

Overview

Appendix

⇒ Docker

⇒ Introduction

Installation

- <https://docs.docker.com/install>
- Docker Cheat Sheet

Repository hosting publicly available Docker images:

<https://hub.docker.com/explore>

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- ⇒ Managing images

Search images

```
> docker search nextcloud
NAME                DESCRIPTION                STARS  OFFICIAL  AUTOMATED
nextcloud           A safe home ...           424    [OK]
linuxserver/nextcloud A Nextcloud ...           56
greyltc/nextcloud   Nextcloud: ...            34                      [OK]
wonderfall/nextcloud All-in-one ...            27                      [OK]
rootlogin/nextcloud Nextcloud ...             17                      [OK]
lsioarmhf/nextcloud  ARMHF based ...           8
ownyourbits/nextcloudpi NextCloud ARM ...         7
...
```

Pull image using CLI

```
> docker image pull alpine
Using default tag: latest
latest: Pulling from library/alpine
ff3a5c916c92: Pull complete
Digest: sha256:7df6db5aa61ae9480f52f0b3a06a140ab98d427f86d8d5de0bedab9b8df6b1c0
Status: Downloaded newer image for alpine:latest
```

Pull Nextcloud image

```
> docker image pull wonderfall/nextcloud ❶
Using default tag: latest ❷
latest: Pulling from wonderfall/nextcloud
ff3a5c916c92: Already exists ❸
a542d4c3cffb: Pull complete ❹
83001cc0bea0: Pull complete
41a33c66b2c1: Pull complete
a70bf67726f3: Pull complete
fea90b3d29ac: Pull complete
Digest: sha256:472c5c7...2ca20cca45 ❺
Status: Downloaded newer image for wonderfall/nextcloud:latest
```

Nextcloud based on Alpine

Alpine

Nextcloud based on Alpine

ff3a5c916c92

fea90b3d29ac

a70bf67726f3

41a33c66b2c1

83001cc0bea0

a542d4c3cffb

ff3a5c916c92

Inspect image

```
> docker image inspect dac77467ddcc
[
  {
    "Id": "sha256:dac77467ddccc2287d99558245bd34707...",
    "RepoTags": [
      "nextcloud:13.0.4"
    ],
    "RepoDigests": [
      "nextcloud@sha256:fb3e77f19b21364925e8f02..."
    ],
    ...
  }
]
```

Search an image's tags

```
> curl 'https://registry.hub.docker.com/v2/repositories/library/nextcloud/tags/' | \
jq '. "results"[]["name"]' # requires «aptitude install curl jq»
% Total      % Received % Xferd  Average Speed   Time    Time       Time  Current
           Dload  Upload   Total     Spent    Left     Speed
100 11856      0 11856      0      0  11856      0 --:--:-- --:--:-- --:--:-- 20371
"fpm"
"production"
"stable"
"latest"
"13"
"13.0"
"13.0.2"
"production-apache"
"stable-apache"
"apache"
```

Nextcloud image by version

```
> docker image pull nextcloud:13.0.4
13.0.4: Pulling from library/nextcloud
3d77ce4481b1: Pull complete
32bfdb6043a8: Pull complete
028453741593: Pull complete
f93d7bd342a3: Pull complete
4a2fac611953: Pull complete
87fd7c7d0f94: Pull complete
Digest: sha256:fb3e77f19b21364925e8f02d6e5ad3a1 ...
Status: Downloaded newer image for nextcloud:13.0.4
```

List images by CLI

```
> docker image ls
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
nextcloud	13.0.4	dac77467ddcc	3 days ago	544MB
wonderfall/nextcloud	latest	57e1fb51b334	2 months ago	328MB
alpine	latest	3fd9065eaf02	4 months ago	4.15MB

Nextcloud latest image

```
> docker image pull nextcloud
Using default tag: latest
latest: Pulling from library/nextcloud ❶
Digest: sha256:fb3e77f19b21364925e8f02d6e5ad3a1 ... ❷
Status: Downloaded newer image for nextcloud:latest
```

Duplicate Nextcloud images

```
> docker image ls
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
nextcloud	13.0.4	dac77467ddcc	4 days ago	544MB
nextcloud	latest	dac77467ddcc	4 days ago	544MB
...				

Maven ringing a bell?

```
<dependency>
  <groupId>junit</groupId>           <!-- wonderfall -->
  <artifactId>junit</artifactId>      <!-- nextcloud -->
  <version>4.12</version>             <!-- 13.0.4 -->
</dependency>
```

Un tag image by version

```
> docker image rm nextcloud:latest
Untagged: nextcloud:latest
```

```
> docker image ls
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
nextcloud	13.0.4	dac77467ddcc	4 days ago	544MB
...				

Remove image by version

```
> docker image rm nextcloud:13.0.2
Untagged: nextcloud:latest
Untagged: nextcloud@sha256:c693921e69cb89cd0bee7c014280159df647e5ba87f54c895650156d973df035
Deleted: sha256:10ae267ddcf25bfe5cc059685d3d005bcfe7229b44c3a6f93e0a07795d33b5b2
Deleted: sha256:1c271f4f2f19a222cd116c771b02294c5dd596fa8a0366559061f83a0de8de3f
...
Deleted: sha256:2c833f307fd8f18a378b71d3c43c575fabdb88955a2198662938ac2a08a99928
```

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⇒ Running container

Starting Nextcloud container

```
> docker run -d -p 8080:80 --name nc13 nextcloud  
517e3dba488763eb615f2c68d417e1b7fb3a9ce5bb4a5ffc346dcb86c00d13d2
```

List running containers

```
> docker ps -a # show stopped containers as well
```

CONTAINER ID	IMAGE	COMMAND	...	PORTS	NAMES
517e3dba4887	nextcloud	"/entrypoint.sh apac..."	...	0.0.0.0:8080->80/tcp	nc13

Enter running container

```
> docker exec -it nextcloud_db_1 /bin/bash
# ls -al
total 84
drwxr-xr-x    1 root root 4096 Jun 20 09:28 .
drwxr-xr-x    1 root root 4096 Jun 20 09:28 ..
-rwxr-xr-x    1 root root    0 Jun 20 09:28 .dockerenv
drwxr-xr-x    1 root root 4096 May 25 20:20 bin
drwxr-xr-x    2 root root 4096 Nov 19  2017 boot
drwxr-xr-x    5 root root  340 Jun 20 09:28 dev
drwxr-xr-x    2 root root 4096 Apr 30 15:37 docker-entrypoint-initdb.d
lrwxrwxrwx    1 root root   34 May 25 20:20 docker-entrypoint.sh -> usr/local/bin/docker-entrypoint.sh
...
```

Remove container

```
> docker rm nc13  
nc13
```

```
> docker ps -a  
CONTAINER ID    IMAGE    COMMAND    CREATED    STATUS    ... NAMES
```

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⇒ Volumes

List volumes

```
> docker volume ls
DRIVER          VOLUME NAME
local           nextcloud_db
local           nextcloud_nextcloud
```

```
# ls -al /var/lib/docker/volumes
total 40
drwx-----  4 root root  4096 Jun 20 11:13 .
drwx--x--x 14 root root  4096 Jun 20 09:40 ..
-rw-----  1 root root 32768 Jun 20 11:13 metadata.db
drwxr-xr-x  3 root root  4096 Jun 20 11:13 nextcloud_db
drwxr-xr-x  3 root root  4096 Jun 20 11:13 nextcloud_nextcloud
```

List orphaned volumes

```
> docker volume ls -f dangling=true
DRIVER      VOLUME NAME
local       nextcloud_db
local       nextcloud_nextcloud
```

Remove volumes

```
> docker volume rm nextcloud_db nextcloud_nextcloud
nextcloud_db
nextcloud_nextcloud
```

Followup exercises

- 312. [Airlines, airports and flights](#)
- 313. [Creating a Hibernate JPA project](#)
- 314. [Adding keys and AUTO_INCREMENT](#)
- 315. [Advocating simple key definitions](#)