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EXPERIMENT-1

Performing CRUD Operation on Containers

Steps to be followed:

1. Pulling a Docker image
2. Creating a new container
3. Stopping the container
4. Listing all the containers
5. Deleting the container
6. Removing the image

Step 1: Pulling a Docker image

1.1 Open the terminal and pull an image using the command:

"docker pull nginx"

```
C:\Users\91983>docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
a378f10b3218: Pull complete
4dfff0708538: Pull complete
2135e49ace4b: Pull complete
c843f6b280ce: Pull complete
6f35ab6f1400: Pull complete
6c538b49fa4a: Pull complete
d57731fb9008: Pull complete
Digest: sha256:b4af4f8b6470febf45dc10f564551af682a802eda1743055a7dfc8332dffa595
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview nginx
```

1.2 List all the docker images to check the newly pulled *nginx* image:

" docker images "

```
C:\Users\91983>docker images
REPOSITORY                                          TAG
              IMAGE ID       CREATED         SIZE
nginx                                               latest
              bc649bab30d1   12 days ago     187MB
hubproxy.docker.internal:5555/docker/desktop-kubernetes   kubernetes-v1.27.2-cni-v1.2.0-critools-v1.27.0-cri-dockerd-v0.
3.2-1-debian   c763812a4530   4 months ago    418MB
registry.k8s.io/kube-apiserver                      v1.27.2
              c5b13e4f7806   5 months ago    121MB
```

Step 2: Creating a new container

2.1 Create a new container from the *nginx* image:

" docker run -dt -p 81:81 nginx "

```
C:\Users\91983>docker run -dt -p 81:80 nginx
59cd250204ed1959ef82e7fca5c39c20c0c2859aa20e30bce93abd00d9c8cf45
```

2.2 List all the running containers to check the newly created container. You can find various details like port of container, it's time of creation and ID.

" docker ps "

```
C:\Users\91983>docker ps
CONTAINER ID   IMAGE                  COMMAND                  CREATED         STATUS         PORTS
  NAMES
59cd250204ed   nginx                  "/docker-entrypoint.…"   8 seconds ago   Up 6 seconds   0.0.0.0:81->80/tcp
  competent_boyd
8dde08a8dba4   165df46c1bb9           "kube-scheduler --au…"   15 minutes ago  Up 15 minutes
  k8s_kube-scheduler_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
6451c043a73b   registry.k8s.io/pause:3.9   "/pause"                 15 minutes ago  Up 15 minutes
  k8s_POD_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
```

Step 3: Stopping the container

3.1 Use the following command to stop the running container. ***(***You can also us the container ID to stop the container: *" docker stop CONTAINER_ID "****)***

" docker stop CONTAINER_NAME "

```
C:\Users\91983>docker stop 59cd250204ed
59cd250204ed
```

3.2 Use the following command to list all the running containers and verify if the container has stopped running:

" docker ps "

```
C:\Users\91983>docker ps
CONTAINER ID   IMAGE                  COMMAND                  CREATED         STATUS         PORTS     NAMES
8dde08a8dba4   165df46c1bb9           "kube-scheduler --au…"   19 minutes ago   Up 19 minutes            k8s_kube-
scheduler_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
6451c043a73b   registry.k8s.io/pause:3.9   "/pause"                 19 minutes ago   Up 19 minutes            k8s_POD_k
ube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
```

3.3 You can start the container again and check the running containers. ***(***You can also us the container ID to start the container: *sudo docker start CONTAINER_ID****)***

" docker start CONTAINER_NAME " or " docker start CONTAINER_ID "

```
C:\Users\91983>docker start 59cd250204ed
59cd250204ed
```

```
C:\Users\91983>docker start 59cd250204ed
59cd250204ed
```

3.4 To start the container in interactive mode, use the –i and –t options.

" ***docker run -it --name=Test_1 nginx "***

```
C:\Users\91983>docker run -it --name=Test_1 nginx
/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: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/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
2023/10/24 13:42:40 [notice] 1#1: using the "epoll" event method
2023/10/24 13:42:40 [notice] 1#1: nginx/1.25.2
2023/10/24 13:42:40 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14)
2023/10/24 13:42:40 [notice] 1#1: OS: Linux 5.10.102.1-microsoft-standard-WSL2
2023/10/24 13:42:40 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2023/10/24 13:42:40 [notice] 1#1: start worker processes
2023/10/24 13:42:40 [notice] 1#1: start worker process 29
2023/10/24 13:42:40 [notice] 1#1: start worker process 30
2023/10/24 13:42:40 [notice] 1#1: start worker process 31
2023/10/24 13:42:40 [notice] 1#1: start worker process 32
2023/10/24 13:42:40 [notice] 1#1: start worker process 33
2023/10/24 13:42:40 [notice] 1#1: start worker process 34
2023/10/24 13:42:40 [notice] 1#1: start worker process 35
2023/10/24 13:42:40 [notice] 1#1: start worker process 36
```

Step 4: Listing all the containers

4.1 Use the below command to list all the containers started and the once which are stopped:

" docker ps -a "

```
C:\Users\91983>docker ps -a
CONTAINER ID   IMAGE                     COMMAND                  CREATED          STATUS          PORTS
  NAMES
2f8e93a9c8fc   dc245db8c2fa              "kube-apiserver --ad…"   13 seconds ago   Up 12 seconds
  k8s_kube-apiserver_kube-apiserver-docker-desktop_kube-system_8b71cd624d40d0ffecf5822890467a47_104
03ed1b222b30   nginx                     "/docker-entrypoint.…"   2 minutes ago    Up 2 minutes    80/tcp
  Test_1
59cd250204ed   nginx                     "/docker-entrypoint.…"   14 minutes ago   Up 5 minutes    0.0.0.0:81->80/tcp
  competent_boyd
8dde08a8dba4   165df46c1bb9              "kube-scheduler --au…"   29 minutes ago   Up 29 minutes
  k8s_kube-scheduler_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
6451c043a73b   registry.k8s.io/pause:3.9  "/pause"                 29 minutes ago   Up 29 minutes
  k8s_POD_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
39cc4e421382   registry.k8s.io/pause:3.9  "/pause"                 29 minutes ago   Up 29 minutes
  k8s_POD_kube-controller-manager-docker-desktop_kube-system_861008677140df5bf14684241a098812_7
```

4.2 To list the containers by their ID, use the below command

" docker ps -aq "

```
C:\Users\91983>docker ps -aq
03ed1b222b30
59cd250204ed
8dde08a8dba4
6451c043a73b
39cc4e421382
```

4.3 To list the total file size of each container, use the below command:

" docker ps -s "

```
C:\Users\91983>docker ps -s
CONTAINER ID   IMAGE                  COMMAND                  CREATED         STATUS         PORTS
  NAMES                                                                                      SIZE
03ed1b222b30   nginx                  "/docker-entrypoint.…"   5 minutes ago   Up 5 minutes    80/tcp
  Test_1                                                                                     1.09kB (virtual 187M
B)
59cd250204ed   nginx                  "/docker-entrypoint.…"   16 minutes ago  Up 7 minutes    0.0.0.0:81->80/tcp
  competent_boyd                                                                             1.09kB (virtual 187M
B)
8dde08a8dba4   165df46c1bb9           "kube-scheduler --au…"   32 minutes ago  Up 32 minutes
  k8s_kube-scheduler_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7   0B (virtual 50.7MB)
6451c043a73b   registry.k8s.io/pause:3.9  "/pause"                 32 minutes ago  Up 32 minutes
  k8s_POD_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7             0B (virtual 744kB)
39cc4e421382   registry.k8s.io/pause:3.9  "/pause"                 32 minutes ago  Up 32 minutes
  k8s_POD_kube-controller-manager-docker-desktop_kube-system_861008677140df5bf14684241a098812_7    0B (virtual 744kB)
```

4.4 To list the latest created containers, use the following command:

" docker ps -l "

```
C:\Users\91983>docker ps -l
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
```

Step 5: Deleting the container

5.1 Stop the running container and remove it using the following commands:

" docker stop CONTAINER_NAME "

```
C:\Users\91983>docker stop Test_1
Test_1

C:\Users\91983>docker ps
CONTAINER ID   IMAGE                     COMMAND                  CREATED          STATUS          PORTS
  NAMES
59cd250204ed   nginx                     "/docker-entrypoint.…"   20 minutes ago   Up 11 minutes   0.0.0.0:81->80/tcp
  competent_boyd
8dde08a8dba4   165df46c1bb9              "kube-scheduler --au…"   36 minutes ago   Up 36 minutes
  k8s_kube-scheduler_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
6451c043a73b   registry.k8s.io/pause:3.9   "/pause"                 36 minutes ago   Up 36 minutes
  k8s_POD_kube-scheduler-docker-desktop_kube-system_42b55bbd22a41e1e397a84692d259b1e_7
39cc4e421382   registry.k8s.io/pause:3.9   "/pause"                 36 minutes ago   Up 36 minutes
  k8s_POD_kube-controller-manager-docker-desktop_kube-system_861008677140df5bf14684241a098812_7
```

“ docker container rm CONTAINER_NAME “

```
C:\Users\91983>docker container rm Test_1
Test_1
```

Step 6: Removing the image

6.1 Remove the image using the command:

“ docker image rm nginx “

```
C:\Users\91983>docker image rm nginx
Untagged: nginx:latest
Untagged: nginx@sha256:b4af4f8b6470febf45dc10f564551af682a802eda1743055a7dfc8332dffa595
Deleted: sha256:bc649bab30d150c10a84031a7f54c99a8c31069c7bc324a7899d7125d59cc973
Deleted: sha256:c6f480996a203ed077606cce624f944b041449833e2db3f7d19fe22974fb965b
Deleted: sha256:e4347a01432c5f4350b041632f5703c3dd47de2ec68547b9339d11ea44708389
Deleted: sha256:9d40098fc19fdfff9c74fd3c2c0ff49bfda7d9d04b5d7806d0843d32055d769a
Deleted: sha256:165ae0ef2ddd33b6d5a7f206633b9b0c30cd94ff18a4ed5c3aeb59bf28388526
Deleted: sha256:06dabb44ac4d1f0b5544255e944f15a939178d77aff60a5b296e38bd8743efeb
Deleted: sha256:ee220599571f649e0fb74b40db1615a4c9c1355ac912f9e70087b695617af352
Deleted: sha256:cb4596cc145400fb1f2aa56d41516b39a366ecdee7bf3f9191116444aacd8c90
```