

- 1) check the docker version installed

```
[mmansour@localhost ~]$ docker --version
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
podman version 4.2.0
[mmansour@localhost ~]$
```

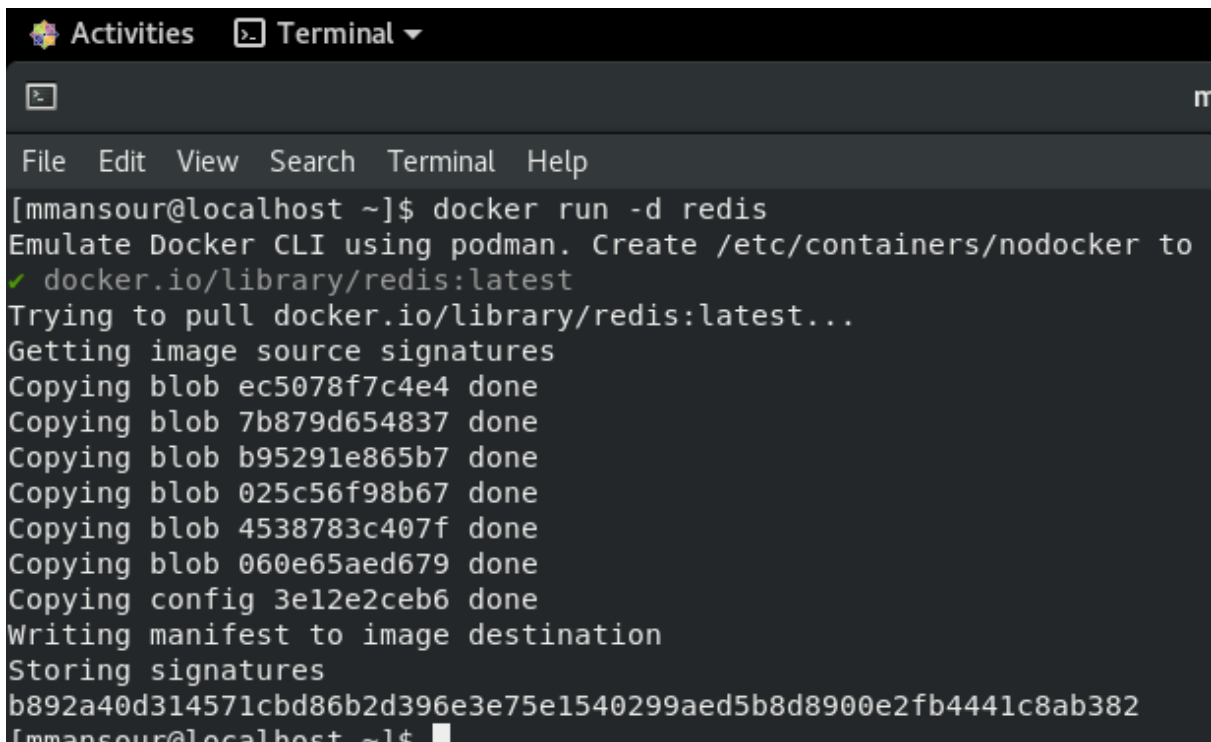
- 2) run docker container for hello-world

```
[mmansour@localhost ~]$ docker run hello-world
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
!... Hello Podman World ...!

      .--"---.
     /        \
    / (O)   (O) \
   ~~~|  -(,Y,)-|
     .---. /'   \ |~~
  ~/  o  o  \~~~~-.---.~~
 |  =(X)=  |~  / (O (O) \
 ~~~~~~ ~|  =(Y_)-=  |
 ~~~~      ~~~|    U    |~~

Project:   https://github.com/containers/podman
Website:   https://podman.io
Documents: https://docs.podman.io
Twitter:   @Podman_io
[mmansour@localhost ~]$
```

- 3) run docker container redis in detached mode



```
Activities Terminal
[mmansour@localhost ~]$ docker run -d redis
Emulate Docker CLI using podman. Create /etc/containers/nodocker to
✓ docker.io/library/redis:latest
Trying to pull docker.io/library/redis:latest...
Getting image source signatures
Copying blob ec5078f7c4e4 done
Copying blob 7b879d654837 done
Copying blob b95291e865b7 done
Copying blob 025c56f98b67 done
Copying blob 4538783c407f done
Copying blob 060e65aed679 done
Copying config 3e12e2ceb6 done
Writing manifest to image destination
Storing signatures
b892a40d314571cbd86b2d396e3e75e1540299aed5b8d8900e2fb4441c8ab382
[mmansour@localhost ~]$
```

- 4) try to stop the running redis container

```
[mmansour@localhost ~]$ docker ps -a
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS        NAMES
7c33958a43c1   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
1151a7370ae9   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
b892a40d3145   docker.io/library/redis:latest      redis-server             3 hours ago   Up 3 hours ago
[mmansour@localhost ~]$ docker stop b892a40d3145
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
b892a40d3145
[mmansour@localhost ~]$
```

5) check the ID of the redis container

```
[mmansour@localhost ~]$ docker ps -a
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS        NAMES
7c33958a43c1   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
1151a7370ae9   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
b892a40d3145   docker.io/library/redis:latest      redis-server             3 hours ago   Up 3 hours ago
[mmansour@localhost ~]$ docker stop b892a40d3145
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
b892a40d3145
[mmansour@localhost ~]$
```

6) try to run a container from nginx:alpine and delete image

```
[mmansour@localhost ~]$ docker run -d nginx:alpine
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
12d3cc966c638b676f2a54ccb40a8014fc14a6f174ac63fa870c481c8f0c7117
[mmansour@localhost ~]$ docker image ls
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
REPOSITORY      TAG       IMAGE ID       CREATED        SIZE
docker.io/library/redis    latest    3e12e2ceb68f   13 hours ago   121 MB
quay.io/podman/hello       latest    d7295400d59f   25 hours ago   82.6 kB
docker.io/library/nginx    alpine    19dd4d73108a   3 weeks ago    25.1 MB
[mmansour@localhost ~]$ docker ps -a
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS        NAMES
7c33958a43c1   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
1151a7370ae9   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
b892a40d3145   docker.io/library/redis:latest      redis-server             3 hours ago   Exited (0) 18 minutes ago
fad473eb0d96   docker.io/library/nginx:alpine      nginx -g daemon o...    4 minutes ago   Exited (0) 4 minutes ago
12d3cc966c63   docker.io/library/nginx:alpine      nginx -g daemon o...    3 minutes ago   Up 3 minutes ago
[mmansour@localhost ~]$ docker rmi 19dd4d73108a
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Error: image used by 12d3cc966c638b676f2a54ccb40a8014fc14a6f174ac63fa870c481c8f0c7117: image is in use by a container
[mmansour@localhost ~]$
```

7) delete the image redis

```
[mmansour@localhost ~]$ docker image ls
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
REPOSITORY      TAG       IMAGE ID       CREATED        SIZE
docker.io/library/redis    latest    3e12e2ceb68f   13 hours ago   121 MB
quay.io/podman/hello       latest    d7295400d59f   25 hours ago   82.6 kB
docker.io/library/nginx    alpine    19dd4d73108a   3 weeks ago    25.1 MB
[mmansour@localhost ~]$ docker rmi 3e12e2ceb68f
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Error: image used by b892a40d314571cbd86b2d396e3e75e1540299aed5b8d8900e2fb4441c8ab382: image is in use by a container
[mmansour@localhost ~]$ docker ps -a
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS        NAMES
7c33958a43c1   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
1151a7370ae9   quay.io/podman/hello:latest        /usr/local/bin/po...    3 hours ago   Exited (0) 3 hours ago
b892a40d3145   docker.io/library/redis:latest      redis-server             3 hours ago   Exited (0) 23 minutes ago
fad473eb0d96   docker.io/library/nginx:alpine      nginx -g daemon o...    9 minutes ago   Exited (0) 8 minutes ago
12d3cc966c63   docker.io/library/nginx:alpine      nginx -g daemon o...    8 minutes ago   Up 8 minutes ago
[mmansour@localhost ~]$
```

8) pull image from nginx:1.14-alpine

```
[mmansour@localhost ~]$ docker pull nginx:1.14-alpine
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Resolved "nginx" as an alias (/home/mmansour/.cache/containers/short-name-aliases.conf)
Trying to pull docker.io/library/nginx:1.14-alpine...
Getting image source signatures
Copying blob bdf0201b3a05 done
Copying blob 8129faeb2eb6 done
Copying blob 3d0a573c81ed done
Copying blob 3dc99f571daf done
Copying config 8a2fb25a19 done
Writing manifest to image destination
Storing signatures
8a2fb25a19f5dc1528b7a3fabe8b3145ff57fe10e4f1edac6c718a3cf4aa4b73
[mmansour@localhost ~]$
```

Run an instance of the ubuntu image to run the sleep 1000 command at startup.

Exec into the container and touch a file called test-file

```
[mmansour@localhost ~]$ docker run ubuntu sleep 1000
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Resolved "ubuntu" as an alias (/etc/containers/registries.conf.d/000-shortnames.conf)
Trying to pull docker.io/library/ubuntu:latest...
Getting image source signatures
Copying blob e96e057aae67 done
Copying config a8780b506f done
Writing manifest to image destination
Storing signatures
[mmansour@localhost ~]$ docker exec c87de5b6fcdf touch test-file
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
[mmansour@localhost ~]$ docker ps -a
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
CONTAINER ID   IMAGE                                COMMAND                  CREATED         STATUS         PORTS          NAMES
7c33958a43c1   quay.io/podman/hello:latest        /usr/local/bin/po...    4 hours ago    Exited (0) 4 hours ago          gallant_mahavira
1151a7370ae9   quay.io/podman/hello:latest        /usr/local/bin/po...    4 hours ago    Exited (0) 4 hours ago          romantic_jang
b892a40d3145   docker.io/library/redis:latest     redis-server            4 hours ago    Exited (0) 49 minutes ago       serene_blackburn
fad473eb0d96   docker.io/library/nginx:alpine     nginx -g daemon o...    35 minutes ago Exited (0) 35 minutes ago       lucid_lederberg
12d3cc966c63   docker.io/library/nginx:alpine     nginx -g daemon o...    34 minutes ago Up 34 minutes ago               funny_cori
c87de5b6fcdf   docker.io/library/ubuntu:latest    sleep 1000              15 minutes ago Up 15 minutes ago               hungry_chaplygin
[mmansour@localhost ~]$
```

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

```
[mmansour@localhost ~]$ docker run -d --name web nginx:alpine
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
54250e909dc38a8728d1d831da5f7a40196092d915079ae81aa7f8cd1cd22d14
[mmansour@localhost ~]$ docker ps -a
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
CONTAINER ID   IMAGE                                COMMAND                  CREATED         STATUS         PORTS          NAMES
7c33958a43c1   quay.io/podman/hello:latest        /usr/local/bin/po...    4 hours ago    Exited (0) 4 hours ago          gallant_mahavira
1151a7370ae9   quay.io/podman/hello:latest        /usr/local/bin/po...    4 hours ago    Exited (0) 4 hours ago          romantic_jang
b892a40d3145   docker.io/library/redis:latest     redis-server            4 hours ago    Exited (0) About an hour ago       serene_blackburn
fad473eb0d96   docker.io/library/nginx:alpine     nginx -g daemon o...    47 minutes ago Exited (0) 46 minutes ago       lucid_lederberg
12d3cc966c63   docker.io/library/nginx:alpine     nginx -g daemon o...    46 minutes ago Up 46 minutes ago               funny_cori
c87de5b6fcdf   docker.io/library/ubuntu:latest    sleep 1000              27 minutes ago Exited (0) 10 minutes ago       hungry_chaplygin
54250e909dc3   docker.io/library/nginx:alpine     nginx -g daemon o...    8 seconds ago   Up 8 seconds ago                web
[mmansour@localhost ~]$
```

10) delete all the images from the host

```
[mmansour@localhost ~]$ docker rmi -f $(docker images -aq)
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Untagged: docker.io/library/redis:latest
Untagged: quay.io/podman/hello:latest
Untagged: docker.io/library/nginx:alpine
Untagged: docker.io/library/ubuntu:latest
Untagged: docker.io/library/nginx:1.14-alpine
Deleted: 3e12e2ceb68fcf0de4ebfe5678b2dcc34642c0f994b1f6d82154ca498aebc2e6
Deleted: d7295400d59f2a14b654f08134771ad1322b7ced6efd86b190da8e639197c8d5
Deleted: 19dd4d73108a1feefc29d299f3727467ac02486c83474fc3979e4a7637291fe6
Deleted: a8780b506fa4eeb1d0779a3c92c8d5d3e6a656c758135f62826768da458b5235
Deleted: 8a2fb25a19f5dc1528b7a3fabe8b3145ff57fe10e4f1edac6c718a3cf4aa4b73
[mmansour@localhost ~]$
```

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

```
[mmansour@localhost ~]$ docker run -d -p 38282:8080 nginx:alpine
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Resolved "nginx" as an alias (/home/mmansour/.cache/containers/short-name-aliases.conf)
Trying to pull docker.io/library/nginx:alpine...
Getting image source signatures
Copying blob 2f12a0e7c01d done
Copying blob 1a7b9b9bbef6 done
Copying blob ca7dd9ec2225 done
Copying blob b704883c57af done
Copying blob 76a48b0f5898 done
Copying blob 4342b1ab302e done
Copying config 19dd4d7310 done
Writing manifest to image destination
Storing signatures
e95ccd7ec7c17f6d2f581e21d14cf6e76171731a43de3f4e77acd27573d7371d
[mmansour@localhost ~]$
```

- 12) create ubuntu image and check the size of it

```
[mmansour@localhost ~]$ docker pull ubuntu
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Resolved "ubuntu" as an alias (/etc/containers/registries.conf.d/000-shortnames.conf)
Trying to pull docker.io/library/ubuntu:latest...
Getting image source signatures
Copying blob e96e057aae67 done
Copying config a8780b506f done
Writing manifest to image destination
Storing signatures
a8780b506fa4eeb1d0779a3c92c8d5d3e6a656c758135f62826768da458b5235
[mmansour@localhost ~]$
```

```
[mmansour@localhost ~]$ docker image ls
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.


| REPOSITORY               | TAG    | IMAGE ID     | CREATED      | SIZE    |
|--------------------------|--------|--------------|--------------|---------|
| docker.io/library/nginx  | latest | ac8efec875ce | 19 hours ago | 146 MB  |
| docker.io/library/nginx  | alpine | 19dd4d73108a | 3 weeks ago  | 25.1 MB |
| docker.io/library/ubuntu | latest | a8780b506fa4 | 4 weeks ago  | 80.3 MB |


[mmansour@localhost ~]$
```

- 13) Run a container named blue-app using image kodekloud/simple-webapp and set the environment variable APP_COLOR to blue. Make the application available on port 38282 on the host. The application listens on port 8080

```
[mmansour@localhost ~]$ docker run -e APP_COLOR=blue -p 38282:8080 mmumshad/simple-webapp-color
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
Error: rootlessport listen tcp 0.0.0.0:38282: bind: address already in use
```

- 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

```
[mmansour@localhost ~]$ docker run --name mysql-db -e MYSQL_ROOT_PASSWORD=db_pass123 -d mysql
Emulate Docker CLI using podman. Create /etc/containers/nodocker to quiet msg.
f9a2a716ec0f0eaa07dff2de3d49b8ca0ef396f7708ed8aa49d80be365179dd8
[mmansour@localhost ~]$ docker inspect mysql-db
```

```
{,
  "StopSignal": 15,
  "CreateCommand": [
    "/usr/bin/podman",
    "run",
    "--name",
    "mysql-db",
    "-e",
    "MYSQL_ROOT_PASSWORD=db_pass123",
    "-d",
    "mysql"
  ]
}
```

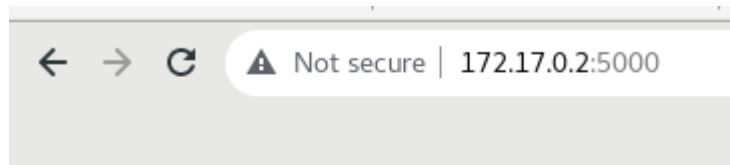
- 15) pull the code from <https://github.com/sabreensalama/simple-flask-app/tree/main> and create a docker file for this flask app

```
[root@localhost simple-flask-app-main]# docker build -t flask_docker .
Sending build context to Docker daemon 5.12kB
Step 1/7 : FROM python:3.8-alpine
```

```
[root@localhost simple-flask-app-main]# ls
app.py Dockerfile README.md requirements.txt
[root@localhost simple-flask-app-main]#
```

```
[root@localhost simple-flask-app-main]# docker image ls
REPOSITORY      TAG          IMAGE ID       CREATED        SIZE
flask_docker     latest       2ec432691775   26 minutes ago 60.8MB
python          3.8-alpine   13f1e3678aa9   2 days ago    48.2MB
hello-world     latest       feb5d9fea6a5   14 months ago 13.3kB
[root@localhost simple-flask-app-main]#
```

```
[root@localhost simple-flask-app-main]# docker run flask-docker
* Serving Flask app 'app' (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5000
* Running on http://172.17.0.2:5000
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 400-212-924
```



Hello World

- 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 simple-flask-app-main]# docker run --name mysql-db -e MYSQL_ROOT_PASSWORD=db_pass123 -d -v /var/lib/mysql:mysql_aedd750aeaa61082682073be9e9d93747a6433ea8d4f6b0f61791b95c3caf5a5 mysql
[root@localhost simple-flask-app-main]#
```