Docker Volumes

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Docker Architecture

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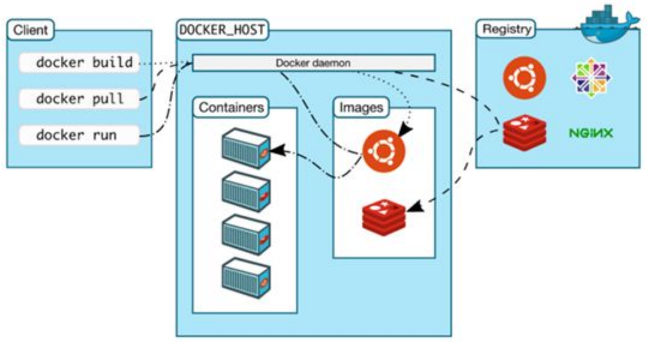
Docker Architecture



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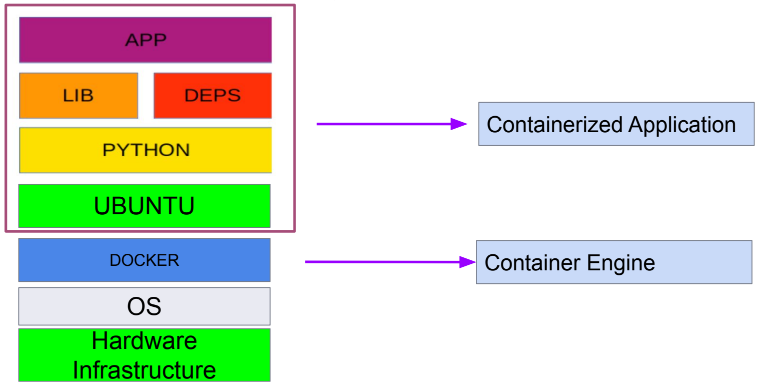
2 Container Layers

What is Container?



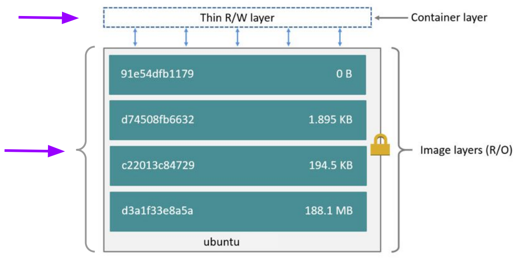
Container Layers

- A Docker image is built up from a series of layers. Each layer represents an instruction in the image's Dockerfile. Each layer except the very last one is read-only.

```
docker run imageName
```

```
FROM ubuntu
COPY . /app
RUN apt-get install python3.6
CMD python3 /app/index.py
```

Dockerfile



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3 Manage data in Docker

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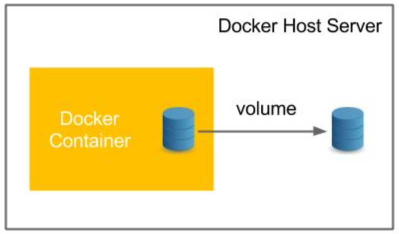
Manage data in Docker

- By default, all files created inside a container are stored on a **writable container layer**. This means that the data doesn't persist when that container no longer exists.
- Docker volumes, which are special directories in a container, store files in the host machine so that the files are **persisted** even after the container stops.



Manage data in Docker

Volumes are created and managed by Docker. We can create a volume explicitly using the docker volume create command.

```
$ docker volume create firstvolume
```

Manage data in Docker

- When we create a volume, it is stored within a directory on the Docker host. When we mount the volume into a container, this directory is what is mounted into the container.

```
$ docker volume inspect firstvolume
[
    {
        "CreatedAt": "2020-07-12T13:19:27Z",
        "Driver": "local",
        "Labels": {},
        "Mountpoint": "/var/lib/docker/volumes/firstvolume/_data",
        "Name": "firstvolume",
        "Options": {},
        "Scope": "local«
    }
]
```

4 Declaration of volumes

Declaration of volumes

- Volumes can be declared on the command-line, with the --volume or -v flag for docker run.
- v or --volume: Consists of three fields, separated by colon characters (:). The fields must be in the correct order.

```
--volume <volume_name>:<path>:<list of options>
```

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Declaration of volumes

```
--volume <volume_name>:<path>:<list of options>
```

- The first field is the name of the volume, and is unique on a given host machine.
- The second field is the path where the file or directory are mounted in the container.
- The third field is optional, and is a comma-separated list of options, such as ro (read only).

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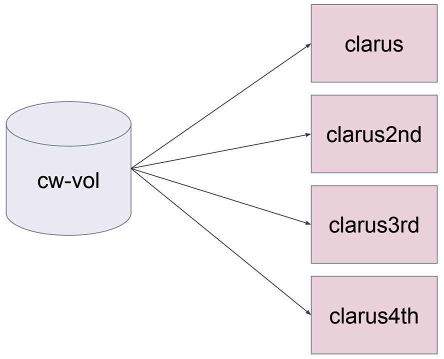
Declaration of volumes

We can use the same Volume with different Containers.



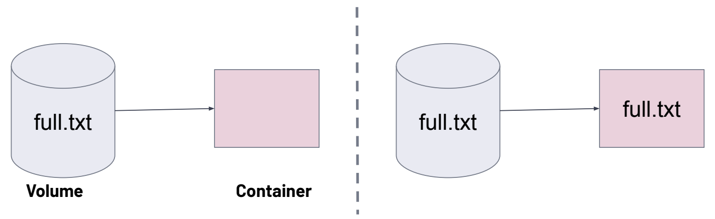
5 Docker Volume Behaviours

Docker Volume Behaviours

No	Situation	Behaviour
1	If there is no target directory.	The target directory is created and files inside volume are copied to this directory.
2	If there is a target directory, but it is empty.	The files in the volume are copied to the target directory.
3	If there is a target directory and it is not empty, but volume is empty.	The files in the target directory are copied to volumes.
4	If the volume is not empty.	There will be just the files inside volume regardless of the target directory is full or empty.

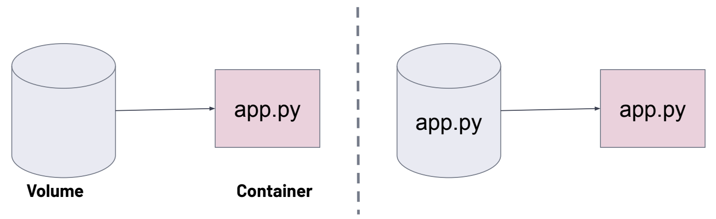
Docker Volume Behaviours

No	Situation	Behaviour
1	If there is no target directory.	The target directory is created and files inside volume are copied to this directory.
2	If there is a target directory, but it is empty.	The files in the volume are copied to the target directory.



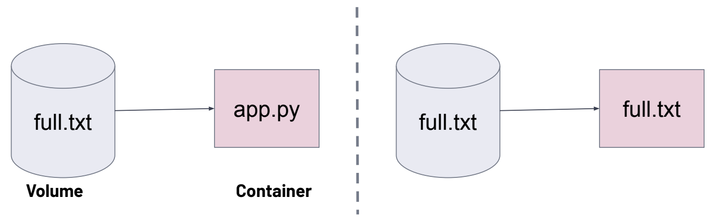
Docker Volume Behaviours

No	Situation	Behaviour
3	If there is a target directory and it is not empty, but volume is empty.	The files in the target directory are copied to volumes.

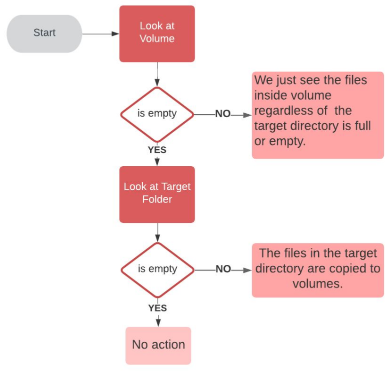


Docker Volume Behaviours

No	Situation	Behaviour
4	If the volume is not empty.	There will be just the files inside volume regardless of the target directory is full or empty.



Docker Volume Behaviours


Start
Look at Volume
is empty
NO
We just see the files inside volume regardless of the target directory is full or empty.
YES
Look at Target Folder
is empty
NO
The files in the target directory are copied to volumes.
YES
No action

6 docker volume Commands

docker volume Commands

Command	Description
docker volume create	Create a volume
docker volume inspect	Display detailed information on one or more volumes
docker volume ls	List volumes
docker volume prune	Remove all unused local volumes
docker volume rm	Remove one or more volumes

THANKS!

Any questions?

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