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Lab 3

```
seif@alienware-17-r5:~$ docker --version
Docker version 24.0.5, build ced0996
seif@alienware-17-r5:~$
```

Problem 1

Run the container hello-world

```
seif@alienware-17-r5:~$ 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://hub.docker.com/

For more examples and ideas, visit:
 https://docs.docker.com/get-started/
```

Check the container status

```
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE           COMMAND     CREATED        STATUS                   PORTS     NAMES
9d7cb384c7a0   hello-world     "/hello"    2 minutes ago  Exited (0) 2 minutes ago           sharp_boyd
1e0fccba3750   ubuntu:latest   "bash"      8 minutes ago  Exited (0) 8 minutes ago           elated_engelbart
seif@alienware-17-r5:~$
```

Start the stopped container

```
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE           COMMAND     CREATED        STATUS                   PORTS     NAMES
9d7cb384c7a0   hello-world     "/hello"    2 minutes ago  Exited (0) 2 minutes ago           sharp_boyd
1e0fccba3750   ubuntu:latest   "bash"      8 minutes ago  Exited (0) 8 minutes ago           elated_engelbart
seif@alienware-17-r5:~$ docker run hello-world

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seif@alienware-17-r5:~$ docker run ubuntu:latest
```

Remove the container

```
seif@alienware-17-r5:~$ docker run ubuntu:latest
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE          COMMAND       CREATED             STATUS                      PORTS     NAMES
bd62decb7737   ubuntu:latest  "/bin/bash"   54 seconds ago      Exited (0) 52 seconds ago             infallible_sanderson
cd4867381f37   hello-world    "/hello"      About a minute ago  Exited (0) About a minute ago         mystifying_hertz
9d7cb384c7a0   hello-world    "/hello"      4 minutes ago       Exited (0) 4 minutes ago              sharp_boyd
1e0fccba3750   ubuntu:latest  "bash"        10 minutes ago      Exited (0) 10 minutes ago             elated_engelbart
seif@alienware-17-r5:~$ docker rm cd4867381f37
cd4867381f37
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE          COMMAND       CREATED             STATUS                      PORTS     NAMES
bd62decb7737   ubuntu:latest  "/bin/bash"   About a minute ago  Exited (0) About a minute ago         infallible_sanderson
9d7cb384c7a0   hello-world    "/hello"      5 minutes ago       Exited (0) 5 minutes ago              sharp_boyd
1e0fccba3750   ubuntu:latest  "bash"        10 minutes ago      Exited (0) 10 minutes ago             elated_engelbart
seif@alienware-17-r5:~$ docker rm  ubuntu:latest
Error response from daemon: No such container: ubuntu:latest
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE          COMMAND       CREATED             STATUS                      PORTS     NAMES
bd62decb7737   ubuntu:latest  "/bin/bash"   About a minute ago  Exited (0) About a minute ago         infallible_sanderson
9d7cb384c7a0   hello-world    "/hello"      5 minutes ago       Exited (0) 5 minutes ago              sharp_boyd
1e0fccba3750   ubuntu:latest  "bash"        11 minutes ago      Exited (0) 11 minutes ago             elated_engelbart
seif@alienware-17-r5:~$ docker rm  bd62decb7737
bd62decb7737
```

Remove the image

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

```
seif@alienware-17-r5:~$ docker run -it ubuntu
root@66f73abeb3eb:/# echo docker
docker
root@66f73abeb3eb:/# bash
root@66f73abeb3eb:/# touch hello-docker
root@66f73abeb3eb:/# docker ps -a
bash: docker: command not found
root@66f73abeb3eb:/# ecit
bash: ecit: command not found
root@66f73abeb3eb:/# exit
exit
root@66f73abeb3eb:/# docker ps -a
bash: docker: command not found
root@66f73abeb3eb:/# exit
exit
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE           COMMAND        CREATED         STATUS                      PORTS     NAMES
66f73abeb3eb   ubuntu          "/bin/bash"    2 minutes ago   Exited (127) 3 seconds ago            dreamy_goldwasser
1e0fccba3750   ubuntu:latest   "bash"         25 minutes ago  Exited (0) 25 minutes ago             elated_engelbart
seif@alienware-17-r5:~$ docker stop 66f73abeb3eb
66f73abeb3eb
seif@alienware-17-r5:~$ docker rm 66f73abeb3eb
66f73abeb3eb
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE           COMMAND     CREATED         STATUS                      PORTS     NAMES
1e0fccba3750   ubuntu:latest   "bash"      26 minutes ago  Exited (0) 26 minutes ago             elated_engelbart
seif@alienware-17-r5:~$ docker container prune
WARNING! This will remove all stopped containers.
Are you sure you want to continue? [y/N] y
Deleted Containers:
1e0fccba3750f0f20d791706857404734e781b5e1e72a6435aa50026d93f1f3d

Total reclaimed space: 5B
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE      COMMAND     CREATED     STATUS      PORTS      NAMES
seif@alienware-17-r5:~$
```

Hello-docker file will be removed because the container this files resides in is removed

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.

```
seif@alienware-17-r5:~$ 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
b193354265ba: Pull complete
14a15c0bb358: Pull complete
02da291ad1e4: Pull complete
9a89a1d664ee: Pull complete
a24ae6513051: Pull complete
b85424247193: Pull complete
9a240a3b3d51: Pull complete
8bf57120f71f: Pull complete
c64090e82a0b: Pull complete
af7c7515d542: Pull complete
Digest: sha256:c0455ac041844b5e65cd08571387fa5b50ab2a6179557fd938298cab13acf0dd
Status: Downloaded newer image for mysql:latest
b645a75ea4981d88cdc70827a667b3eb152ef90f805552838cbb23b70aa8939e
seif@alienware-17-r5:~$ docker ps
CONTAINER ID   IMAGE          COMMAND                 CREATED         STATUS          PORTS                 NAMES
b645a75ea498   mysql:latest   "docker-entrypoint.s…"  13 seconds ago  Up 10 seconds   3306/tcp, 33060/tcp   app-database
seif@alienware-17-r5:~$
```

Problem 4:

Run the image Nginx

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

```
seif@alienware-17-r5:~$ docker run -d --name my-nginx nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
648e0aadf75a: Pull complete
262696647b70: Pull complete
e66d0270d23f: Pull complete
55ac49bd649c: Pull complete
cbf42f5a00d2: Pull complete
8015f365966b: Pull complete
4cadff8bc2aa: Pull complete
Digest: sha256:67f9a4f10d147a6e04629340e6493c9703300ca23a2f7f3aa56fe615d75d31ca
Status: Downloaded newer image for nginx:latest
79db74e86f43ab8b0a507badf8c3a50b54d94c5e3646d486e989e0f4b025976e
seif@alienware-17-r5:~$ touch a.html
seif@alienware-17-r5:~$ docker cp a.html my-nginx:/usr/share/nginx/html
Successfully copied 1.54kB to my-nginx:/usr/share/nginx/html
```

```
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS                    NAMES
79db74e86f43   nginx          "/docker-entrypoint.…"   14 minutes ago   Up 14 minutes   80/tcp                   my-nginx
b645a75ea498   mysql:latest   "docker-entrypoint.s…"   17 minutes ago   Up 17 minutes   3306/tcp, 33060/tcp      app-database
seif@alienware-17-r5:~$ docker stop 79db74e86f43
79db74e86f43
seif@alienware-17-r5:~$ docker rm 79db74e86f43
79db74e86f43
seif@alienware-17-r5:~$ docker run -d --name my-nginx-new -p 8080:80 nginx
553c1e31b2b2ef8f80fdde4f5e4ae2766213e8f4e977ff07e5e201d7da96e718
seif@alienware-17-r5:~$ curl http://localhost
curl: (7) Failed to connect to localhost port 80 after 0 ms: Connection refused
seif@alienware-17-r5:~$ curl http://localhost:8080/
<!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>
```

Commit the container with image name IMAGE_NAME

```
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS                                        NAMES
553c1e31b2b2   nginx          "/docker-entrypoint.…"   7 minutes ago    Up 7 minutes    0.0.0.0:8080->80/tcp, :::8080->80/tcp        my-nginx-new
b645a75ea498   mysql:latest   "docker-entrypoint.s…"   25 minutes ago   Up 25 minutes   3306/tcp, 33060/tcp                          app-database
seif@alienware-17-r5:~$ docker commit nginx neww
Error response from daemon: No such container: nginx
seif@alienware-17-r5:~$ docker commit 553c1e31b2b2 neww
sha256:19bb8e75a0f96d40dfebd5385f5cc48c4b62bf05b34c6a54b951f5a0c006e8fe
seif@alienware-17-r5:~$ docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS                                        NAMES
553c1e31b2b2   nginx          "/docker-entrypoint.…"   8 minutes ago    Up 8 minutes    0.0.0.0:8080->80/tcp, :::8080->80/tcp        my-nginx-new
b645a75ea498   mysql:latest   "docker-entrypoint.s…"   26 minutes ago   Up 26 minutes   3306/tcp, 33060/tcp                          app-database
seif@alienware-17-r5:~$ docker commit 553c1e31b2b2 IMAGE_NAME
invalid reference format: repository name must be lowercase
seif@alienware-17-r5:~$ docker commit 553c1e31b2b2 nginx
sha256:5cb37b3417a1fa7b172f1e15a3e0fa06f1ca9ef7223eaf4866cf3d9ec2452ede
seif@alienware-17-r5:~$
```

Problem 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

```
seif@alienware-17-r5:~$ docker run -d --name mynginx -v ~/html:/usr/share/nginx/html -p 8081:80 nginx
083fd44929ca9728de7e2aa8a5ca2396f6655b0733426f186bfab9f8c91fe648
seif@alienware-17-r5:~$ docker stop mynginx
mynginx
seif@alienware-17-r5:~$ docker rm mynginx
mynginx
seif@alienware-17-r5:~$ docker run -d --name mynginx-new -v ~/html:/usr/share/nginx/html -p 9898:80 nginx
179bdbe0f9c41ea5b8b8064bfc38c78ca40577731dc1e17ee4891f5908b13b6e
```