Docker Task1

1- check the docker version installed

```
[maly@localhost ~]$ docker --version
Docker version 20.10.21, build baeda1f
```

2- run docker container for hello-world

```
[maly@localhost ~]$ sudo docker run hello-world
[sudo] password for maly:

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/
```
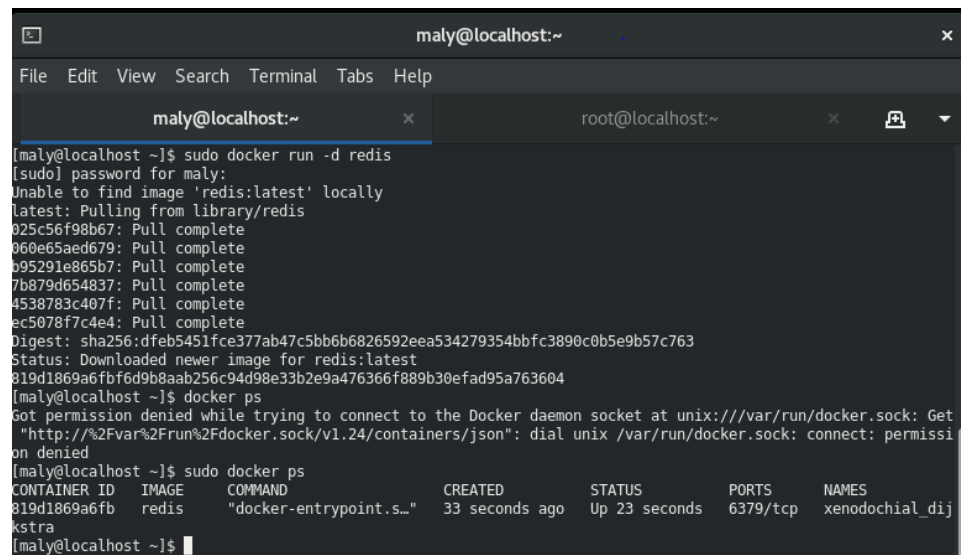
3- run docker container redis in detached mode

```
maly@localhost:~

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   maly@localhost:~              ×          root@localhost:~

[maly@localhost ~]$ sudo docker run -d redis
[sudo] password for maly:
Unable to find image 'redis:latest' locally
latest: Pulling from library/redis
025c56f98b67: Pull complete
060e65aed679: Pull complete
b95291e865b7: Pull complete
7b879d654837: Pull complete
4538783c407f: Pull complete
ec5078f7c4e4: Pull complete
Digest: sha256:dfeb5451fce377ab47c5bb6b6826592eea534279354bbfc3890c0b5e9b57c763
Status: Downloaded newer image for redis:latest
819d1869a6fbf6d9b8aab256c94d98e33b2e9a476366f889b30efad95a763604
[maly@localhost ~]$ docker ps
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get
 "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/json": dial unix /var/run/docker.sock: connect: permissi
on denied
[maly@localhost ~]$ sudo docker ps
CONTAINER ID   IMAGE    COMMAND            CREATED          STATUS          PORTS       NAMES
819d1869a6fb   redis    "docker-entrypoint.s…"   33 seconds ago   Up 23 seconds   6379/tcp   xenodochial_dij
kstra
[maly@localhost ~]$
```

4- try to stop the running redis container


```
                                    maly@localhost:~                          ×

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            maly@localhost:~              ×              root@localhost:~              ×

[maly@localhost ~]$ sudo docker run -d redis
[sudo] password for maly:
Unable to find image 'redis:latest' locally
latest: Pulling from library/redis
025c56f98b67: Pull complete
060e65aed679: Pull complete
b95291e865b7: Pull complete
7b879d654837: Pull complete
4538783c407f: Pull complete
ec5078f7c4e4: Pull complete
Digest: sha256:dfeb5451fce377ab47c5bb6b6826592eea534279354bbfc3890c0b5e9b57c763
Status: Downloaded newer image for redis:latest
819d1869a6fbf6d9b8aab256c94d98e33b2e9a476366f889b30efad95a763604
[maly@localhost ~]$ docker ps
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get
 "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/json": dial unix /var/run/docker.sock: connect: permissi
on denied
[maly@localhost ~]$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND               CREATED         STATUS        PORTS       NAMES
819d1869a6fb   redis     "docker-entrypoint.s…"  33 seconds ago  Up 23 seconds  6379/tcp   xenodochial_dij
kstra
[maly@localhost ~]$ sudo docker stop 819d1869a6fb
819d1869a6fb
[maly@localhost ~]$ docker ps
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get
 "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/json": dial unix /var/run/docker.sock: connect: permissi
on denied
[maly@localhost ~]$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
[maly@localhost ~]$
```

4- check the present container on the host


```
                                    root@localhost:~                          ×

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            maly@localhost:~              ×              root@localhost:~              ×

[root@localhost ~]# docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
[root@localhost ~]# docker ps -a
CONTAINER ID   IMAGE     COMMAND               CREATED        STATUS                    PORTS       N
AMES
819d1869a6fb   redis     "docker-entrypoint.s…"  4 minutes ago  Exited (0) About a minute ago          x
enodochial_dijkstra
[root@localhost ~]#
```

5- check the ID of the redis container

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

7- delete the image redis


```
[root@localhost ~]# docker ps
CONTAINER ID   IMAGE     COMMAND     CREATED    STATUS      PORTS       NAMES
[root@localhost ~]# docker ps -a
CONTAINER ID   IMAGE     COMMAND              CREATED          STATUS                    PORTS       NAMES
819d1869a6fb   redis     "docker-entrypoint.s…"   4 minutes ago    Exited (0) About a minute ago         xenodochial_dijkstra
[root@localhost ~]# docker rmi redis
Error response from daemon: conflict: unable to remove repository reference "redis" (must force) - container 819d1869a6fb is usin
g its referenced image 3e12e2ceb68f
[root@localhost ~]# docker rmi redis -f
Untagged: redis:latest
Untagged: redis@sha256:dfeb5451fce377ab47c5bb6b6826592eea534279354bbfc3890c0b5e9b57c763
Deleted: sha256:3e12e2ceb68fcf0de4ebfe5678b2dcc34642c0f994b1f6d82154ca498aebc2e6
[root@localhost ~]# docker images
REPOSITORY   TAG      IMAGE ID   CREATED   SIZE
[root@localhost ~]# docker ps
CONTAINER ID   IMAGE     COMMAND     CREATED    STATUS      PORTS       NAMES
[root@localhost ~]# docker ps -a
CONTAINER ID   IMAGE        COMMAND              CREATED        STATUS              PORTS       NAMES
819d1869a6fb   3e12e2ceb68f  "docker-entrypoint.s…"   7 minutes ago  Exited (0) 4 minutes ago         xenodochial_dijkstra
[root@localhost ~]#
```

8- pull image from nginx:1.14-alpine 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


```
[root@localhost ~]# 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@localhost ~]# docker run ubuntu sleep 1000
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
e96e057aae67: Pull complete
Digest: sha256:4b1d0c4a2d2aaf63b37111f34eb9fa89fa1bf53dd6e4ca954d47caebca4005c2
Status: Downloaded newer image for ubuntu:latest
^C^C[root@localhost ~]# docker ps -a
CONTAINER ID   IMAGE     COMMAND      CREATED        STATUS                  PORTS       NAMES
7301199b5329   ubuntu    "sleep 1000"  8 minutes ago  Exited (137) 8 seconds ago         vibrant_licht
erman
```



```
[root@localhost ~]# docker run --rm -i -t ubuntu bash
root@5fc787926e2c:/# ls
bin   dev  home  lib32  libx32  mnt  proc  run   srv  tmp  var
boot  etc  lib   lib64  media   opt  root  sbin  sys  usr
root@5fc787926e2c:/# touch /tmp/test-file
root@5fc787926e2c:/# ls tmp/
test-file
root@5fc787926e2c:/#
```

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

```
[root@localhost ~]# docker run -d --name web 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
2b7f1599cb1e17348ee371c8eb74fa1a8b50c342ced483f25245a3de6976f280
[root@localhost ~]# docker ps
CONTAINER ID   IMAGE          COMMAND                CREATED        STATUS         PORTS      NAMES
2b7f1599cb1e   nginx:alpine   "/docker-entrypoint.…" 7 seconds ago  Up 3 seconds   80/tcp     web
[root@localhost ~]#
```

10- delete all the images from the host

```
[root@localhost ~]# docker images
REPOSITORY   TAG          IMAGE ID       CREATED        SIZE
nginx        alpine       19dd4d73108a   3 weeks ago    23.5MB
ubuntu       latest       a8780b506fa4   4 weeks ago    77.8MB
nginx        1.14-alpine  8a2fb25a19f5   3 years ago    16MB
[root@localhost ~]# docker rmi 19dd4d73108a
Error response from daemon: conflict: unable to delete 19dd4d73108a (cannot be forced) - image is being used by
 running container 2b7f1599cb1e
[root@localhost ~]# docker rmi -f $(docker images -q)
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:4b1d0c4a2d2aaf63b37111f34eb9fa89fa1bf53dd6e4ca954d47caebca4005c2
Deleted: sha256:a8780b506fa4eeb1d0779a3c92c8d5d3e6a656c758135f62826768da458b5235
Untagged: nginx:1.14-alpine
Untagged: nginx@sha256:485b610fefec7ff6c463ced9623314a04ed67e3945b9c08d7e53a47f6d108dc7
Deleted: sha256:8a2fb25a19f5dc1528b7a3fabe8b3145ff57fe10e4f1edac6c718a3cf4aa4b73
Deleted: sha256:f68a8bcb9dbd06e0d2750eabf63c45f51734a72831ed650d2349775865d5fc20
Deleted: sha256:cbf2c7789332fe231e8defa490527a7b2c3ae8589997ceee00895f3263f0a8cf
Deleted: sha256:894f3fad7e6ecd7f24e88340a44b7b73663a85c0eb7740e7ade169e9d8491a4c
Deleted: sha256:a464c54f93a9e88fc1d33df1e0e39cca427d60145a360962e8f19a1dbf900da9
Error response from daemon: conflict: unable to delete 19dd4d73108a (cannot be forced) - image is being used by
 running container 2b7f1599cb1e
[root@localhost ~]# docker images
REPOSITORY   TAG      IMAGE ID       CREATED        SIZE
nginx        alpine   19dd4d73108a   3 weeks ago    23.5MB
[root@localhost ~]# docker image prune
WARNING! This will remove all dangling images.
Are you sure you want to continue? [y/N] y
Total reclaimed space: 0B
[root@localhost ~]# docker images
REPOSITORY   TAG      IMAGE ID       CREATED        SIZE
```

```
[root@localhost ~]# docker images
REPOSITORY   TAG      IMAGE ID       CREATED        SIZE
nginx        alpine   19dd4d73108a   3 weeks ago    23.5MB
[root@localhost ~]# docker image prune -f
Total reclaimed space: 0B
[root@localhost ~]# docker rmi -f $(docker images -q)
Untagged: nginx:alpine
Untagged: nginx@sha256:455c39afebd4d98ef26dd70284aa86e6810b0485af5f4f222b19b89758cabf1e
Deleted: sha256:19dd4d73108a1feefc29d299f3727467ac02486c83474fc3979e4a7637291fe6
[root@localhost ~]# docker images
REPOSITORY   TAG      IMAGE ID   CREATED   SIZE
[root@localhost ~]#
```

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


```
[root@localhost ~]# docker run -d --name nginx -p 38282:8080 nginx:alpine
3f87ec844f993c0d28d393fd23e47072e4411d52b422186ddd94eabe61aafe18
[root@localhost ~]# docker ps
CONTAINER ID   IMAGE           COMMAND               CREATED         STATUS
  PORTS                                NAMES
3f87ec844f99   nginx:alpine    "/docker-entrypoint.…"   12 seconds ago   Up 10 seconds
  80/tcp, 0.0.0.0:38282->8080/tcp, :::38282->8080/tcp   nginx
[root@localhost ~]#
```

12- create ubuntu image and check the size of it


```
[root@localhost ~]# docker images
REPOSITORY   TAG       IMAGE ID       CREATED       SIZE
nginx        alpine    19dd4d73108a   3 weeks ago   23.5MB
[root@localhost ~]# 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@localhost ~]# docker images
REPOSITORY   TAG       IMAGE ID       CREATED       SIZE
nginx        alpine    19dd4d73108a   3 weeks ago   23.5MB
ubuntu       latest    a8780b506fa4   4 weeks ago   77.8MB
[root@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.


```
[root@localhost ~]# docker run --name blue-app -p 38282:8080 -e APP_COLOR=blue -d kode
kloud/simple-webapp
71faa3104c2c1085e6cf6d480763e19b96a1b201857d99de60577ca65b88a7a3
[root@localhost ~]# docker ps
CONTAINER ID   IMAGE                      COMMAND           CREATED         STATUS
    PORTS                                NAMES
71faa3104c2c   kodekloud/simple-webapp    "python app.py"   14 seconds ago   Up 12 seco
nds    0.0.0.0:38282->8080/tcp, :::38282->8080/tcp   blue-app
[root@localhost ~]#
```

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

```
[root@localhost ~]# docker run -d --name=mysqldb -e MYSQL_ROOT_PASSWORD=db_pass123 mys
ql
26119553dfec32b3664e777d2c05e00fc969670f45362a2e02d33aff12a3d2de
[root@localhost ~]# docker inspect cba692e2f27c | grep MYSQL_ROOT_PASSWORD
Error: No such object: cba692e2f27c
[root@localhost ~]# ^C
[root@localhost ~]# docker ps
CONTAINER ID    IMAGE      COMMAND                CREATED         STATUS          POR
TS              NAMES
26119553dfec    mysql      "docker-entrypoint.s…"  30 seconds ago  Up 28 seconds   330
6/tcp, 33060/tcp    mysqldb
[root@localhost ~]# docker inspect 26119553dfec | grep MYSQL_ROOT_PASSWORD
            "MYSQL_ROOT_PASSWORD=db_pass123",
[root@localhost ~]#
```

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

```
[maly@localhost lab1]$ git clone https://github.com/sabreensalama/simple-flask-app
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.
[maly@localhost lab1]$ ls
simple-flask-app
[maly@localhost lab1]$ cd simple-flask-app/
[maly@localhost simple-flask-app]$ lls
bash: lls: command not found...
Similar command is: 'ls'
[maly@localhost simple-flask-app]$ ls
app.py  README.md  requirements.txt
[maly@localhost simple-flask-app]$
```

Open ▾ 🗖

requirements.txt
~/docker-labs/lab1/simple-flask-app

```
Flask==0.10.1
jinja2==3.0.3
werkzeug==2.0.3
itsdangerous==2.0.1
```

home > maly > docker-labs > lab1 > simple-flask-app > Dockerfile > ...

```dockerfile
1   FROM python
2   WORKDIR /app
3   COPY . /app
4   RUN pip install -r requirements.txt
5   EXPOSE 5000
6   ENTRYPOINT ["python"]
7   CMD ["app.py"]
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**

```
[root@localhost simple-flask-app]# docker build -t flask-app:v5 .
Sending build context to Docker daemon     64kB
Step 1/7 : FROM python
 ---> 539eccd5ee4e
Step 2/7 : WORKDIR /app
 ---> Using cache
 ---> d52cfd05e930
Step 3/7 : COPY . /app
 ---> f1a09fef03bf
Step 4/7 : RUN pip install -r requirements.txt
 ---> Running in 28eb78516f0d
Collecting Flask==0.10.1
  Downloading Flask-0.10.1.tar.gz (544 kB)
                                    544.2/544.2 kB 1.1 MB/s eta 0:00:00
  Preparing metadata (setup.py): started
  Preparing metadata (setup.py): finished with status 'done'
Collecting jinja2==3.0.3
  Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)
                                    133.6/133.6 kB 557.4 kB/s eta 0:00:00
```

---

root@localhost:~   ×

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maly@localhost:~/docker-labs/lab1/simp...   ×   root@localhost:~   ×

```
* Running on http://172.17.0.2:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 229-188-197
^C[root@localhost ~]# docker ps -a
CONTAINER ID    IMAGE          COMMAND             CREATED            STATUS
                PORTS          NAMES
fe18274bc22a    flask-app:v5   "python app.py"     About a minute ago  Exited (0)
 7 seconds ago                 competent_poitras
343b9012357e    flask-app:v4   "python app.py"     9 minutes ago       Exited (1)
 9 minutes ago                 unruffled_moore
0f075bfd7f43    flask-app:v2   "python app.py"     11 minutes ago      Exited (1)
 10 minutes ago                charming_mcclintock
ccf429d98f41    flask-app:v3   "python app.py"     19 minutes ago      Exited (1)
 19 minutes ago                affectionate_mcnulty
52a8e07a7329    7a8690b33c79   "/bin/sh -c 'pip ins…" 34 minutes ago    Exited (1)
 34 minutes ago                cranky_booth
33853e4b9ff7    9ca7223aef2a   "/bin/sh -c 'pip ins…" 35 minutes ago    Exited (1)
 35 minutes ago                nice_faraday
2c3d97c91972    flask-app:v2   "python app.py"     40 minutes ago      Exited (1)
 40 minutes ago                silly_curie
[root@localhost ~]# docker run -d -p 5000:5000 flask-app:v5
b34784fd025218f3c1df46aa8ee7c6d8b87c527c0839a3d09fba2e51402829ff
[root@localhost ~]#
```

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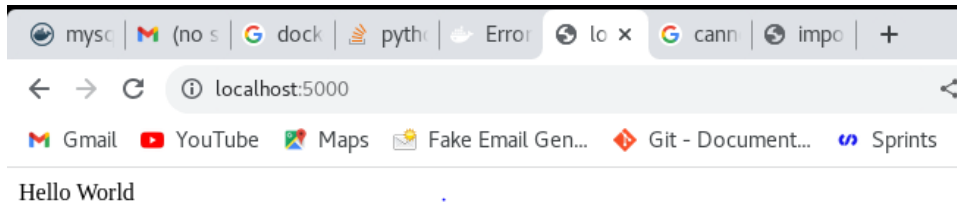
16- Create a volume called mysql_data, Run a mysql container again, but this time map a volume to the container so that the data stored by the container is stored at /opt/data on the host. Use the same name : mysql-db and same password: db_pass123 as before. Mysql stores data at /var/lib/mysql inside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


```
[root@localhost ~]# docker run -d -v /opt/data:/var/lib/mysql --name=mysqldb -e MYSQL_
ROOT_PASSWORD=db_pass123 mysql
3678cc16ff5633d64c72a2d412ade7cd04446da407e52a00e0ac55ce048d962a
[root@localhost ~]# docker volume create mysql_data
mysql_data
```