       1.26GB          283MB    U
nginx:latest                                                                   341bf0f3ce6c        237MB         65.8MB    U
ubuntu:latest                                                                  cd1dba651b30        117MB         31.7MB
[root@localhost problem4]# |
```

roblem 5 (Bonus) : § Run a container Nginx with name mynginx and attach a volume for containing static html file § Remove the container § Run a new container with the following: § Attach the volume that was attached to the previous container § Map port 80 to port 9898 on you host machine § Access the html files from your browser


root@localhost:~/docker-lab,
[root@localhost problem5]# docker exec -it mynginx bash
root@25bc9b495b3b:/# echo "<h1>Persistent Data - Moustafa</h1
root@25bc9b495b3b:/# exit
exit
[root@localhost problem5]# docker rm -f mynginx
mynginx
[root@localhost problem5]# docker run -d \
--name mynginx2 \
-v myvolume:/usr/share/nginx/html \
-p 9898:80 \
nginx
749dafbc1f0599f597857233840b172a2eb9237ea6da206556178e670398d
[root@localhost problem5]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state U
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc m
link/ether 00:0c:29:74:89:a5 brd ff:ff:ff:ff:ff:ff
altname enp3s0
inet 192.168.25.128/24 brd 192.168.25.255 scope global dy
valid_lft 1190sec preferred_lft 1190sec
inet6 fe80::f0fa:c8de:47df:580c/64 scope link noprefixrou
valid_lft forever preferred_lft forever
3: docker0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc
link/ether d2:4b:b8:cc:ee:ec brd ff:ff:ff:ff:ff:ff
inet 172.17.0.1/16 brd 172.17.255.255 scope global docker
valid_lft forever preferred_lft forever
inet6 fe80::d04b:b8ff:fecc:eeec/64 scope link
valid_lft forever preferred_lft forever
4: br-67aab86ed4fd: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1
link/ether 86:a1:e4:9e:46:b8 brd ff:ff:ff:ff:ff:ff
inet 192.168.49.1/24 brd 192.168.49.255 scope global br-6
valid_lft forever preferred_lft forever
17: vethff92fa8@if2: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 15
link/ether f2:aa:01:33:15:77 brd ff:ff:ff:ff:ff:ff link-n
inet6 fe80::f0aa:1ff:fe33:1577/64 scope link
valid_lft forever preferred_lft forever
[root@localhost problem5]#
Repositories
Welcome to nginx!
Not secure
192.168.25.128:9898
Welcome to nginx!
If you see this page, the nginx web server is successfully installed and working. Further configuration is required.
For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.
Thank you for using nginx.
Activate Wind
Go to Settings to a

```
[root@localhost problem5]# docker volume create myvolume
myvolume
[root@localhost problem5]# docker volume ls
DRIVER    VOLUME NAME
local     898d85cdb7f450e1d80ce103aec7009dec18291b80290ef43d4f334b6393de56
local     c82093b130c0a239d97e12eaf4870b75ca624bd4e85bcc32b3d235a7286d7408
local     minikube
local     myvolume
[root@localhost problem5]# docker run -d \
--name mynginx \
-v myvolume:/usr/share/nginx/html \
nginx
docker: Error response from daemon: Conflict. The container name "/mynginx" is already in use by
0151a31d0d2f1c60". You have to remove (or rename) that container to be able to reuse that name.

Run 'docker run --help' for more information
[root@localhost problem5]# docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS
25bc9b495b3b   nginx          "/docker-entrypoint.…"   8 minutes ago    Exited (0) About a minut
20c74d328a94   mysql:latest   "docker-entrypoint.s…"   16 minutes ago   Exited (0) 10 minutes ag
[root@localhost problem5]# docker start 25bc9b495b3b
25bc9b495b3b
[root@localhost problem5]# docker run -d --name mynginx -v myvolume:/usr/share/nginx/html nginx
docker: Error response from daemon: Conflict. The container name "/mynginx" is already in use by
0151a31d0d2f1c60". You have to remove (or rename) that container to be able to reuse that name.

Run 'docker run --help' for more information
[root@localhost problem5]# docker exec -it mynginx bash
root@25bc9b495b3b:/# echo "<h1>Persistent Data - Moustafa</h1>" > /usr/share/nginx/html/index.ht
root@25bc9b495b3b:/# exit
exit
[root@localhost problem5]# docker rm -f mynginx
mynginx
[root@localhost problem5]# docker run -d \
--name mynginx2 \
-v myvolume:/usr/share/nginx/html \
-p 9898:80 \
nginx
749dafbc1f0599f597857233840b172a2eb9237ea6da206556178e670398df07
[root@localhost problem5]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
```