



**UNIVERSITY OF PETROLEUM & ENERGY STUDIES**

**Dehradun**

## **ACO LAB**

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**Batch-4 (DevOps)**

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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”*

```
anushka@anushka-VirtualBox:~$ docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
1f7ce2fa46ab: Already exists
9b16c94bb686: Pull complete
9a59d19f9c5b: Pull complete
9ea27b074f71: Pull complete
c6edf33e2524: Pull complete
84b1ff10387b: Waiting
```

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

*“ docker images ”*

```
anushka@anushka-VirtualBox:~$ docker images
REPOSITORY          TAG         IMAGE ID      CREATED       SIZE
dockerfile_experiment latest      b132575f9c97  4 hours ago  59.1MB
dockerfile_experiment tag         b132575f9c97  4 hours ago  59.1MB
myimage             1.1        b132575f9c97  4 hours ago  59.1MB
alpine              latest     b541f2080109  2 days ago   7.34MB
redis               latest     961dda256baa  3 weeks ago  138MB
hello-world-image   latest     24618e19c585  2 months ago 72.8MB
ubuntu              latest     3565a89d9e81  2 months ago 77.8MB
python              3.9       49d20c6af9a6  3 months ago 997MB
frontend_image      1.0       5c91ad7cba4e  3 months ago 1.02GB
nginx               latest     eea7b3dcba7e  3 months ago 187MB
hello-world         latest     9c7a54a9a43c  7 months ago 13.3kB
katakoda/redis-node-docker-example latest     eb49f27be288  7 years ago  35.4MB
```

## Step 2: Creating a new container

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

***“ docker run -dt -p 81:81 nginx ”***

```
anushka@anushka-VirtualBox:~$ docker run -dt -p 81:81 nginx
a8163ededc1f78839d593cb4591528c2aa2e1483d55923d6a58a25dc323784a0
anushka@anushka-VirtualBox:~$
```

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 ”***

```
anushka@anushka-VirtualBox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
a8163ededc1f   nginx    "/docker-entrypoint..." 43 seconds ago Up 42 seconds 80/tcp, 0.0.0.0:81->81/tcp, :::81->81/tcp suspicious_mirzakhani
anushka@anushka-VirtualBox:~$
```

## Step 3: Stopping the container

**3.1** Use the following command to stop the running container. (You can also use the container ID to stop the container: *“ docker stop CONTAINER\_ID ”*)

***“ docker stop CONTAINER\_NAME ”***

```
anushka@anushka-VirtualBox:~$ docker stop a8163ededc1f
a8163ededc1f
anushka@anushka-VirtualBox:~$
```

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

***“ docker ps “***

```
anushka@anushka-VirtualBox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
anushka@anushka-VirtualBox:~$
```

3.3 You can start the container again and check the running containers. (You can also use the container ID to start the container: *sudo docker start CONTAINER\_ID*)

***“ docker start CONTAINER\_NAME “ or “ docker start CONTAINER\_ID “***

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

***“ docker run -it --name=Test\_1 nginx “***

```
anushka@anushka-VirtualBox:~$ 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
2023/12/03 11:49:18 [notice] 1#1: using the "epoll" event method
2023/12/03 11:49:18 [notice] 1#1: nginx/1.25.2
2023/12/03 11:49:18 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14)
2023/12/03 11:49:18 [notice] 1#1: OS: Linux 6.2.0-35-generic
2023/12/03 11:49:18 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2023/12/03 11:49:18 [notice] 1#1: start worker processes
2023/12/03 11:49:18 [notice] 1#1: start worker process 29
2023/12/03 11:49:18 [notice] 1#1: start worker process 30
2023/12/03 11:49:18 [notice] 1#1: start worker process 31
2023/12/03 11:49:18 [notice] 1#1: start worker process 32
```

## 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 ”***

```
anushka@anushka-VirtualBox:~$ docker ps -a
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS                    NAMES
1e57582ec219   nginx                               "/docker-entrypoint..." 54 seconds ago Up 54 seconds   80/tcp              Test_1
a8163ededc1f   nginx                               "/docker-entrypoint..." 6 minutes ago  Up 2 minutes   80/tcp, 0.0.0.0:81->81/tcp, :::81->81/tcp  suspicious_mirzakhani
4ad653bc5853   alpine                             "ping -c1 db"           15 hours ago  Exited (0) 15 hours ago                                quirky_dubinsky
ac5318e40a68   katacoda/redis-node-docker-example "npm start"             15 hours ago  Created                                      hungry_jentson
c02197e3a7dc   katacoda/redis-node-docker-example "npm start"             15 hours ago  Exited (255) 4 hours ago                                hungry_tausstg
fefa5f2206f6   alpine                             "ping -c1 redis"        15 hours ago  Exited (0) 15 hours ago                                flamboyant_clarke
356dd71819b2   redis                              "docker-entrypoint.s..." 15 hours ago  Exited (255) 4 hours ago                                redis
14b1f499f99f   hello-world                        "/hello"                 6 weeks ago   Exited (0) 6 weeks ago                                inspiring_jentson
2044ab033f9e   hello-world-image                "/bin/sh -c 'cat hel..." 2 months ago  Exited (0) 8 weeks ago                                crazy_ganguly
1b1f1a1a3c74   python:3.9                        "python"                 2 months ago  Exited (255) 8 weeks ago                                nice_chaplygin
b793263849e0   python:3.9                        "python"                 2 months ago  Exited (255) 8 weeks ago                                sad_ferni
a6af289765cc   ubuntu                            "/bin/bash"              2 months ago  Exited (129) 2 months ago                                Python.py
fcfb5c2d4686   ubuntu                            "/bin/bash"              2 months ago  Exited (130) 2 months ago                                festive_colden
ca6be173d011   ubuntu                            "/bin/bash"              2 months ago  Exited (130) 2 months ago                                nervous_franklin
88b02a0f74d4   nginx                               "/docker-entrypoint..." 3 months ago  Exited (0) 3 months ago                                kind_cray
a7a1ebc57b3c   nginx                               "/docker-entrypoint..." 3 months ago  Exited (0) 3 months ago                                objective_shantr
97ebf714f6e0   nginx                               "/docker-entrypoint..." 3 months ago  Created                                      dreamy_verahanthira
b540368e7435   nginx                               "/docker-entrypoint..." 3 months ago  Exited (0) 3 months ago                                friendly_norse
3d7c4197b486   nginx                               "/docker-entrypoint..." 3 months ago  Exited (0) 3 months ago                                silly_driscoll
423e9543b813   hello-world                        "/hello"                 3 months ago  Exited (0) 3 months ago                                jovial_jennings
anushka@anushka-VirtualBox:~$
```

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

***“ docker ps -aq ”***

```
anushka@anushka-VirtualBox:~$ docker ps -aq
1e57582ec219
a8163ededc1f
4ad653bc5853
ac5318e40a68
c02197e3a7dc
fefa5f2206f6
356dd71819b2
14b1f499f99f
2044ab033f9e
1b1f1a1a3c74
b793263849e0
a6af289765cc
fcfb5c2d4686
ca6be173d011
88b02a0f74d4
a7a1ebc57b3c
97ebf714f6e0
b540368e7435
3d7c4197b486
423e9543b813
```

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

***“ docker ps -s “***

```
anushka@anushka-VirtualBox:~$ docker ps -s
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES          SIZE
1e57582ec219   nginx    "/docker-entrypoint..." 2 minutes ago  Up 2 minutes  80/tcp                             Test_1         1.09kB (virtual 187MB)
a8163edec1f    nginx    "/docker-entrypoint..." 7 minutes ago  Up 3 minutes  80/tcp, 0.0.0.0:81->81/tcp, :::81->81/tcp  suspicious_mirzakhani 1.09kB (virtual 187MB)
anushka@anushka-VirtualBox:~$
```

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

***“ docker ps -l “***

```
anushka@anushka-VirtualBox:~$ docker ps -l
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS       NAMES
1e57582ec219   nginx    "/docker-entrypoint..." 2 minutes ago  Up 2 minutes  80/tcp      Test_1
anushka@anushka-VirtualBox:~$
```

## Step 5: Deleting the container

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

***“ docker stop CONTAINER\_NAME “***

```
anushka@anushka-VirtualBox:~$ docker stop Test_1
Test_1
anushka@anushka-VirtualBox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
a8163edec1f    nginx    "/docker-entrypoint..." 10 minutes ago  Up 6 minutes  80/tcp, 0.0.0.0:81->81/tcp, :::81->81/tcp  suspicious_mirzakhani
anushka@anushka-VirtualBox:~$
```

***“ docker container rm CONTAINER\_NAME ”***

```
anushka@anushka-VirtualBox:~$ docker container rm Test_1
Test_1
anushka@anushka-VirtualBox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED
a8163eddc1f    nginx     "/docker-entrypoint...." 11 minutes ago
anushka@anushka-VirtualBox:~$
```

## 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
Deleted: sha256:b4af4f8b6470feb45dc10f564551af682a802eda1743055a7dfc8332dffa595
Deleted: sha256:bc649bab30d150c10a84031a7f54c99a8c31069c7bc324a7899d7125d59cc973
Deleted: sha256:c6f480996a203ed077606cce624f944b041449833e2db3f7d19fe22974fb965b
Deleted: sha256:e4347a01432c5f4350b041632f5703c3dd47de2ec68547b9339d11ea44708389
Deleted: sha256:9d40098fc19fdfff9c74fd3c2c0ff49bfda7d9d04b5d7806d0843d32055d769a
Deleted: sha256:165ae0ef2ddd33b6d5a7f206633b9b0c30cd94ff18a4ed5c3aeb59bf28388526
Deleted: sha256:06dabb44ac4d1f0b5544255e944f15a939178d77aff60a5b296e38bd8743efeb
Deleted: sha256:ee220599571f649e0fb74b40db1615a4c9c1355ac912f9e70087b695617af352
Deleted: sha256:cb4596cc145400fb1f2aa56d41516b39a366ecdee7bf3f9191116444aacd8c90
```