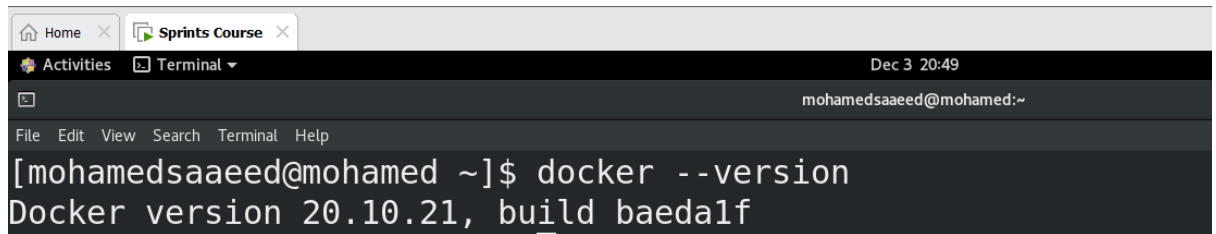


Docker Task 01

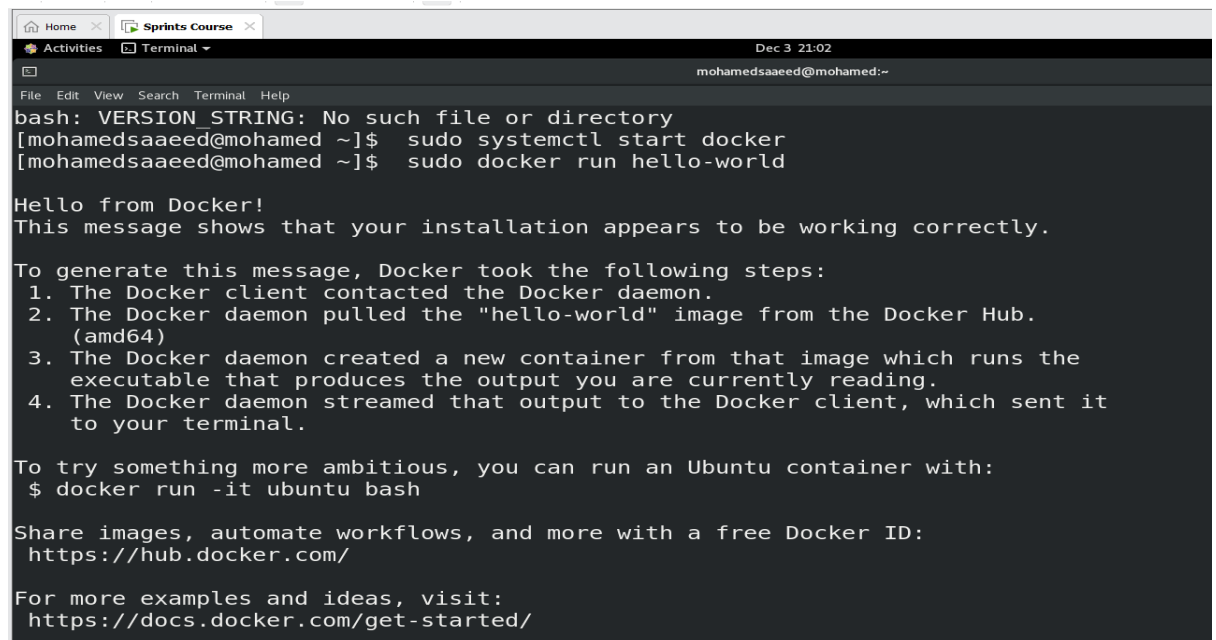
By: **Mohamed Ahmed Saaed**

1. Check the docker version installed

A terminal window titled 'Sprints Course' with a dark background. The prompt is 'mohamedsaaeed@mohamed:~'. The command 'docker --version' has been entered and executed, resulting in the output 'Docker version 20.10.21, build baed1f'.

```
[mohamedsaaeed@mohamed ~]$ docker --version
Docker version 20.10.21, build baed1f
```

2. Run docker container hello-world

A terminal window titled 'Sprints Course' with a dark background. The prompt is 'mohamedsaaeed@mohamed:~'. The user enters 'sudo systemctl start docker' and then 'sudo docker run hello-world'. The output shows a 'Hello from Docker!' message, a confirmation that the installation is working, a list of steps Docker took to run the container, and links to Docker documentation and the Docker Hub.

```
bash: VERSION_STRING: No such file or directory
[mohamedsaaeed@mohamed ~]$ sudo systemctl start docker
[mohamedsaaeed@mohamed ~]$ sudo docker run hello-world

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

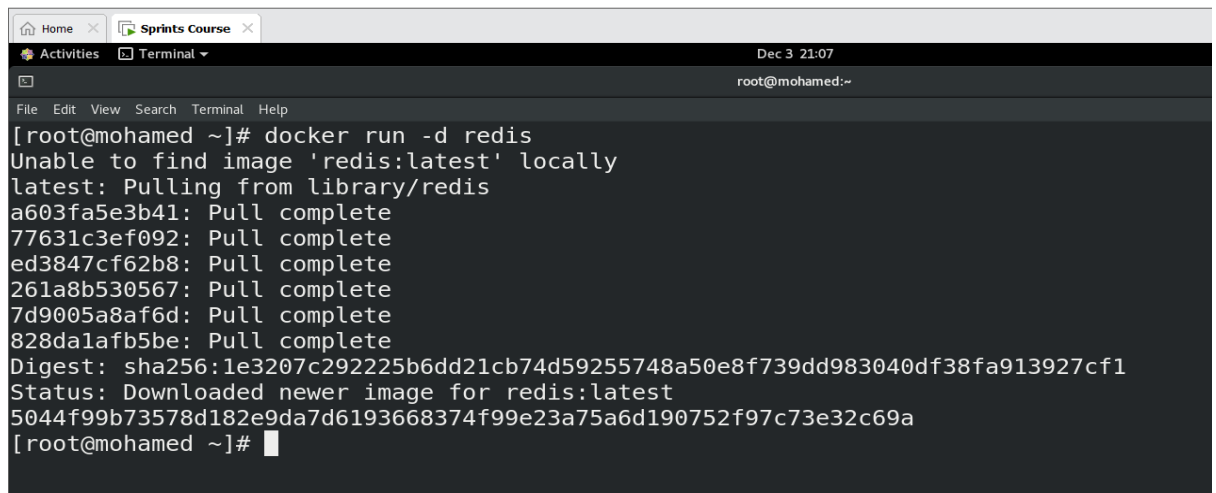
To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces 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/

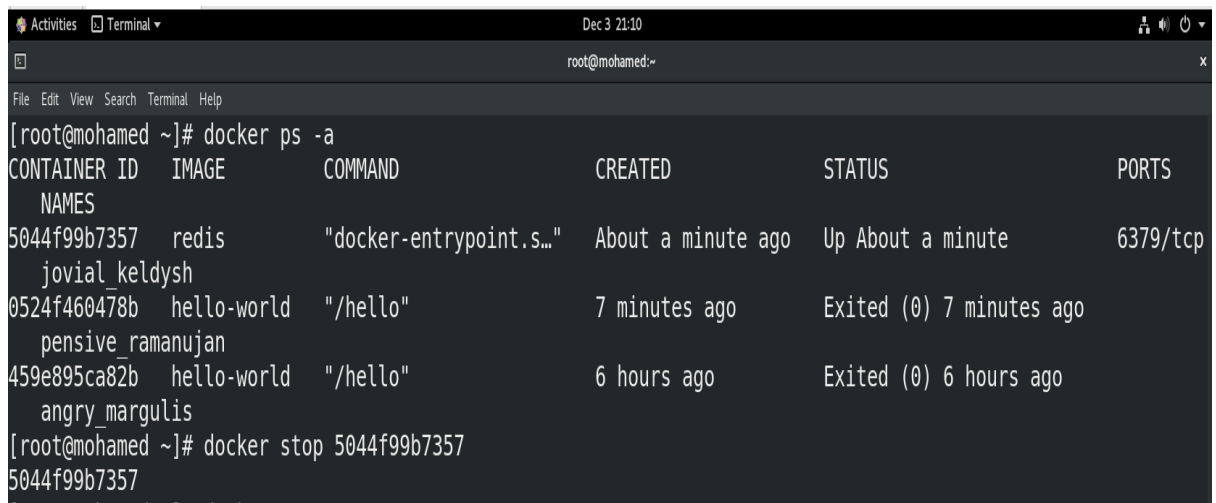
For more examples and ideas, visit:
https://docs.docker.com/get-started/
```

3. Run docker container redis in detached mode

A terminal window titled 'Sprints Course' with a dark background. The prompt is 'root@mohamed:~'. The user enters 'docker run -d redis'. The output shows the process of pulling the 'redis:latest' image from the Docker Hub, including the image ID, digest, and status.

```
[root@mohamed ~]# docker run -d redis
Unable to find image 'redis:latest' locally
latest: Pulling from library/redis
a603fa5e3b41: Pull complete
77631c3ef092: Pull complete
ed3847cf62b8: Pull complete
261a8b530567: Pull complete
7d9005a8af6d: Pull complete
828da1afb5be: Pull complete
Digest: sha256:1e3207c292225b6dd21cb74d59255748a50e8f739dd983040df38fa913927cf1
Status: Downloaded newer image for redis:latest
5044f99b73578d182e9da7d6193668374f99e23a75a6d190752f97c73e32c69a
[root@mohamed ~]#
```

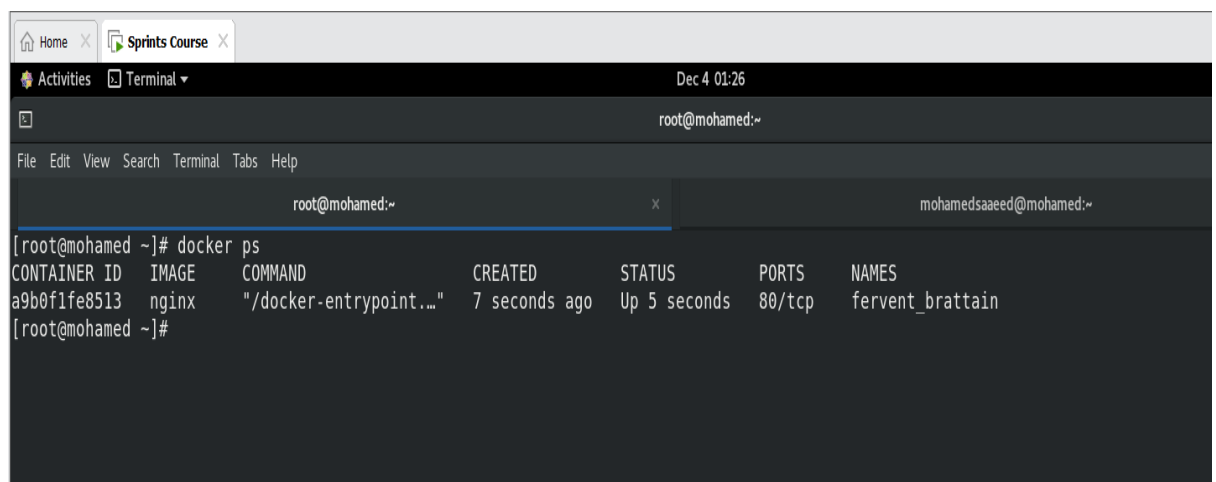
4. Try to stop the running redis container / check the present container



A terminal window titled 'root@mohamed:~' showing the output of the 'docker ps -a' command. The output lists three containers: a running Redis container (ID: 5044f99b7357, Image: redis, Command: "docker-entrypoint.s...", Status: Up About a minute, Ports: 6379/tcp, Name: jovial_keldysh), and two exited 'hello-world' containers (IDs: 0524f460478b and 459e895ca82b). Below the list, the command 'docker stop 5044f99b7357' is entered, followed by the container ID '5044f99b7357' on a new line.

```
[root@mohamed ~]# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS              PORTS          NAMES
5044f99b7357   redis    "docker-entrypoint.s..." About a minute ago Up About a minute 6379/tcp       jovial_keldysh
0524f460478b   hello-world "/hello"                7 minutes ago   Exited (0) 7 minutes ago
459e895ca82b   hello-world "/hello"                6 hours ago     Exited (0) 6 hours ago
angry_margulis

[root@mohamed ~]# docker stop 5044f99b7357
5044f99b7357
```

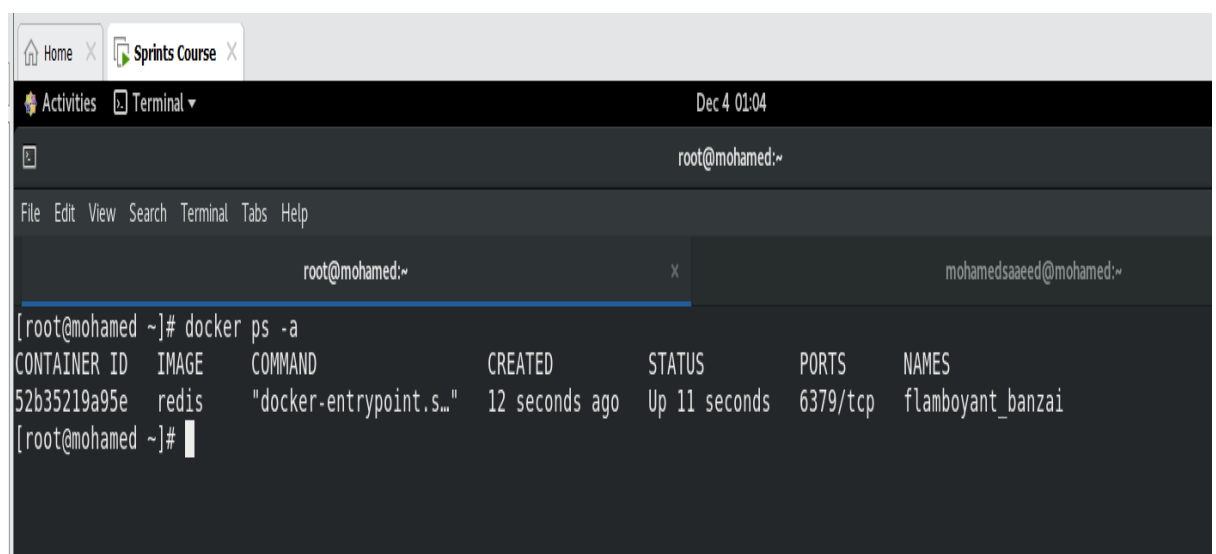


A terminal window titled 'root@mohamed:~' showing the output of the 'docker ps' command. It lists one running container: an nginx container (ID: a9b0f1fe8513, Image: nginx, Command: "/docker-entrypoint.s...", Status: Up 5 seconds, Ports: 80/tcp, Name: fervent_brattain).

```
[root@mohamed ~]# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS              PORTS          NAMES
a9b0f1fe8513   nginx    "/docker-entrypoint.s..." 7 seconds ago   Up 5 seconds        80/tcp         fervent_brattain

[root@mohamed ~]#
```

5. Check the ID of the redis container



A terminal window titled 'root@mohamed:~' showing the output of the 'docker ps -a' command. It lists one running container: a Redis container (ID: 52b35219a95e, Image: redis, Command: "docker-entrypoint.s...", Status: Up 11 seconds, Ports: 6379/tcp, Name: flamboyant_banzai).

```
[root@mohamed ~]# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS              PORTS          NAMES
52b35219a95e   redis    "docker-entrypoint.s..." 12 seconds ago Up 11 seconds        6379/tcp       flamboyant_banzai

[root@mohamed ~]#
```

6. Try to run a container from nginx:alpine and delete it

```
[root@mohamed ~]# docker run nginx:alpine
Unable to find image 'nginx:alpine' locally
alpine: Pulling from library/nginx
ca7dd9ec2225: Pull complete
76a48b0f5898: Pull complete
2f12a0e7c01d: Pull complete
1a7b9b9bbef6: Pull complete
b704883c57af: Pull complete
4342b1ab302e: Pull complete
Digest: sha256:455c39afebd4d98ef26dd70284aa86e6810b0485af5f4f222b19b89758cabf1e
Status: Downloaded newer image for nginx:alpine
/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
2022/12/03 19:53:12 [notice] 1#1: using the "epoll" event method
2022/12/03 19:53:12 [notice] 1#1: nginx/1.23.2
2022/12/03 19:53:12 [notice] 1#1: built by gcc 11.2.1 20220219 (Alpine 11.2.1_git20220219)
2022/12/03 19:53:12 [notice] 1#1: OS: Linux 4.18.0-408.el8.x86_64
2022/12/03 19:53:12 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2022/12/03 19:53:12 [notice] 1#1: start worker processes
2022/12/03 19:53:12 [notice] 1#1: start worker process 30
2022/12/03 19:53:12 [notice] 1#1: start worker process 31
^C2022/12/03 19:54:34 [notice] 1#1: signal 2 (SIGINT) received, exiting
2022/12/03 19:54:34 [notice] 31#31: exiting
2022/12/03 19:54:34 [notice] 31#31: exit
2022/12/03 19:54:34 [notice] 30#30: exiting
2022/12/03 19:54:34 [notice] 30#30: exit
2022/12/03 19:54:34 [notice] 1#1: signal 17 (SIGCHLD) received from 31
2022/12/03 19:54:34 [notice] 1#1: worker process 31 exited with code 0
2022/12/03 19:54:34 [notice] 1#1: signal 29 (SIGIO) received
2022/12/03 19:54:34 [notice] 1#1: signal 17 (SIGCHLD) received from 30
2022/12/03 19:54:34 [notice] 1#1: worker process 30 exited with code 0
2022/12/03 19:54:34 [notice] 1#1: exit
[root@mohamed ~]#
[root@mohamed ~]# docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED    STATUS      PORTS      NAMES
e19c41d94dd9   nginx:alpine  "/docker-entrypoint.s..." About a minute ago    Exited (0) 12 seconds ago
5044f99b7357   redis       "docker-entrypoint.s..." 47 minutes ago        Exited (0) 45 minutes ago
0524f460478b   hello-world  "/hello"                  53 minutes ago        Exited (0) 53 minutes ago
459e895ca82b   hello-world  "/hello"                  7 hours ago           Exited (0) 7 hours ago
[root@mohamed ~]# docker rm e19c41d94dd9
e19c41d94dd9
```

7. Delete the image redis

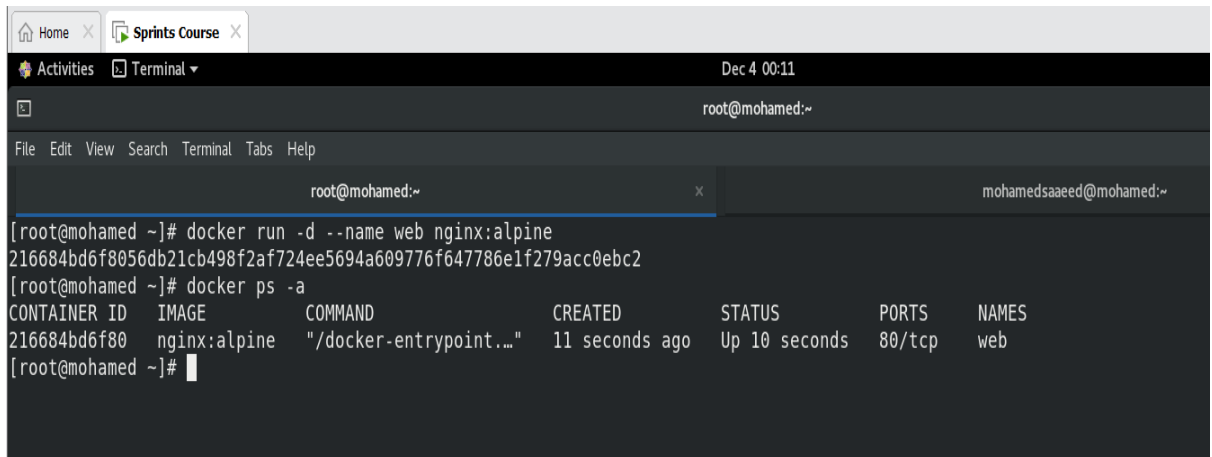
```
File Edit View Search Terminal Help
[root@mohamed ~]# docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED    STATUS      PORTS      NAMES
5044f99b7357   redis       "docker-entrypoint.s..." 50 minutes ago    Exited (0) 48 minutes ago
0524f460478b   hello-world  "/hello"                  56 minutes ago    Exited (0) 56 minutes ago
459e895ca82b   hello-world  "/hello"                  7 hours ago        Exited (0) 7 hours ago
[root@mohamed ~]# docker rm 5044f99b7357
5044f99b7357
[root@mohamed ~]# docker rmi redis
Untagged: redis:latest
Untagged: redis@sha256:1e3207c292225b6dd21cb74d59255748a50e8f739dd983040df38fa913927cf1
Deleted: sha256:3358aea34e8c871cc2ec590dcefcf0945e76ec3f82071f30156ed1be97a5fb
Deleted: sha256:7a30c117f63b4e6c72fe3378afbcb9ce36379337b3637f332253cd798d751d13
Deleted: sha256:b1b46e21933d951137a11194588e082fe821c8f4c57442405e1eb5f52352e9a6
Deleted: sha256:3da53f799e971219b1588d420dc233fc0a24b20b63df235c0be7df3b3bbd489c
Deleted: sha256:ed4b2a727497ed285215178311ad360bce450969da5439d2b3c3dbf57e5b19d8
Deleted: sha256:eba15e26a17cb94c52a1cf638c83094c3fa65885f44f6698936b1680515ba228
Deleted: sha256:ec4a38999118b78eab6899b913a548cb0b2c9b68fd05aff846a56b628b597f38
[root@mohamed ~]#
```

8. Pull image from nginx:1.14-alpine / run an instant of the ubuntu image to run the sleep 1000 command at start up

```
Home x Sprints Course x
Activities Terminal Dec 3 22:26
root@mohamed:~
File Edit View Search Terminal Help
[root@mohamed ~]# docker pull nginx:1.14-alpine
1.14-alpine: Pulling from library/nginx
bdf0201b3a05: Pull complete
3d0a573c81ed: Pull complete
8129faeb2eb6: Pull complete
3dc99f571daf: Pull complete
Digest: sha256:485b610fefec7ff6c463ced9623314a04ed67e3945b9c08d7e53a47f6d108dc7
Status: Downloaded newer image for nginx:1.14-alpine
docker.io/library/nginx:1.14-alpine
[root@mohamed ~]#
```

```
[root@mohamed ~]# docker run ubuntu sleep 1000
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
e96e057aae67: Pull complete
Digest: sha256:4b1d0c4a2d2aaf63b3711f34eb9fa89falbf53dd6e4ca954d47caebca4005c2
Status: Downloaded newer image for ubuntu:latest
[root@mohamed ~]# docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS          NAMES
cclb635b57b1   ubuntu    "sleep 1000"            19 minutes ago Exited (0) 2 minutes ago
7c1f8c512a1a   19dd4d73108a "/docker-entrypoint...." 50 minutes ago Exited (0) 33 minutes ago
c9d9d63d0e02   19dd4d73108a "/docker-entrypoint...." About an hour ago Exited (0) 46 minutes ago
0524f460478b   hello-world "/hello"                3 hours ago   Exited (0) 3 hours ago
459e805ca82b   hello-world "/hello"                9 hours ago   Exited (0) 9 hours ago   angry_margulis
[root@mohamed ~]# docker exec -it cclb635b57b1 /bin/sh
Error response from daemon: Container cclb635b57b1abd90db5ba5facb83ale0921cal829829e2b77a29165c88a0elb is not running
[root@mohamed ~]# docker run 19dd4d73108a
/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
2022/12/03 21:43:37 [notice] 1#1: using the "epoll" event method
2022/12/03 21:43:37 [notice] 1#1: nginx/1.23.2
2022/12/03 21:43:37 [notice] 1#1: built by gcc 11.2.1 20220219 (Alpine 11.2.1_git20220219)
2022/12/03 21:43:37 [notice] 1#1: OS: Linux 4.18.0-408.el8.x86_64
2022/12/03 21:43:37 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2022/12/03 21:43:37 [notice] 1#1: start worker processes
2022/12/03 21:43:37 [notice] 1#1: start worker process 30
2022/12/03 21:43:37 [notice] 1#1: start worker process 31
^C2022/12/03 21:44:56 [notice] 1#1: signal 2 (SIGINT) received, exiting
2022/12/03 21:44:56 [notice] 31#31: exiting
2022/12/03 21:44:56 [notice] 30#30: exiting
2022/12/03 21:44:56 [notice] 31#31: exit
2022/12/03 21:44:56 [notice] 30#30: exit
2022/12/03 21:44:56 [notice] 1#1: signal 17 (SIGCHLD) received from 30
2022/12/03 21:44:56 [notice] 1#1: worker process 30 exited with code 0
2022/12/03 21:44:56 [notice] 1#1: signal 29 (SIGIO) received
2022/12/03 21:44:56 [notice] 1#1: signal 17 (SIGCHLD) received from 31
2022/12/03 21:44:56 [notice] 1#1: worker process 31 exited with code 0
2022/12/03 21:44:56 [notice] 1#1: exit
[root@mohamed ~]# docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS          NAMES
e6afff27dc9d   19dd4d73108a "/docker-entrypoint...." 19 seconds ago Up 17 seconds 80/tcp         magical_burnell
[root@mohamed ~]# docker exec -it e6afff27dc9d /bin/sh
/ # pwd
/
/ # ls
bin          etc          mnt          run          tmp
dev          home        opt          sbin         usr
docker-entrypoint.d lib         proc         srv          var
docker-entrypoint.sh media       root         sys
/ # touch test-file
/ # ls
bin          etc          mnt          run          test-file
dev          home        opt          sbin         tmp
docker-entrypoint.d lib         proc         srv          usr
docker-entrypoint.sh media       root         sys          var
/ #
```

9. Run a container with the nginx:alpine image and name it web

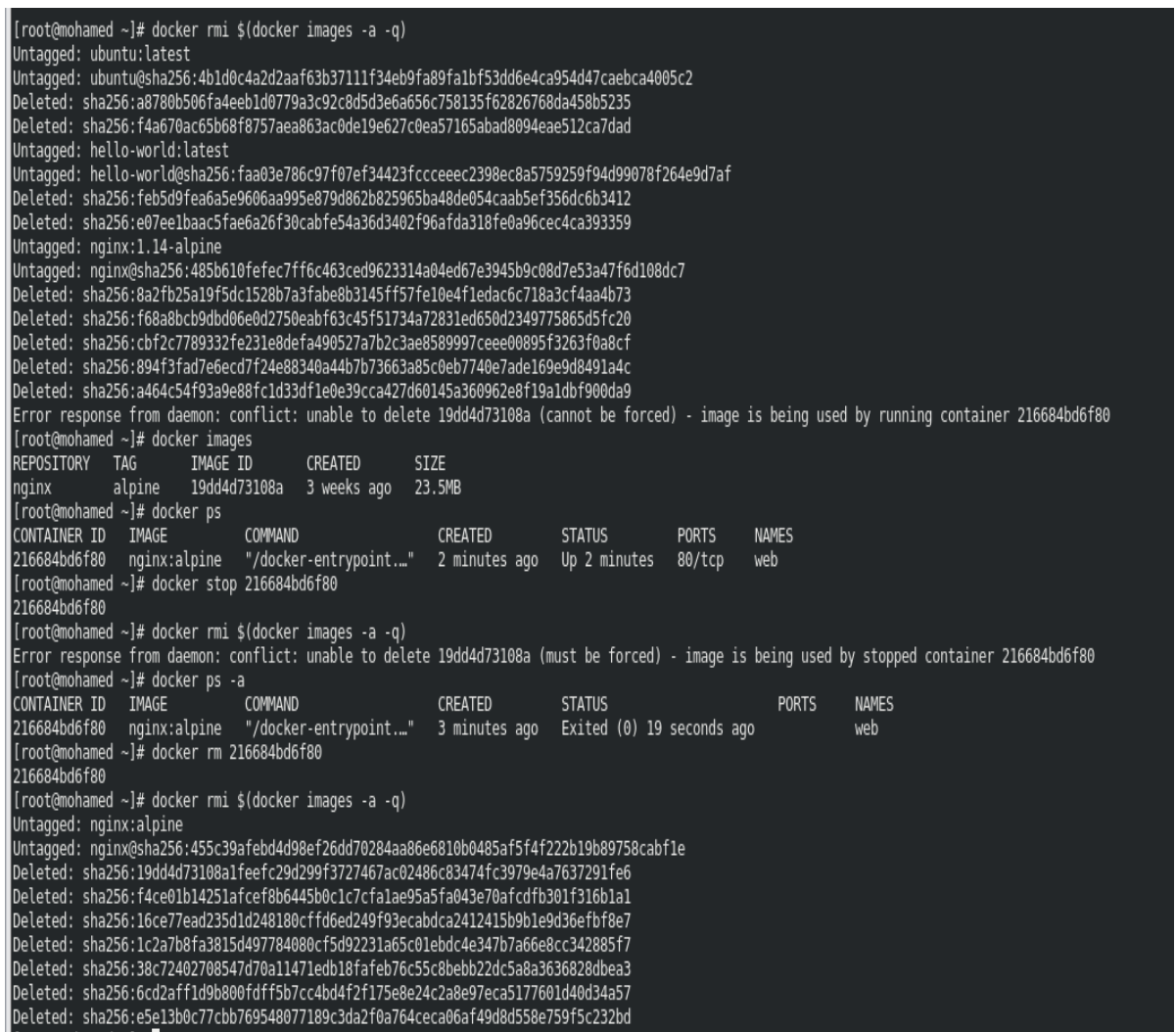


```
[root@mohamed ~]# docker run -d --name web nginx:alpine
216684bd6f8056db21cb498f2af724ee5694a609776f647786e1f279acc0ebc2
[root@mohamed ~]# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
216684bd6f80	nginx:alpine	"/docker-entrypoint..."	11 seconds ago	Up 10 seconds	80/tcp	web

```
[root@mohamed ~]#
```

10. Run a container with the nginx:alpine image and name it web



```
[root@mohamed ~]# docker rmi $(docker images -a -q)
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:4b1d0c4a2d2aaf63b37111f34eb9fa89fa1bf53dd6e4ca954d47caebca4005c2
Deleted: sha256:a8780b506fa4eeb1d0779a3c92c8d5d3e6a656c758135f62826768da458b5235
Deleted: sha256:f4a670ac65b68f8757aea863ac0de19e627c0ea57165abad8094eae512ca7dad
Untagged: hello-world:latest
Untagged: hello-world@sha256:faa03e786c97f07ef34423fccceec2398ec8a5759259f94d99078f264e9d7af
Deleted: sha256:feb5d9fea6a5e906aa995e879d862b825965ba48de054caab5ef356dc6b3412
Deleted: sha256:e07ee1baac5fae6a26f30cabfe54a36d3402f96afda318fe0a96cec4ca393359
Untagged: nginx:1.14-alpine
Untagged: nginx@sha256:485b610fefec7ff6c463ced9623314a04ed67e3945b9c08d7e53a47f6d108dc7
Deleted: sha256:8a2fb25a19f5dc1528b7a3fabe8b3145ff57fe10e4f1edac6c718a3cf4aa4b73
Deleted: sha256:f68a8bcb9dbd06e0d2750eabf63c45f51734a72831ed650d2349775865d5fc20
Deleted: sha256:cbf2c7789332fe231e8defa490527a7b2c3ae8589997ceee00895f3263f0a8cf
Deleted: sha256:894f3fad7e6ecd7f24e88340a44b7b73663a85c0eb7740e7ade169e9d8491a4c
Deleted: sha256:a464c54f93a9e88fcd33df1e0e39cca427d60145a360962e8f19a1dbf900da9
Error response from daemon: conflict: unable to delete 19dd4d73108a (cannot be forced) - image is being used by running container 216684bd6f80
[root@mohamed ~]# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
nginx	alpine	19dd4d73108a	3 weeks ago	23.5MB

```
[root@mohamed ~]# docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
216684bd6f80	nginx:alpine	"/docker-entrypoint..."	2 minutes ago	Up 2 minutes	80/tcp	web

```
[root@mohamed ~]# docker stop 216684bd6f80
216684bd6f80
[root@mohamed ~]# docker rmi $(docker images -a -q)
Error response from daemon: conflict: unable to delete 19dd4d73108a (must be forced) - image is being used by stopped container 216684bd6f80
[root@mohamed ~]# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
216684bd6f80	nginx:alpine	"/docker-entrypoint..."	3 minutes ago	Exited (0) 19 seconds ago		web

```
[root@mohamed ~]# docker rm 216684bd6f80
216684bd6f80
[root@mohamed ~]# docker rmi $(docker images -a -q)
Untagged: nginx:alpine
Untagged: nginx@sha256:455c39afebd4d98ef26dd70284aa8e6810b0485af5f4f222b19b89758cabf1e
Deleted: sha256:19dd4d73108a1feefc29d299f3727467ac02486c83474fc3979e4a7637291fe6
Deleted: sha256:f4ce01b14251afcefb8b6445b0c1c7cfa1ae95a5fa043e70afcdcfb301f316b1a1
Deleted: sha256:16ce77ead235d1d248180cfff6ed249f93ecabdca2412415b9b1e9d36efbf8e7
Deleted: sha256:1c2a7b8fa3815d497784080cf5d92231a65c01ebdc4e347b7a66e8cc342885f7
Deleted: sha256:38c72402708547d70a11471e9db18f9feb76c55c8bebb22dc5a8a3636828dbca3
Deleted: sha256:6cd2aff1d9b800fdff5b7cc4bd4f2f175e8e24c2a8e97eca5177601d40d34a57
Deleted: sha256:e5e13b0c77cbb769548077189c3da2f0a764ceca06af49d8d558e759f5c232bd
```

11. Run an instance of nginx:alpine with a tag nginx and map port 8080 on the container to 38282 on the host

```
[root@mohamed ~]# docker run -d -p 38282:8080 nginx:alpine
Unable to find image 'nginx:alpine' locally
alpine: Pulling from library/nginx
ca7dd9ec2225: Pull complete
76a48b0f5898: Pull complete
2f12a0e7c01d: Pull complete
1a7b0b9bbef6: Pull complete
b764883c57af: Pull complete
4342b1ab302e: Pull complete
Digest: sha256:455c39afebd4d98ef26dd70284aa86e6810b0485af5f4f222b19b89758cabf1e
Status: Downloaded newer image for nginx:alpine
9fd235605bceab0264735114c413221fdec09061ad0568aff8e0ce4a253963f9
[root@mohamed ~]# docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
9fd235605bce   nginx:alpine   "/docker-entrypoint. ..."  23 seconds ago Up 21 seconds 80/tcp, 0.0.0.0:38282->8080/tcp, :::38282->8080/tcp   practical_jackson
[root@mohamed ~]#
```

12. Create ubuntu image and check the size of it

```

x
┌───────────┴───────────┐
│ Home | Sprints Course |
└───────────┴───────────┘
Activities | Terminal
Dec 4 00:46
root@mohamed:~
File Edit View Search Terminal Tabs Help
root@mohamed:~
mohamedsaaed@moh
[root@mohamed ~]# docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
e96e057aae67: Pull complete
Digest: sha256:4b1d0c4a2d2aaf63b37111f34eb9fa89fa1bf53dd6e4ca954d47caebca4005c2
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
[root@mohamed ~]# docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
ubuntu        latest    a8780b506fa4   4 weeks ago    77.8MB
[root@mohamed ~]#
```

13. Run a container named blue-app using image kodekloud/simple-webapp and set the environment variable APP-COLOR to blue, the application listens on port 8080

```
[root@mohamed ~]# docker run -e APP-COLOR=blue --name blue-app -p 9090:8080 kodekloud/simple-webapp
Unable to find image 'kodekloud/simple-webapp:latest' locally
latest: Pulling from kodekloud/simple-webapp
4fe2ade4980c: Pull complete
7cf6a1d62200: Pull complete
f0d690b9e495: Pull complete
fac5d45ad062: Pull complete
dd9b067ef6fd: Pull complete
7454877e71d0: Pull complete
e337be014a61: Pull complete
Digest: sha256:e5355b4c7804f453d79de75d6659ee702eebbe30c02d9f1ce6602a96b576e57
Status: Downloaded newer image for kodekloud/simple-webapp:latest
This is a sample web application that displays a colored background.
A color can be specified in two ways.

1. As a command line argument with --color as the argument. Accepts one of red,green,blue,blue2,pink,darkblue
2. As an Environment variable APP_COLOR. Accepts one of red,green,blue,blue2,pink,darkblue
3. If none of the above then a random color is picked from the above list.
Note: Command line argument precedes over environment variable.

No command line argument or environment variable. Picking a Random Color =pink
* Serving Flask app "app" (lazy loading)
* Environment: production
WARNING: Do not use the development server in a production environment.
Use a production WSGI server instead.
* Debug mode: off
* Running on http://0.0.0.0:8080/ (Press CTRL+C to quit)
172.17.0.1 - - [03/Dec/2022 23:01:01] "GET / HTTP/1.1" 200 -
172.17.0.1 - - [03/Dec/2022 23:01:01] "GET /favicon.ico HTTP/1.1" 404 -
```


14. Deploy a mysql database using the mysql image and name it mysql-db
Set the database password to use db_pass123 then inspect it to check the value

```
root@localhost:~# docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS                NAMES
2340d01a69da   redis     "docker-entrypoint.s..." 2 hours ago   Up 2 hours   6379/tcp             affectionate_chatterjee
e45ad7118f59   nginx    "/docker-entrypoint...." 2 hours ago   Up 2 hours   80/tcp               xenodochial_poitras
7e26d3cb6de7   httpd    "httpd-foreground"        2 hours ago   Up 2 hours   80/tcp               quirky_lewin

[root@localhost test]# docker run -d --name mysql-db -e MYSQL_ROOT_PASSWORD=db_pass123 mysql
Unable to find image 'mysql:latest' locally
latest: Pulling from library/mysql
0ed027b72ddc: Pull complete
0296159747f1: Pull complete
3d2f9b664bd3: Pull complete
df6519f81c26: Pull complete
36bb5e56d458: Pull complete
054e8fde88d0: Pull complete
f2b494c50c7f: Pull complete
132bc0d471b8: Pull complete
135ec7033a05: Pull complete
5961f0272472: Pull complete
75b5f7a3d3a4: Pull complete
Digest: sha256:3d7ae561cf6095f6aca8eb7830e1d14734227b1fb4748092f2be2cfbcf7d614
Status: Downloaded newer image for mysql:latest
591053ee8a284b1280bfdb11cdf7625e62214410a47f7f736c6fb688ee448f60

[root@localhost test]# docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS                NAMES
591053ee8a28   mysql     "docker-entrypoint.s..." 49 seconds ago Up 47 seconds   3306/tcp, 33060/tcp  mysql-db
2340d01a69da   redis     "docker-entrypoint.s..." 2 hours ago   Up 2 hours   6379/tcp             affectionate_chatterjee
e45ad7118f59   nginx    "/docker-entrypoint...." 2 hours ago   Up 2 hours   80/tcp               xenodochial_poitras
7e26d3cb6de7   httpd    "httpd-foreground"        3 hours ago   Up 3 hours   80/tcp               quirky_lewin

[root@localhost test]# docker inspect 591053ee8a28 | grep Env
"Env": [
[root@localhost test]# docker inspect 591053ee8a28 | grep MYSQL_ROOT_PASSWORD
"MYSQL_ROOT_PASSWORD=db_pass123",
[root@localhost test]#
```

15. Pull the code from <https://github.com/sabreensalama/simpleflaskapp/tree/main> and create a docker file for this flask app

```
root@localhost:~# git clone https://github.com/sabreensalama/simple-flask-app.git
Cloning into 'simple-flask-app'...
remote: Enumerating objects: 12, done.
remote: Total 12 (delta 0), reused 0 (delta 0), pack-reused 12
Receiving objects: 100% (12/12), done.
Resolving deltas: 100% (1/1), done.
```

```
FROM python:latest

COPY . /app/

WORKDIR /app

RUN pip install -r requirements.txt

EXPOSE 5000

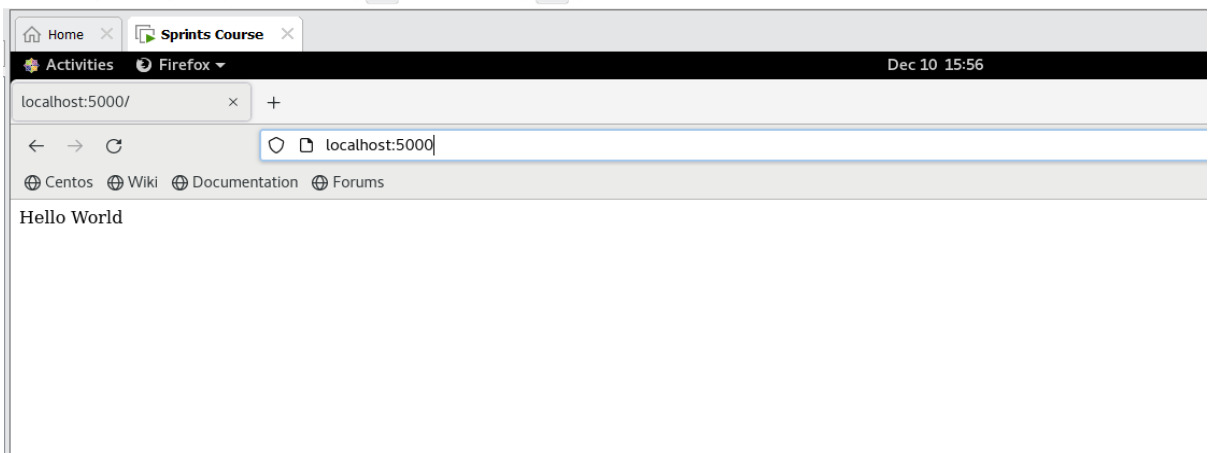
ENTRYPOINT ["python"]

CMD ["app.py"]
```

```

[root@localhost simple-flask-app]# vim requirements.txt
[root@localhost simple-flask-app]# docker build -t flaskapp-img:v6 .
Sending build context to Docker daemon 64kB
Step 1/7 : FROM python:latest
--> 399acc594e4
Step 2/7 : COPY . /app/
--> bbb35e262ca2
Step 3/7 : WORKDIR /app
--> Running in ee55c4fae3ea
Removing intermediate container ee55c4fae3ea
--> ef4dc47695
Step 4/7 : RUN pip install -r requirements.txt
--> Running in cd4f8a95c239
Collecting Flask==2.0.3
  Downloading Flask-2.0.3-py3-none-any.whl (95 kB)
Collecting Werkzeug==2.0
  Downloading Werkzeug-2.2.2-py3-none-any.whl (232 kB)
Collecting Jinja2==3.0
  Downloading Jinja2-3.1.2-py3-none-any.whl (133 kB)
Collecting itsdangerous==2.0
  Downloading itsdangerous-2.1.2-py3-none-any.whl (15 kB)
Collecting click==7.1.2
  Downloading click-8.1.3-py3-none-any.whl (96 kB)
Collecting MarkupSafe==2.0
  Downloading MarkupSafe-2.1.1.tar.gz (18 kB)
  Preparing metadata (setup.py): started
  Preparing metadata (setup.py): finished with status 'done'
Building wheels for collected packages: MarkupSafe
  Building wheel for MarkupSafe (setup.py): started
  Building wheel for MarkupSafe (setup.py): finished with status 'done'
  Created wheel for MarkupSafe: filename=MarkupSafe-2.1.1-cp311-cp311-linux_x86_64.whl size=27486 sha256=8a692a04d14c609f37ae1bb080deedf2026ea7298c11b923f38007bb3d76a4e2
  Stored in directory: /root/.cache/pip/wheels/96/ee/62/407c247ad080bcb67b530ba3ac1479050c36ad51bd0bf09a1f
Successfully built MarkupSafe
Installing collected packages: MarkupSafe, itsdangerous, click, Werkzeug, Jinja2, Flask
Successfully installed Flask-2.0.3 Jinja2-3.1.2 MarkupSafe-2.1.1 Werkzeug-2.2.2 click-8.1.3 itsdangerous-2.1.2
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: https://pip.pypa.io/warning
Removing intermediate container cd4f8a95c239
--> 3ee3f61f030b
Step 5/7 : EXPOSE 5000
--> Running in c7feac9e457d
Removing intermediate container c7feac9e457d
--> d85f95cd0905
Step 6/7 : ENTRYPOINT ["python"]
--> Running in 6eb5844146f7
Removing intermediate container 6eb5844146f7
--> c851275e2539
Step 7/7 : CMD ["app.py"]
--> Running in 7b77c830bc32
Removing intermediate container 7b77c830bc32
--> 223bd0b6825b9
Successfully built 223bd0b6825b9
Successfully tagged flaskapp-img:v6
[root@localhost simple-flask-app]# docker run -d -p 5000:5000 flaskapp-img:v6
0822fa82f71ee08501e51c236e4944108ee99058f5c423358607f42e79aaf
[root@localhost simple-flask-app]# docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
0822fa82f71   flaskapp-img:v6   "python app.py"         5 seconds ago   Up 3 seconds   0.0.0.0:5000->5000/tcp, :::5000->5000/tcp   frosty_bardeen
[root@localhost simple-flask-app]#

```



16. Create a volume called `mysql_data`, run a MySQL container again, but this time map a volume to the container so that the data stored by the container is stored at `/opt/data` on the host. Use the same name: `mysql_db` and same password: `db_pass123` as before. `mysql` stores data at `/var/lib/mysql` inside the container

```
root@localhost: /home/mohamed/Lab01
[root@localhost Lab01]# docker volume create mysql_data
mysql_data
[root@localhost Lab01]# docker run -d -v mysql_data:/var/lib/mysql --name mysql_db -e MYSQL_ROOT_PASSWORD=db_pass123 mysql
12ab96236784f9bdd3543c1a64984beb75e68a2b256595051925ec65bf664051
[root@localhost Lab01]# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
12ab96236784   mysql    "docker-entrypoint.s..." 12 seconds ago Up 11 seconds 3306/tcp, 33060/tcp               mysql_db
5eece18eac67   mysql    "docker-entrypoint.s..." 15 minutes ago Up 15 minutes 3306/tcp, 33060/tcp               mysql-db
[root@localhost Lab01]# docker inspect 12ab96236784 | grep Mount
      "MountLabel": "",
      "Mounts": [
[root@localhost Lab01]# docker inspect 12ab96236784
[
```

```
root@localhost: /home/mohamed/Lab01
e4/diff:/var/lib/docker/overlay2/66bd1b3596548cf9f7a2f7e53ed7c2480f2131c6a2e7c43349da9a7056a7b00e/diff
d984512d2da4e112c251fcd8409d6d9c757a88257df9195d6b5e591f2354/diff:/var/lib/docker/overlay2/6e6e88da18
1ab15333335b90b3fc9675635/diff:/var/lib/docker/overlay2/a03f1ba0f7c4361fab012074fc358319b6240a8a5357b7
      "MergedDir": "/var/lib/docker/overlay2/f4c1a1f9bc253914b2486a3caf4042c3673833bbd6195e1
      "UpperDir": "/var/lib/docker/overlay2/f4c1a1f9bc253914b2486a3caf4042c3673833bbd6195e1f
      "WorkDir": "/var/lib/docker/overlay2/f4c1a1f9bc253914b2486a3caf4042c3673833bbd6195e1f7
    },
    "Name": "overlay2"
  },
  "Mounts": [
    {
      "Type": "volume",
      "Name": "mysql_data",
      "Source": "/var/lib/docker/volumes/mysql_data/_data",
      "Destination": "/var/lib/mysql",
      "Driver": "local",
      "Mode": "z",
      "RW": true,
      "Propagation": ""
    }
  ]
}
```