





# INTRODUCTION TO DOCKER



# INTRODUCTION TO DOCKER

---

Docker Build Command

# DEVELOPMENT WORKFLOW WITH DOCKER

---

# DEVELOPMENT WORKFLOW WITH DOCKER

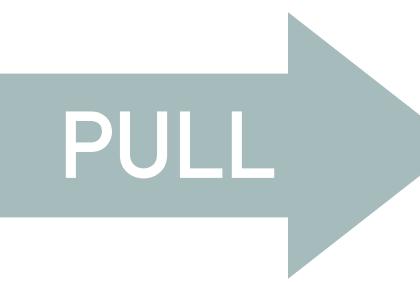
---



**Docker Registry**

# DEVELOPMENT WORKFLOW WITH DOCKER

---



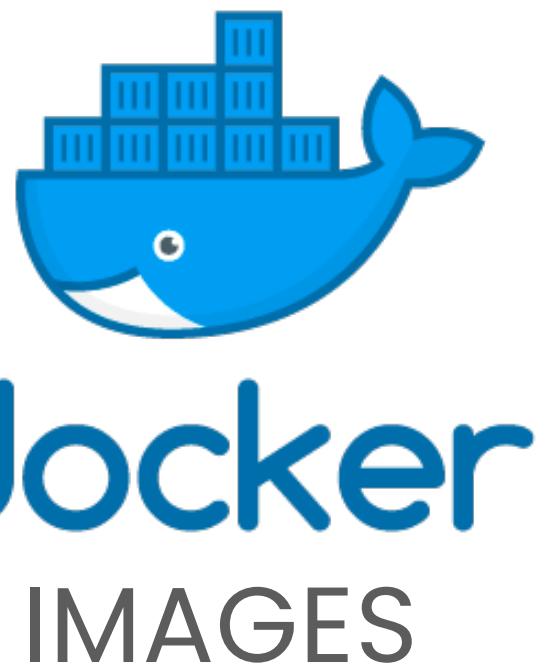
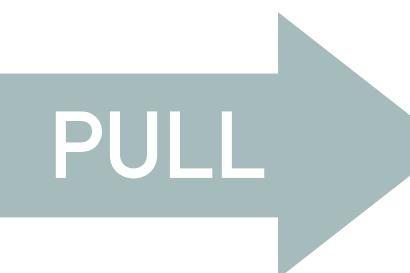
**Docker Registry**

# DEVELOPMENT WORKFLOW WITH DOCKER

---



Docker Registry

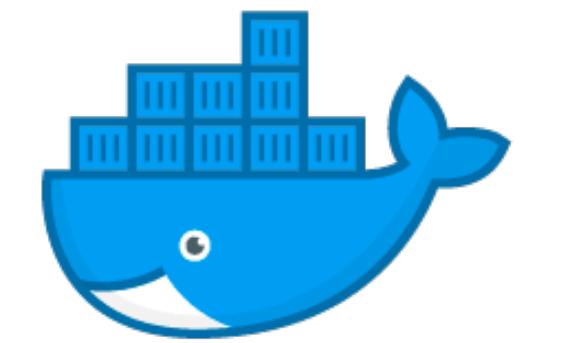
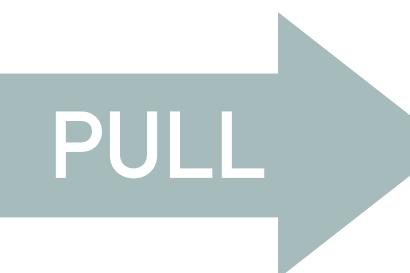


# DEVELOPMENT WORKFLOW WITH DOCKER

---



Docker Registry

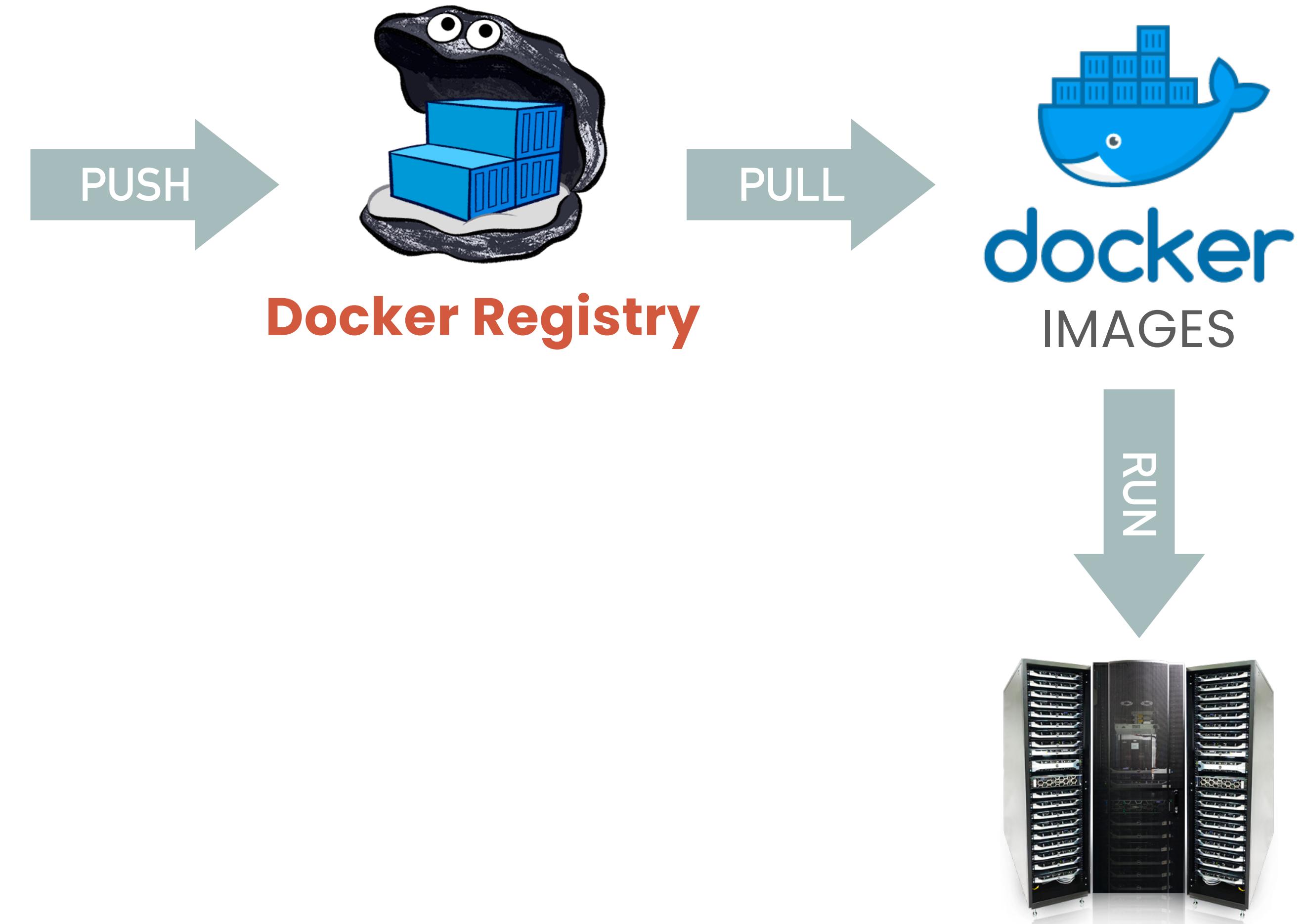


IMAGES

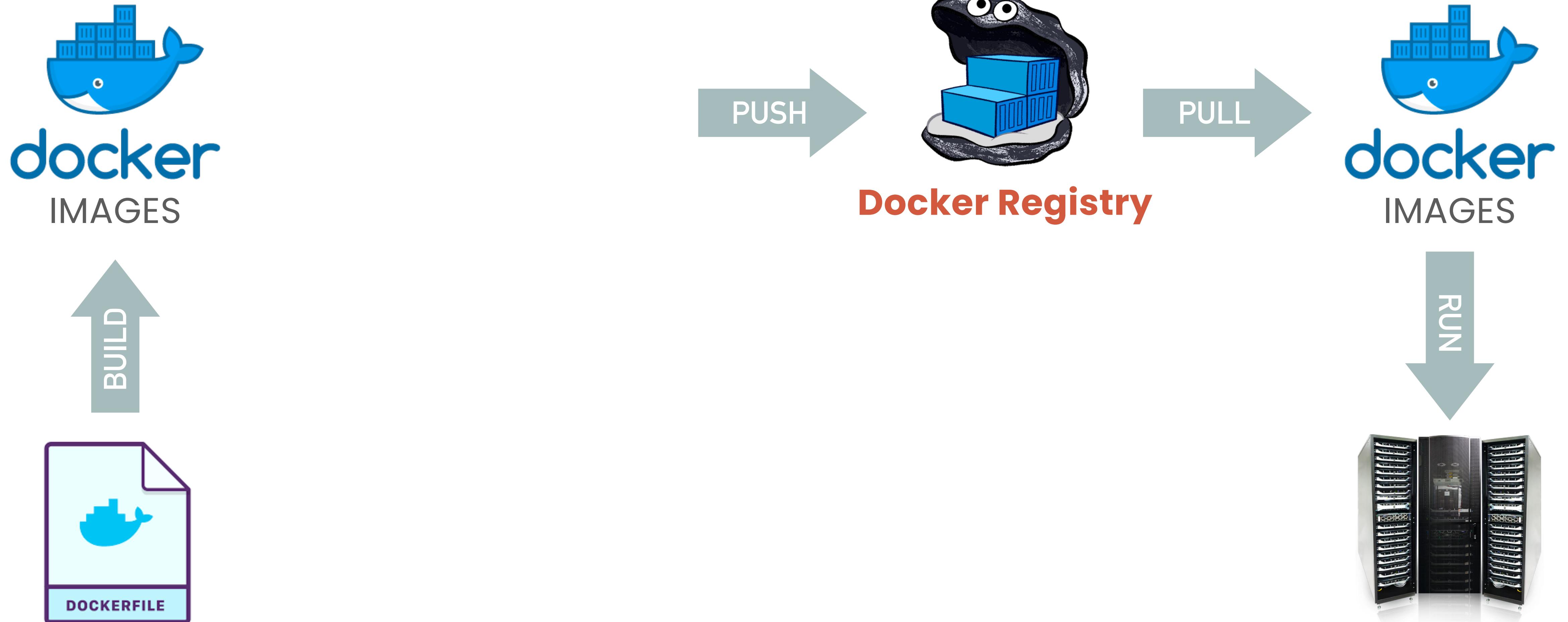


# DEVELOPMENT WORKFLOW WITH DOCKER

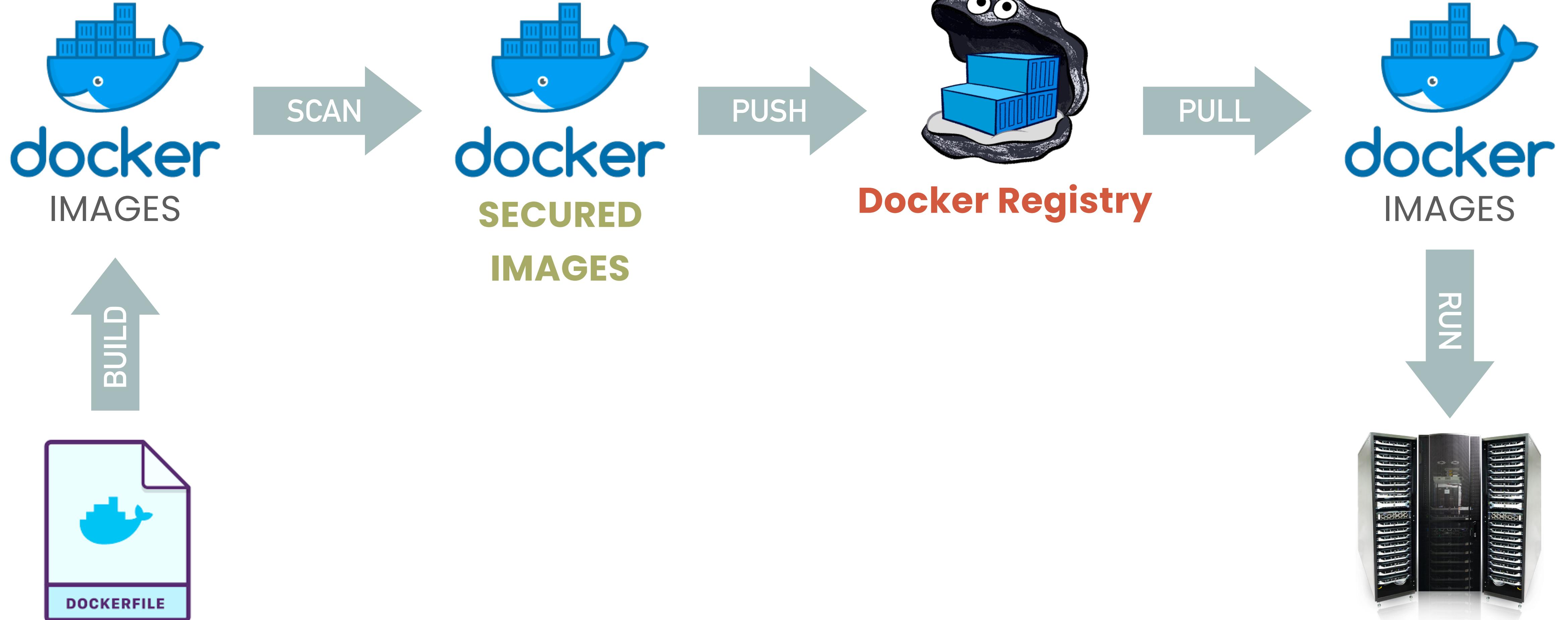
---



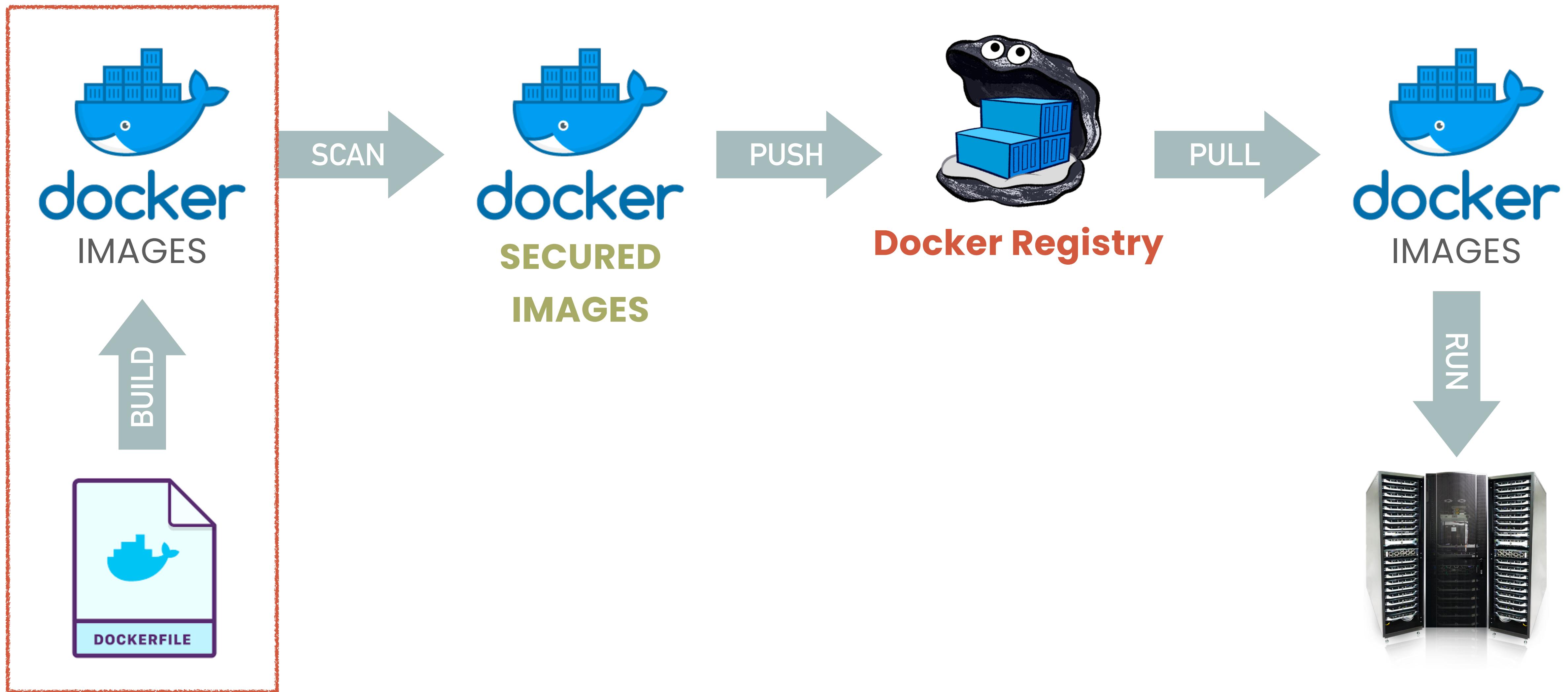
# DEVELOPMENT WORKFLOW WITH DOCKER



# DEVELOPMENT WORKFLOW WITH DOCKER



# DEVELOPMENT WORKFLOW WITH DOCKER



# AGENDA

---



# AGENDA

---

- Creating Docker Image



# AGENDA

---

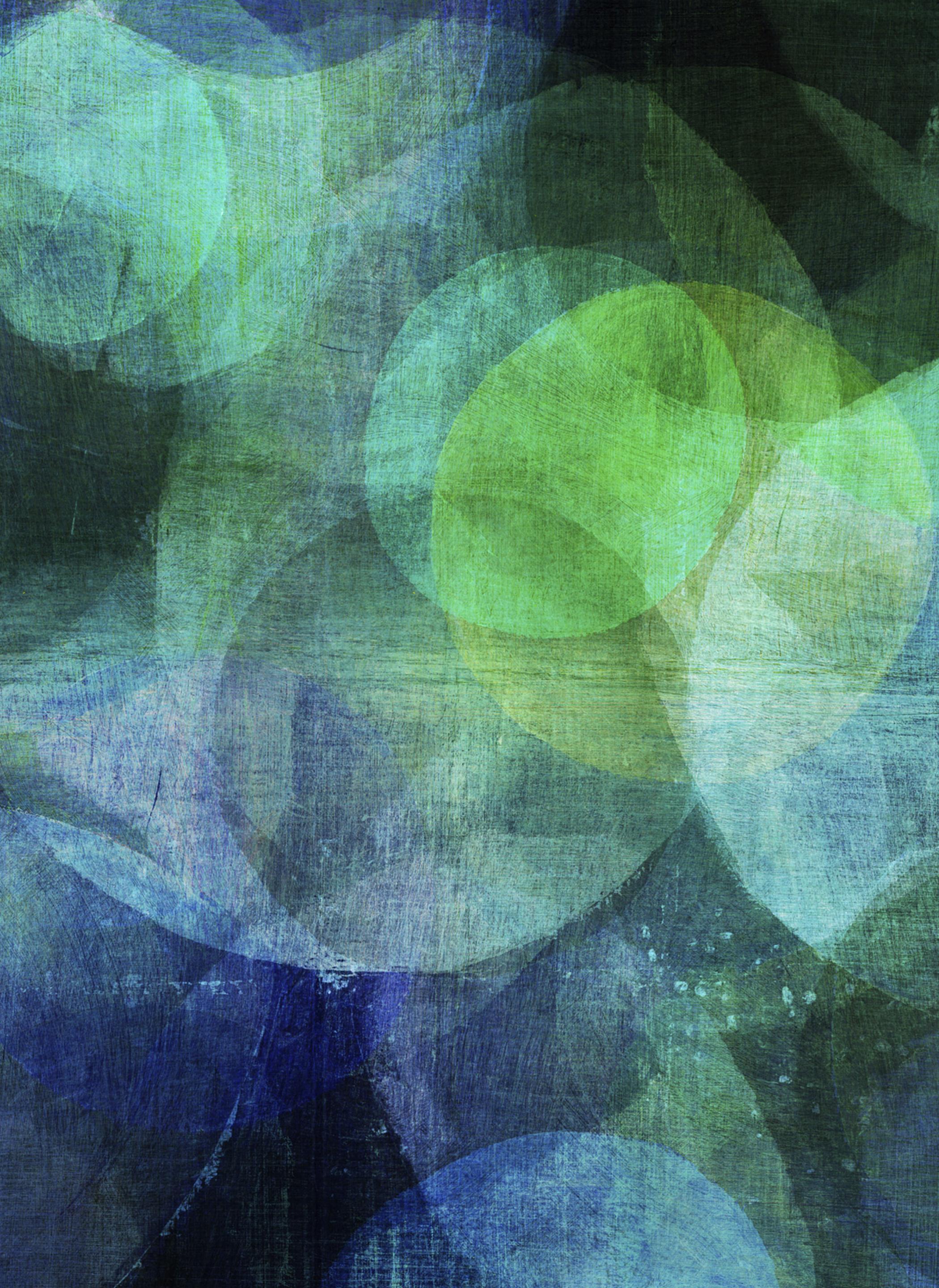
- Creating Docker Image
- Docker Image Layer



# AGENDA

---

- Creating Docker Image
- Docker Image Layer
  - Dockerfile



# AGENDA

---

- Creating Docker Image
- Docker Image Layer
  - Dockerfile
- Docker Build Command



# CREATING DOCKER IMAGE

---

# CREATE DOCKER IMAGE

---

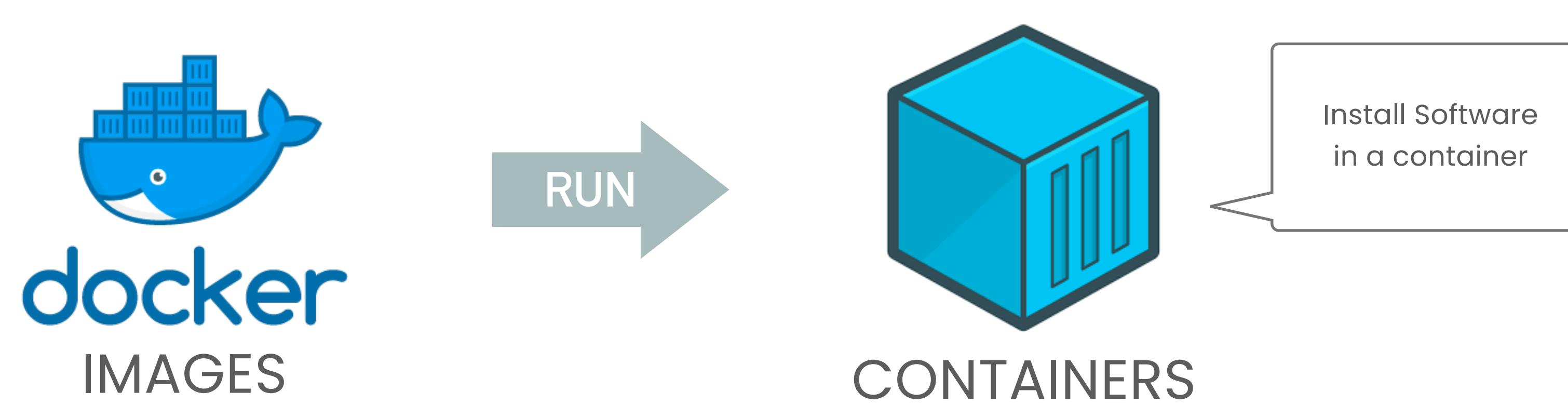
## 1. Building Docker image with interactive container (BAD)



# CREATE DOCKER IMAGE

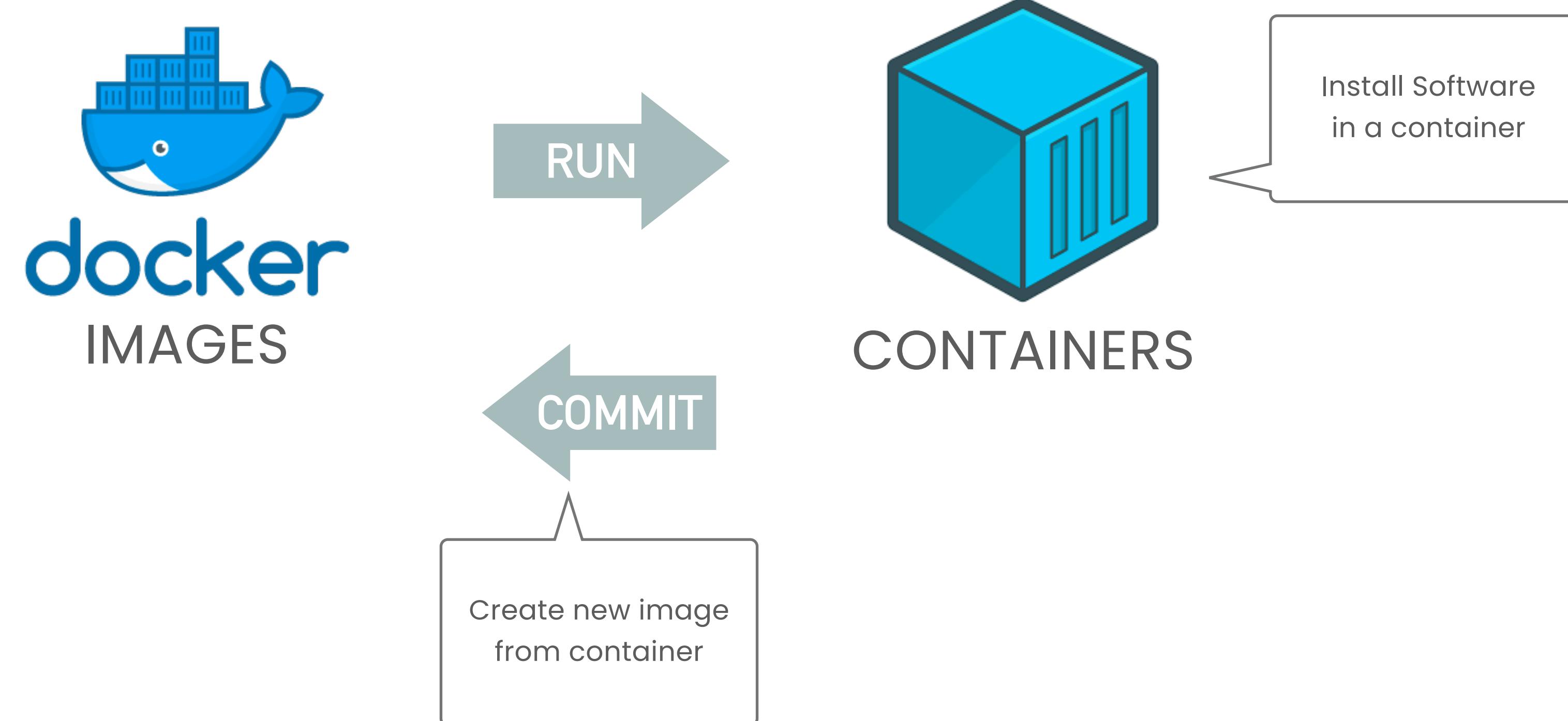
---

## 1. Building Docker image with interactive container (BAD)



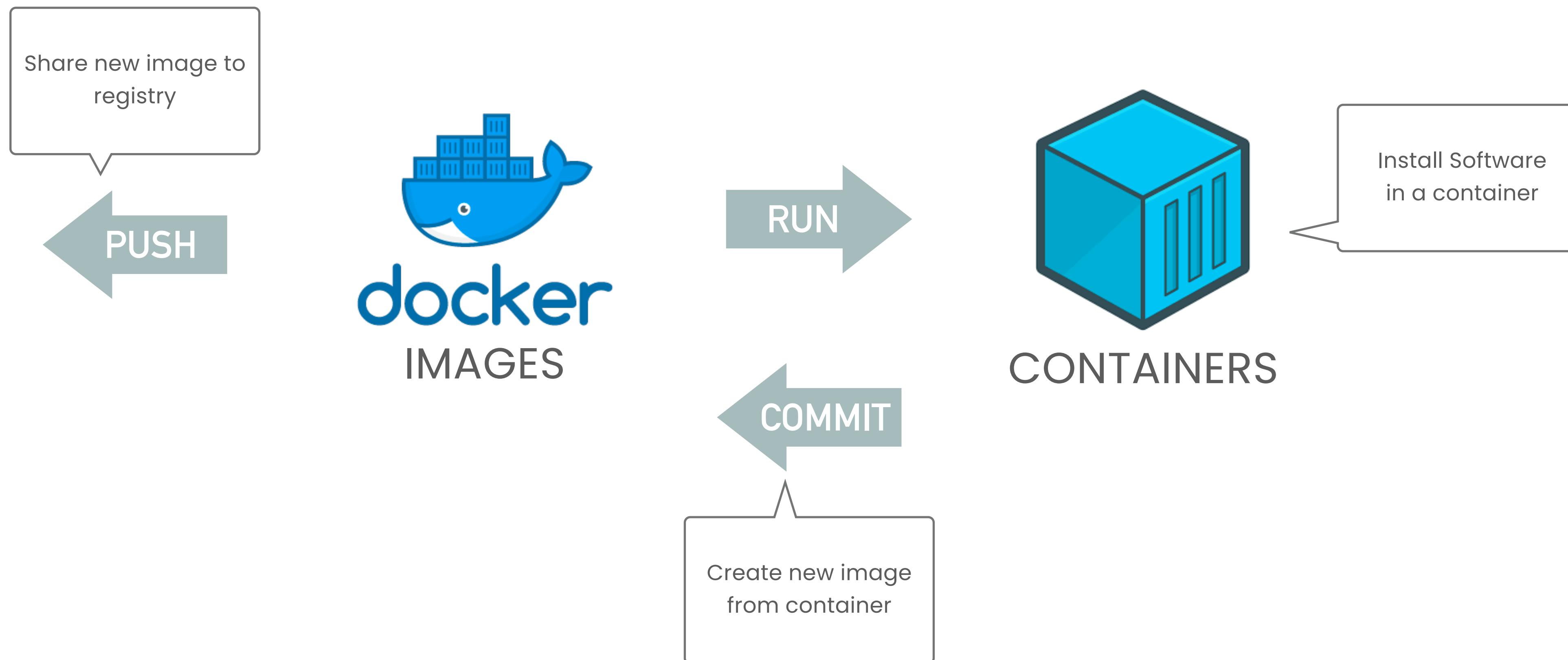
# CREATE DOCKER IMAGE

## 1. Building Docker image with interactive container (BAD)



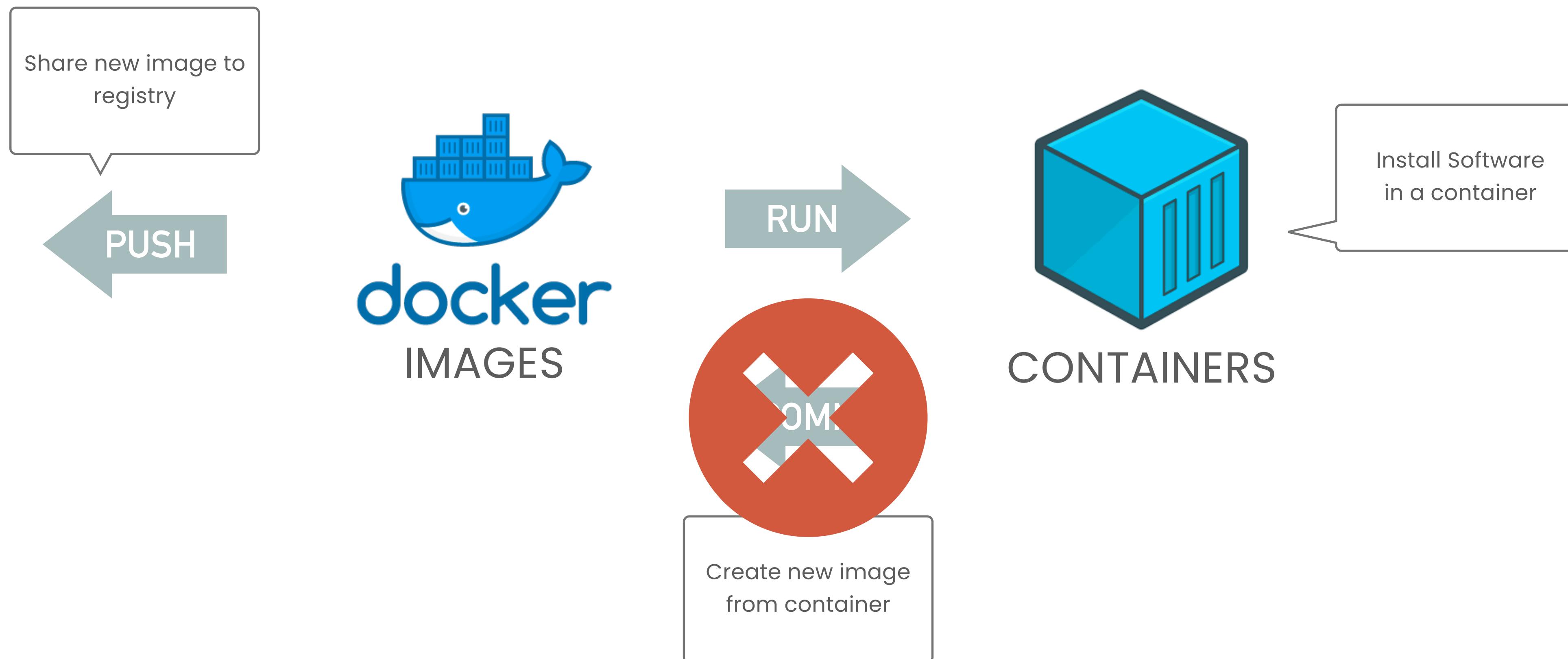
# CREATE DOCKER IMAGE

## 1. Building Docker image with interactive container (BAD)



# CREATE DOCKER IMAGE

## 1. Building Docker image with interactive container (BAD)



# CREATE DOCKER IMAGE

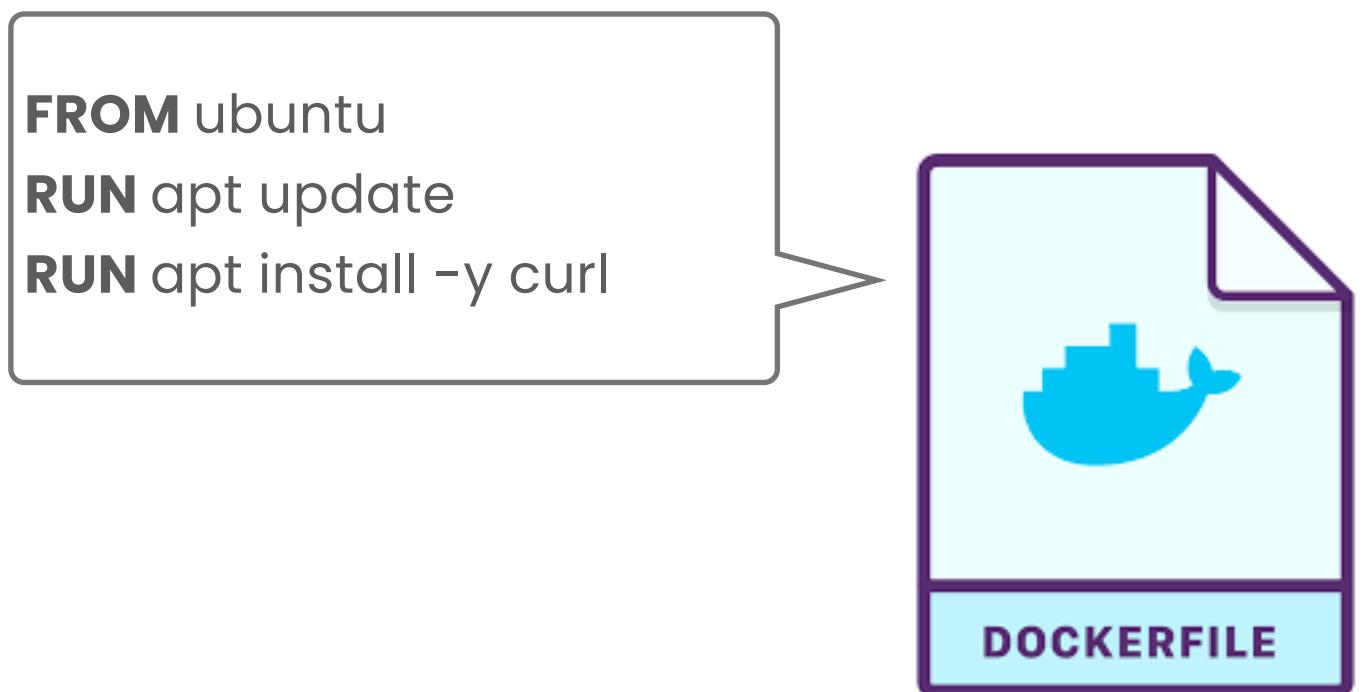
---

## 2. Building Docker image from Dockerfile (Good)

# CREATE DOCKER IMAGE

---

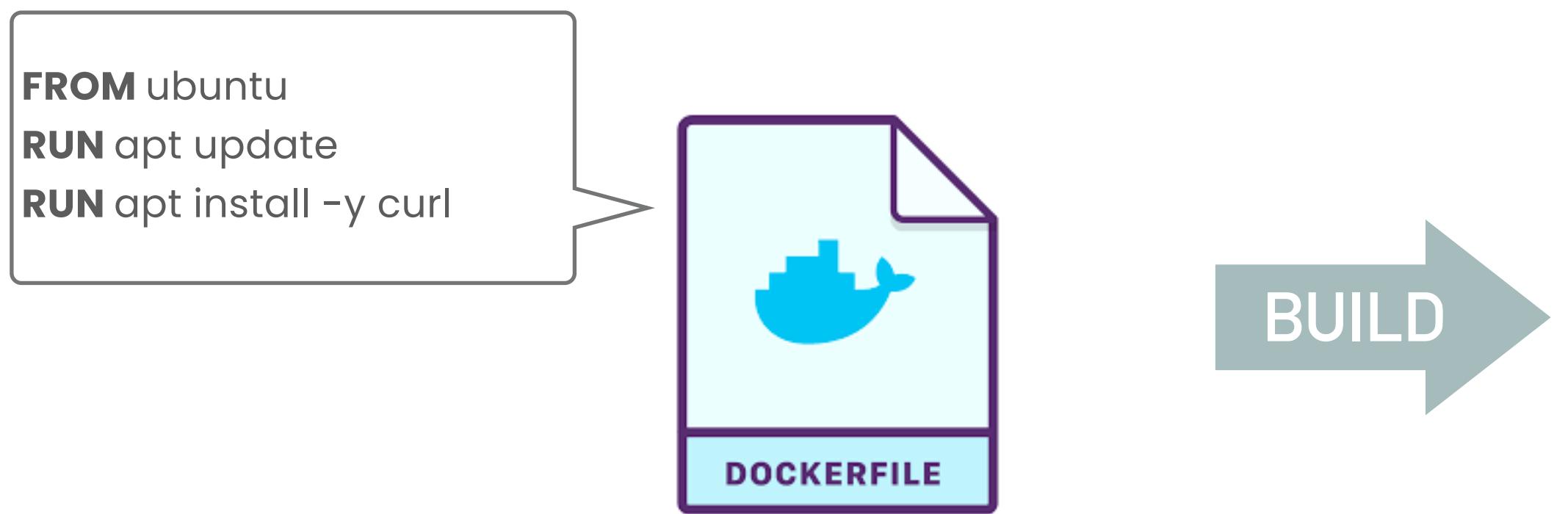
## 2. Building Docker image from Dockerfile (Good)



# CREATE DOCKER IMAGE

---

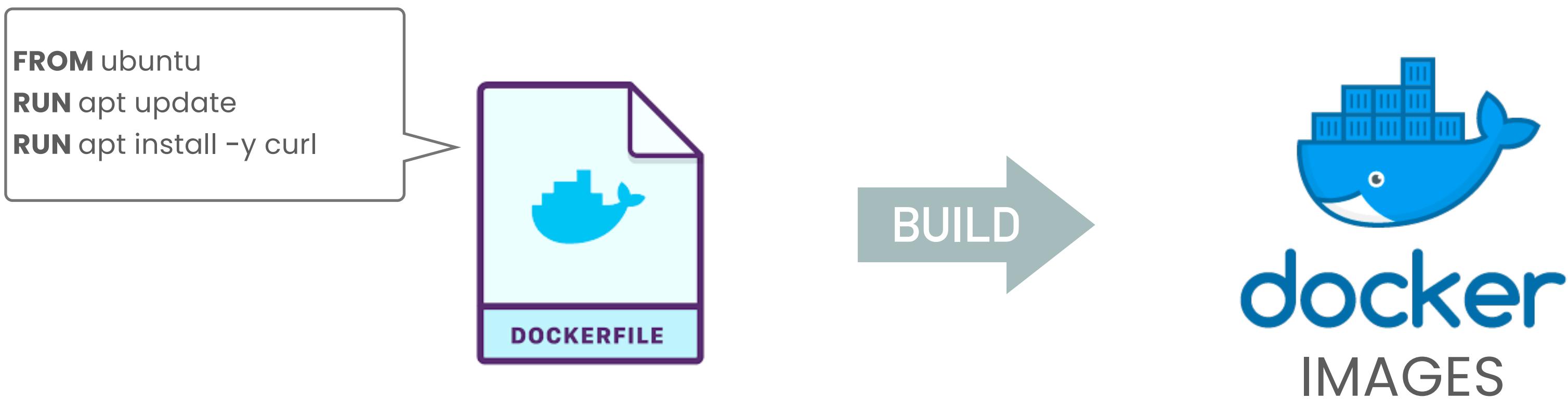
## 2. Building Docker image from Dockerfile (Good)



# CREATE DOCKER IMAGE

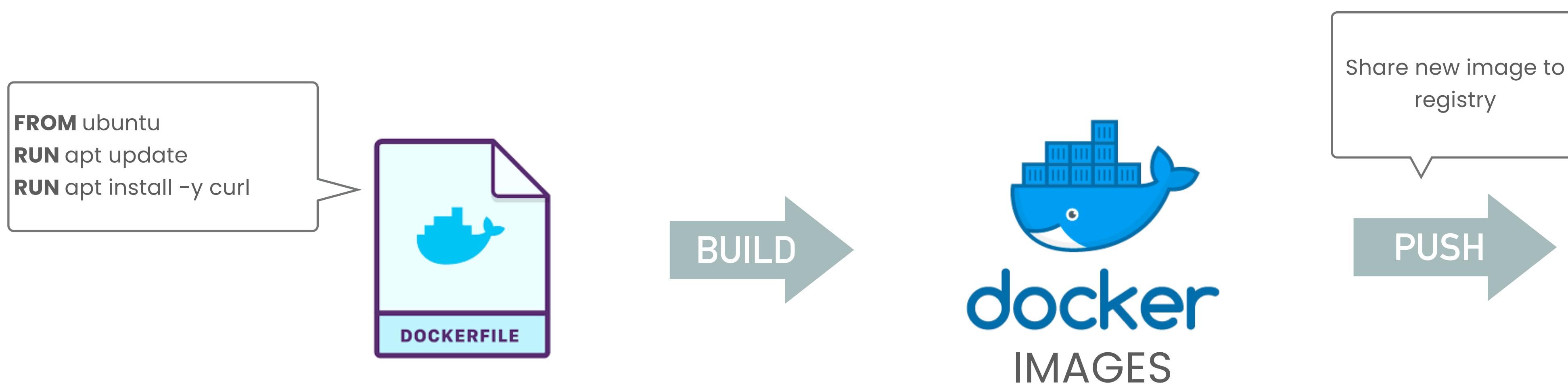
---

## 2. Building Docker image from Dockerfile (Good)



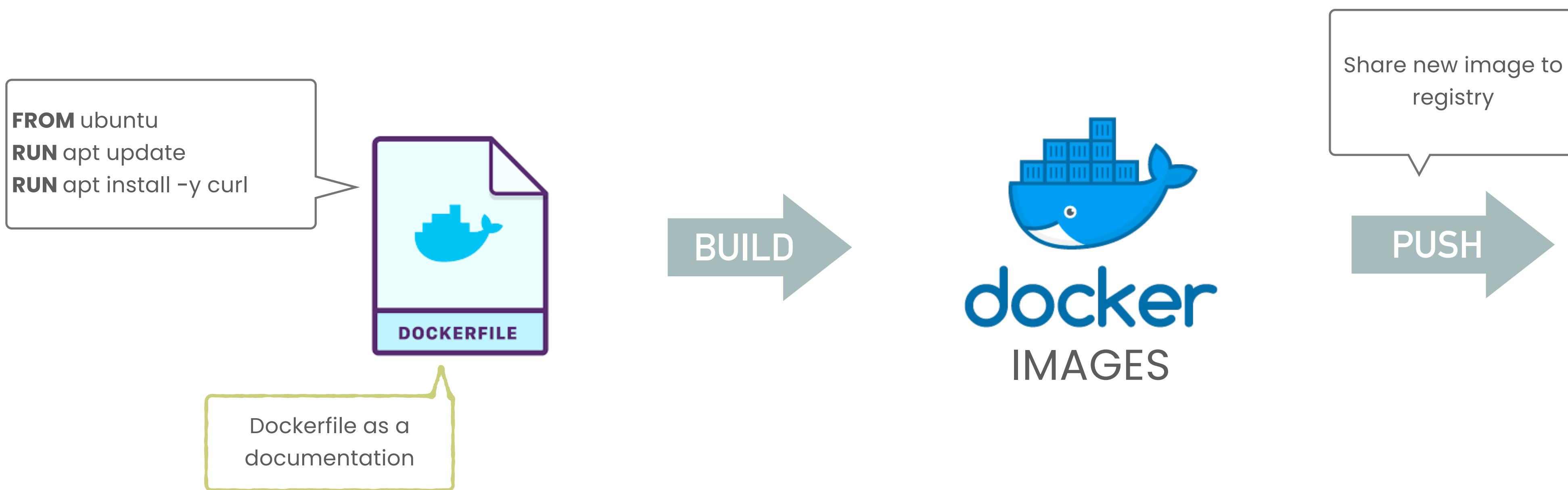
# CREATE DOCKER IMAGE

## 2. Building Docker image from Dockerfile (Good)



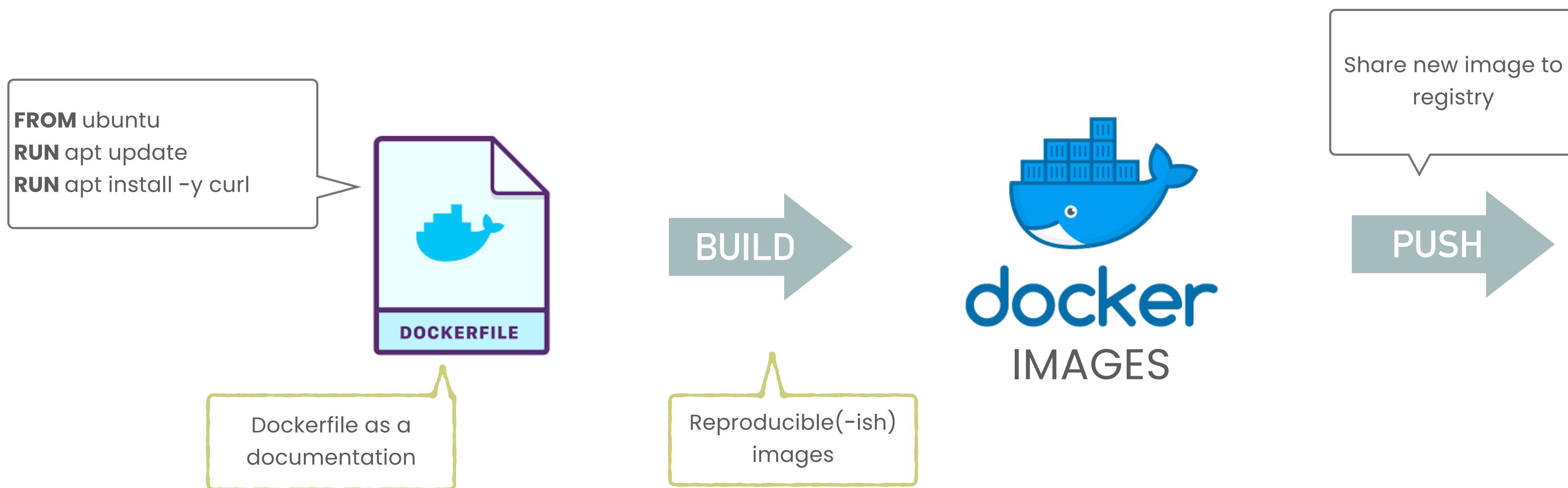
# CREATE DOCKER IMAGE

## 2. Building Docker image from Dockerfile (Good)



# CREATE DOCKER IMAGE

## 2. Building Docker image from Dockerfile (Good)



# DOCKER IMAGE LAYER

---

# DOCKER IMAGE LAYER

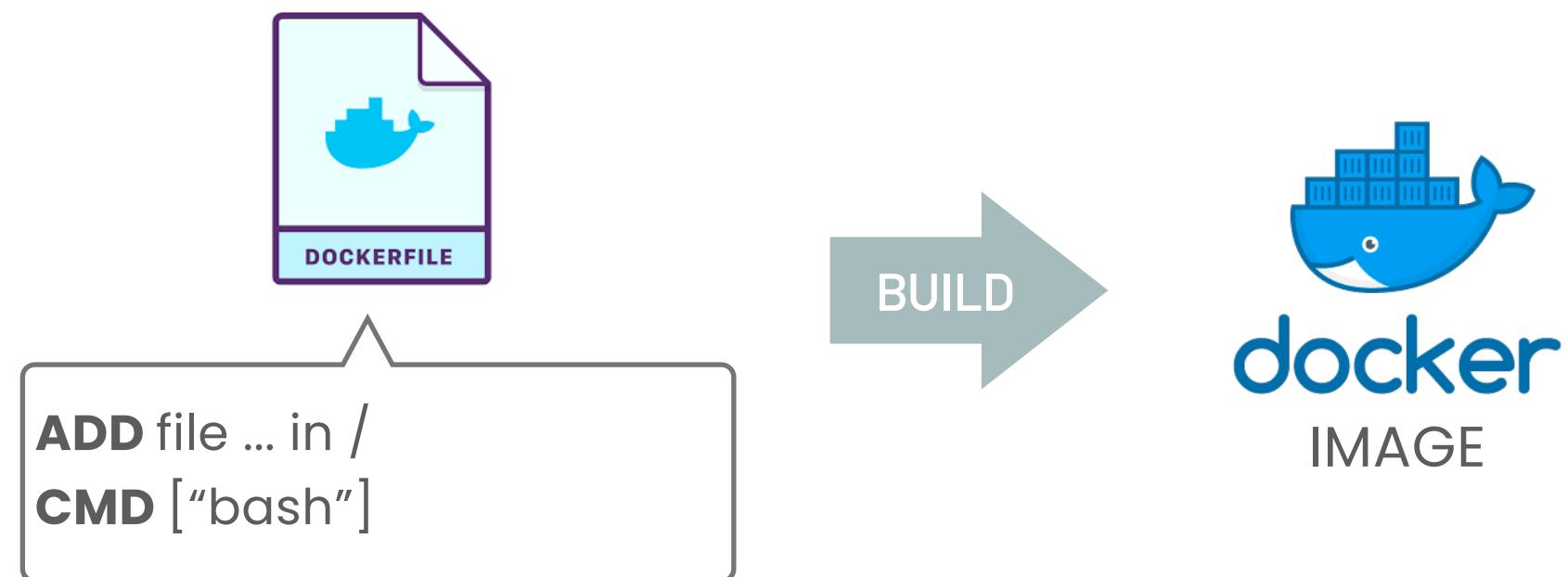
---

```
$ docker image history <image[:tag]>
```

# DOCKER IMAGE LAYER

---

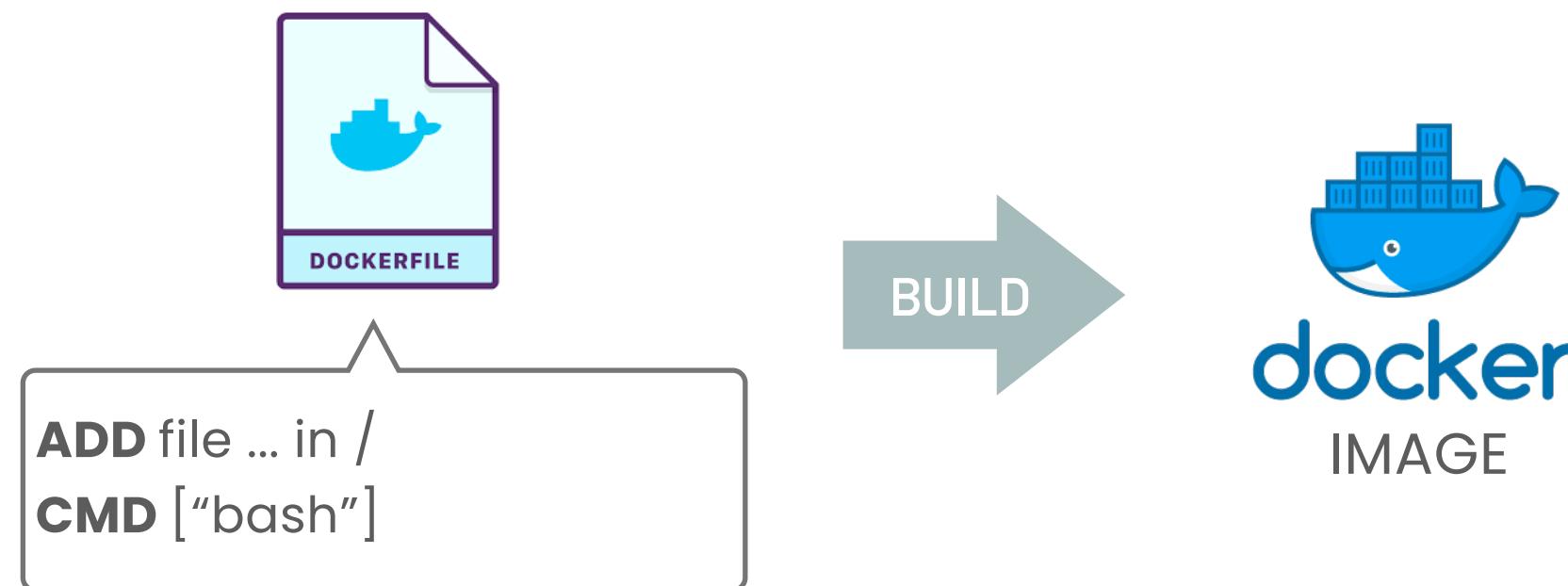
```
$ docker image history <image[:tag]>
```



# DOCKER IMAGE LAYER

---

```
$ docker image history <image[:tag]>
```



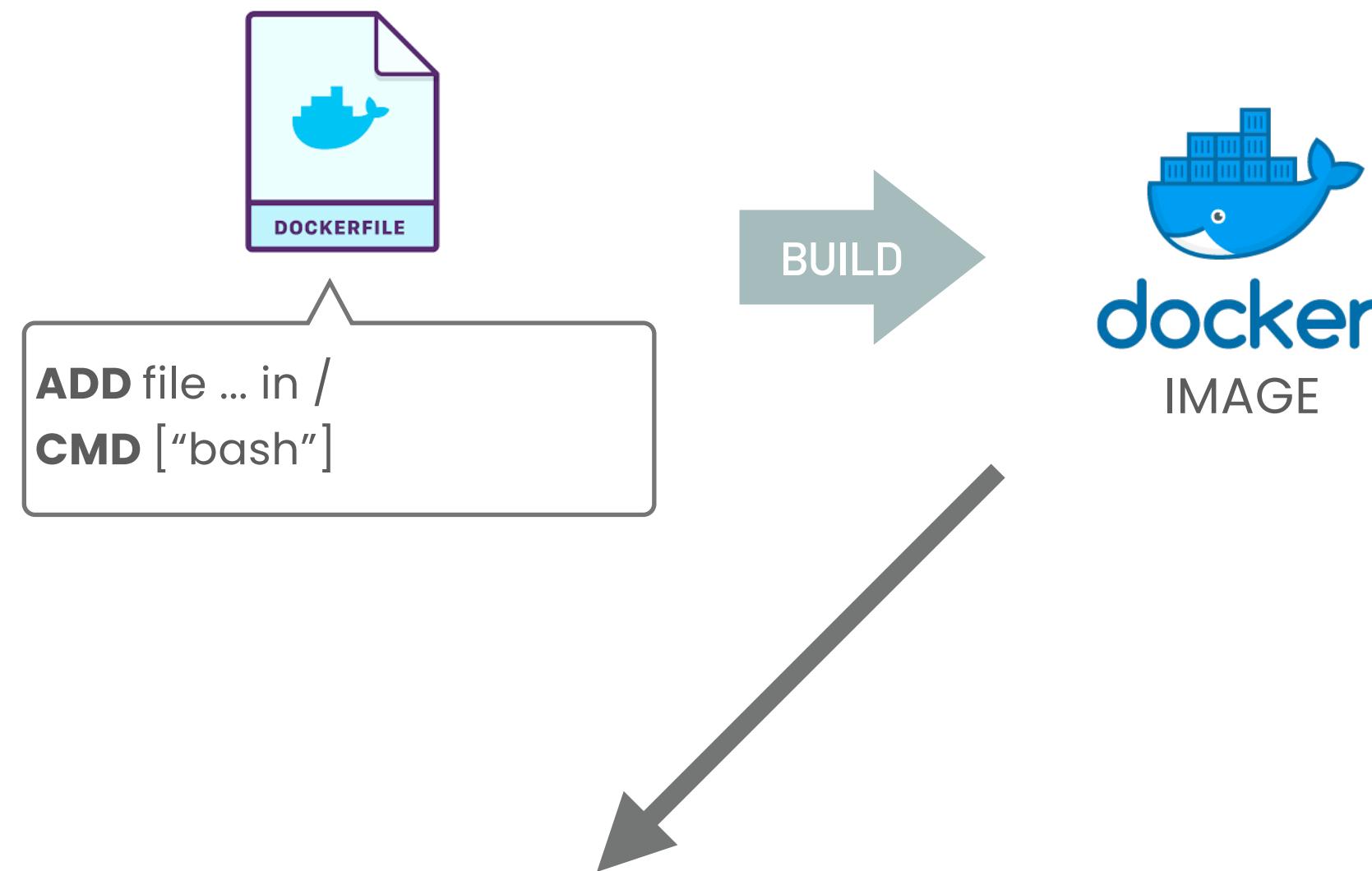
```
$ docker image history ubuntu
```

IMAGE	CREATED	CREATED BY	SIZE	COMMENT
d13c942271d6	3 weeks ago	/bin/sh -c #(nop)  CMD ["bash"]	0B	
<missing>	3 weeks ago	/bin/sh -c #(nop) ADD file:122ad323412c2e70b...	72.8MB	

# DOCKER IMAGE LAYER

---

```
$ docker image history <image[:tag]>
```

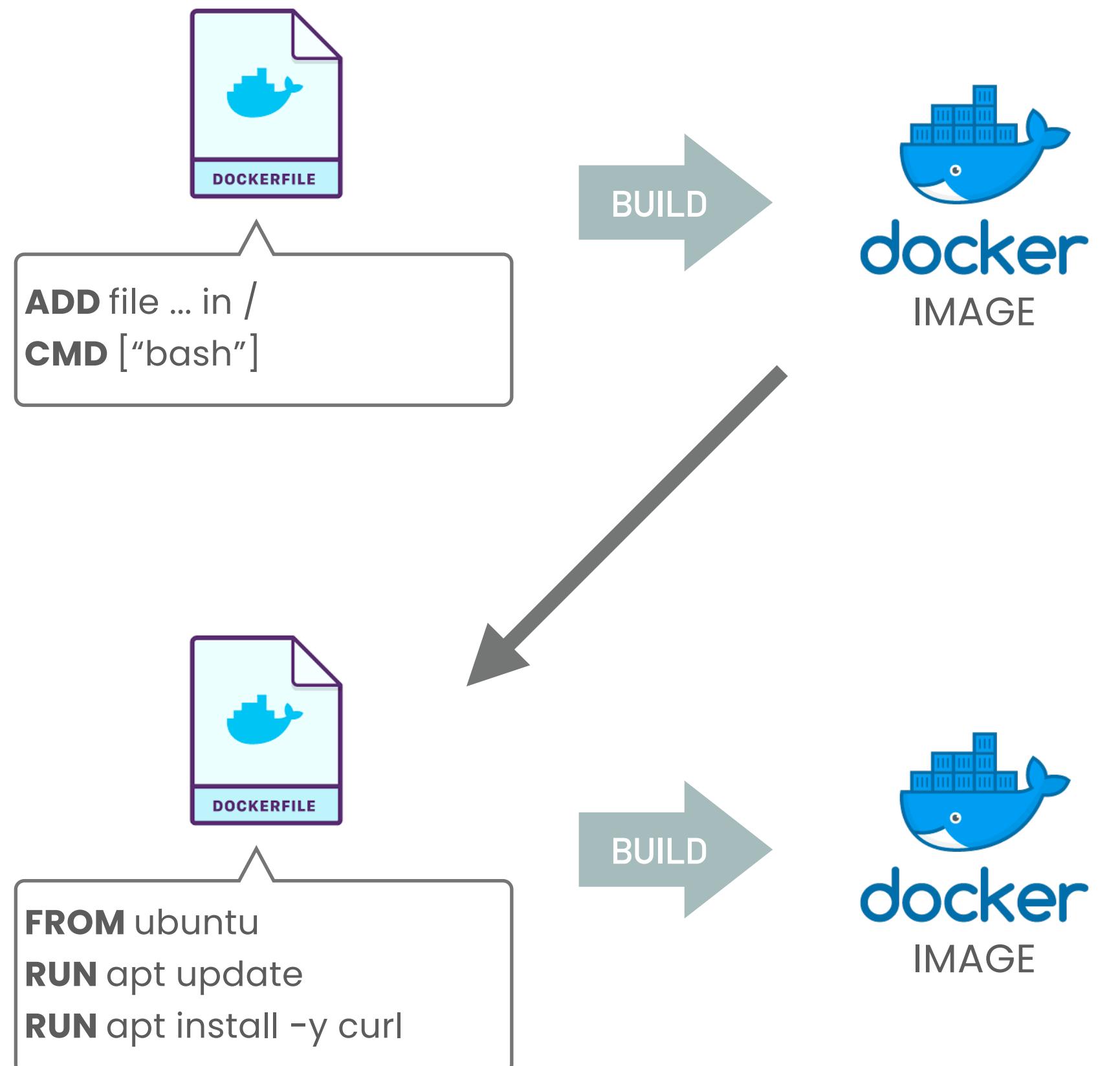


```
$ docker image history ubuntu
```

IMAGE	CREATED	CREATED BY	SIZE	COMMENT
d13c942271d6	3 weeks ago	/bin/sh -c #(nop) CMD ["bash"]	0B	
<missing>	3 weeks ago	/bin/sh -c #(nop) ADD file:122ad323412c2e70b...	72.8MB	

# DOCKER IMAGE LAYER

```
$ docker image history <image[:tag]>
```

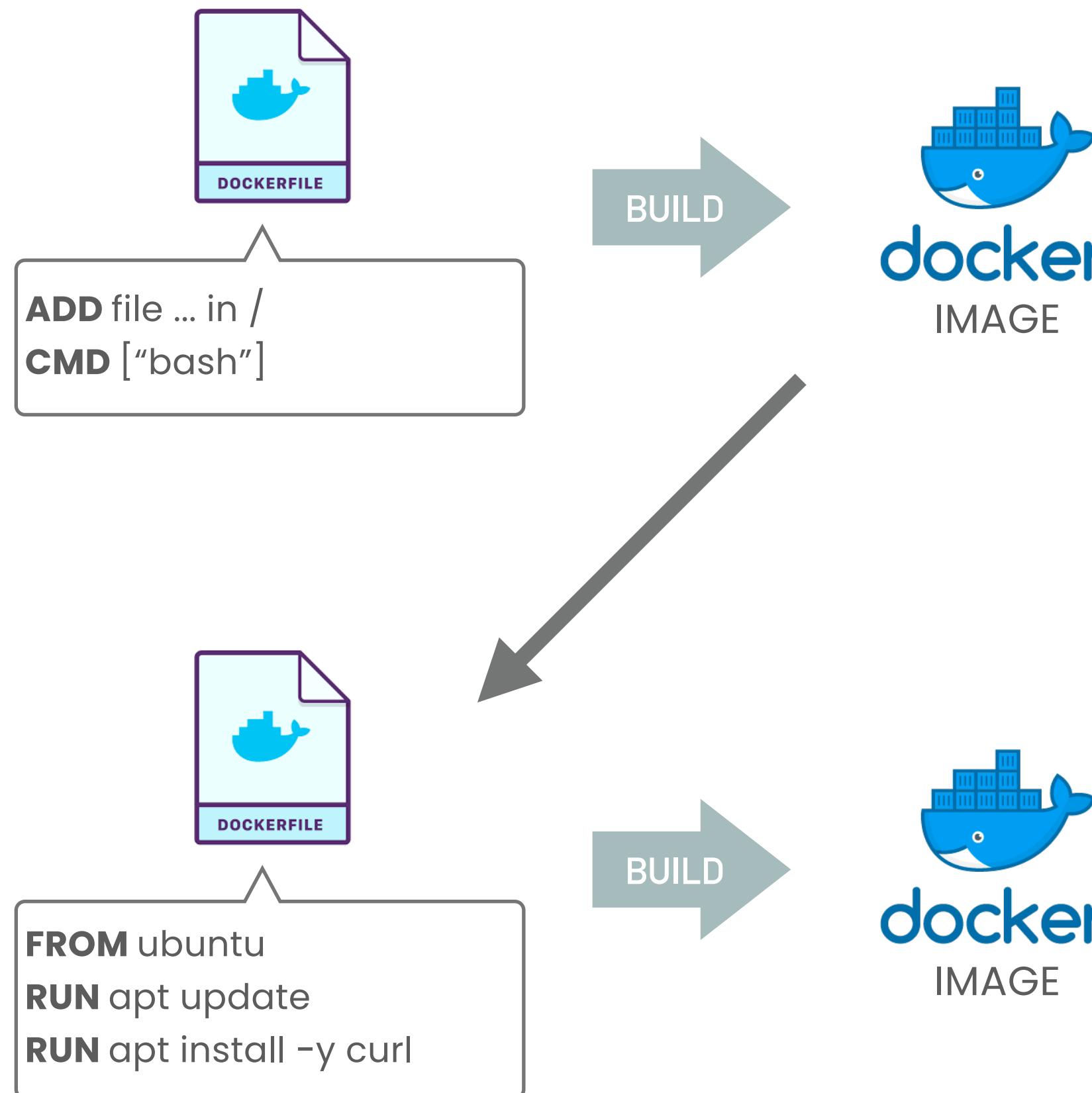


```
$ docker image history ubuntu
```

IMAGE	CREATED	CREATED BY	SIZE	COMMENT
d13c942271d6	3 weeks ago	/bin/sh -c #(nop) CMD ["bash"]	0B	
<missing>	3 weeks ago	/bin/sh -c #(nop) ADD file:122ad323412c2e70b...	72.8MB	

# DOCKER IMAGE LAYER

```
$ docker image history <image[:tag]>
```



```
$ docker image history ubuntu
```

IMAGE	CREATED	CREATED BY	SIZE	COMMENT
d13c942271d6	3 weeks ago	/bin/sh -c #(nop) CMD ["bash"]	0B	
<missing>	3 weeks ago	/bin/sh -c #(nop) ADD file:122ad323412c2e70b...	72.8MB	

```
$ docker image history my-image
```

IMAGE	CREATED	CREATED BY	SIZE	COMMENT
1fcf416f2b8b	9 seconds ago	RUN /bin/sh -c apt install -y curl # buildkit	16.2MB	buildkit.dockerfile.v0
<missing>	18 seconds ago	RUN /bin/sh -c apt update # buildkit	33.3MB	buildkit.dockerfile.v0
<missing>	3 weeks ago	/bin/sh -c #(nop) CMD ["bash"]	0B	
<missing>	3 weeks ago	/bin/sh -c #(nop) ADD file:122ad323412c2e70b...	72.8MB	

# IMAGE LAYERS

---

# IMAGE LAYERS

---



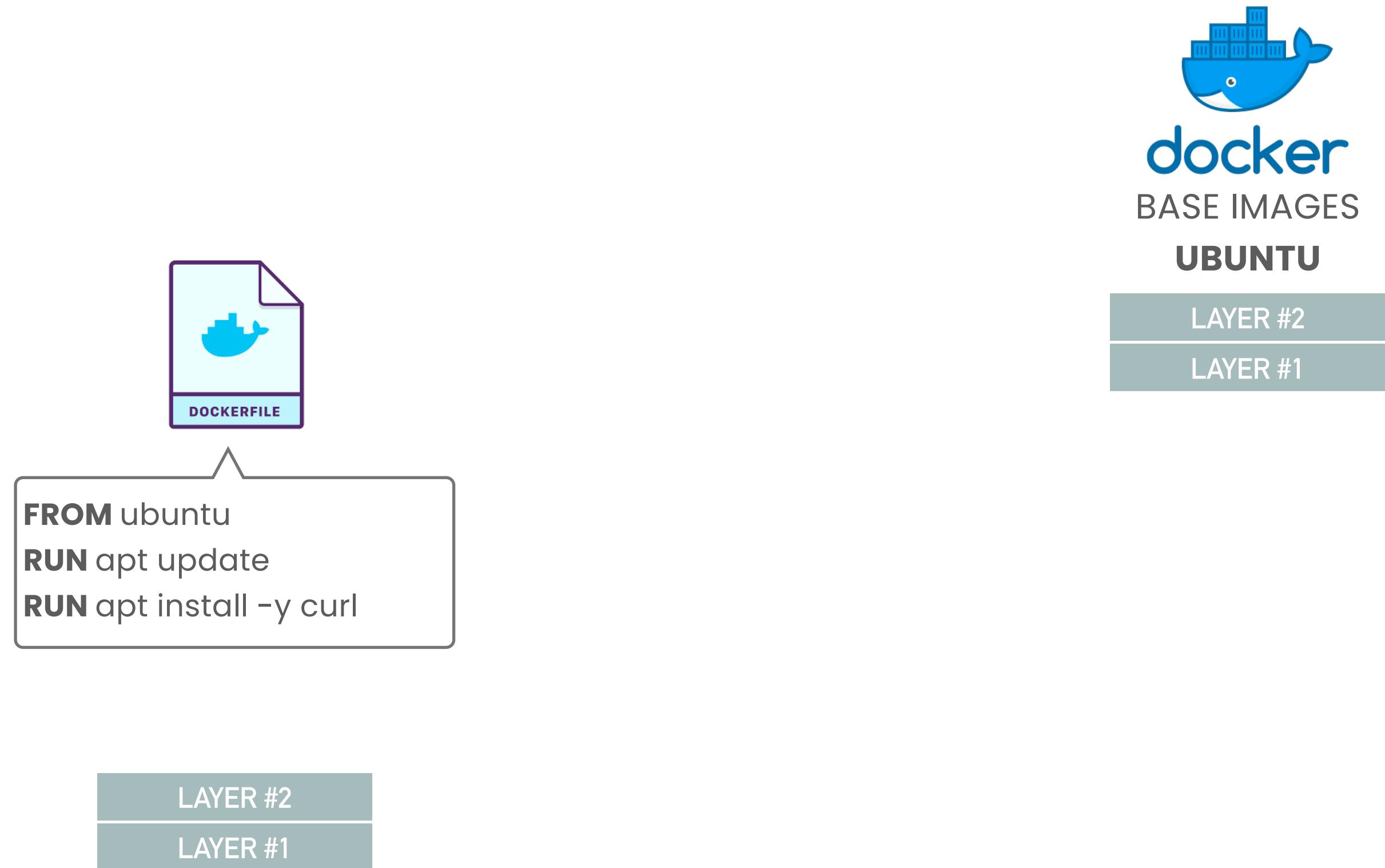
# IMAGE LAYERS

---



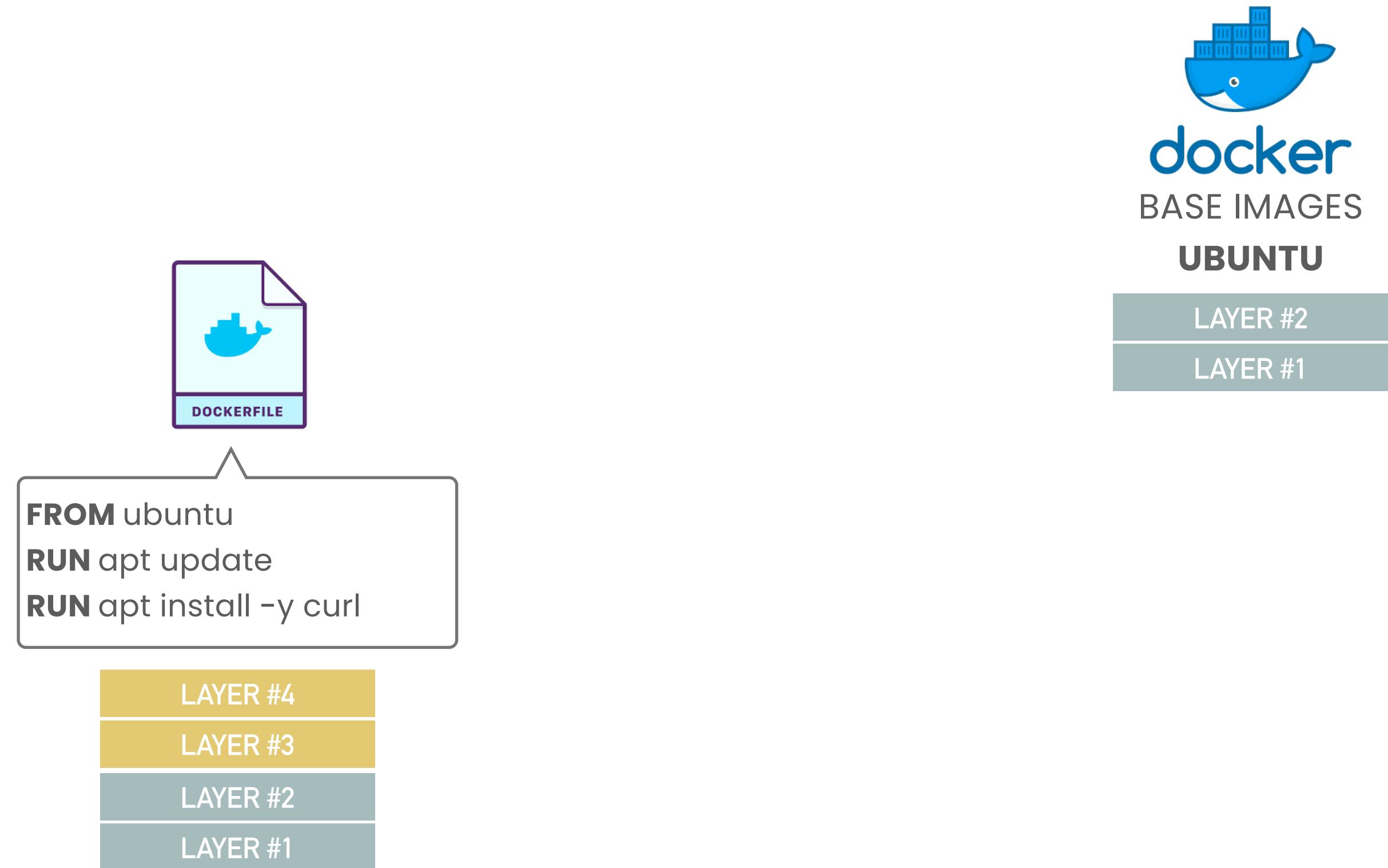
# IMAGE LAYERS

---



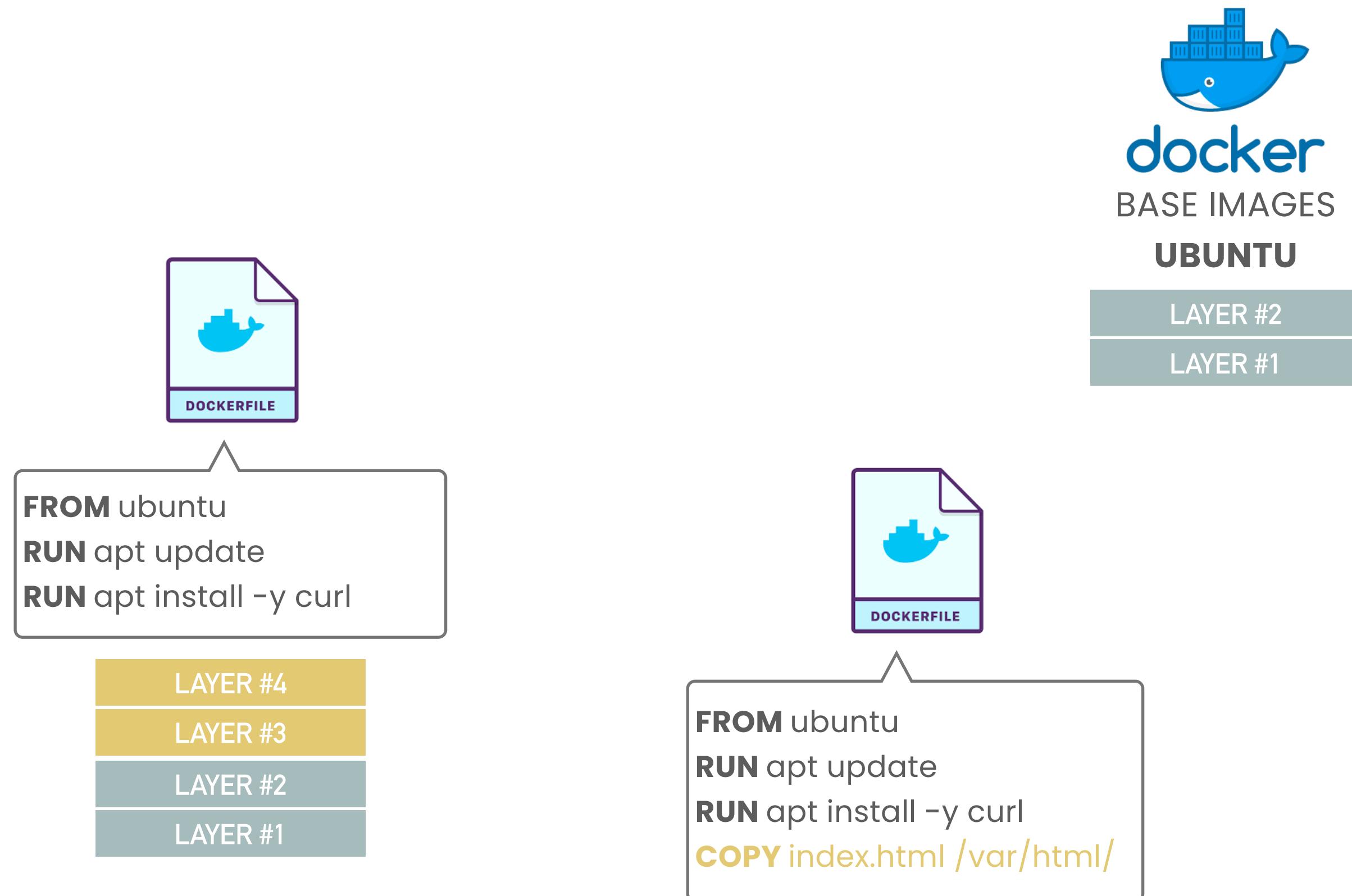
# IMAGE LAYERS

---



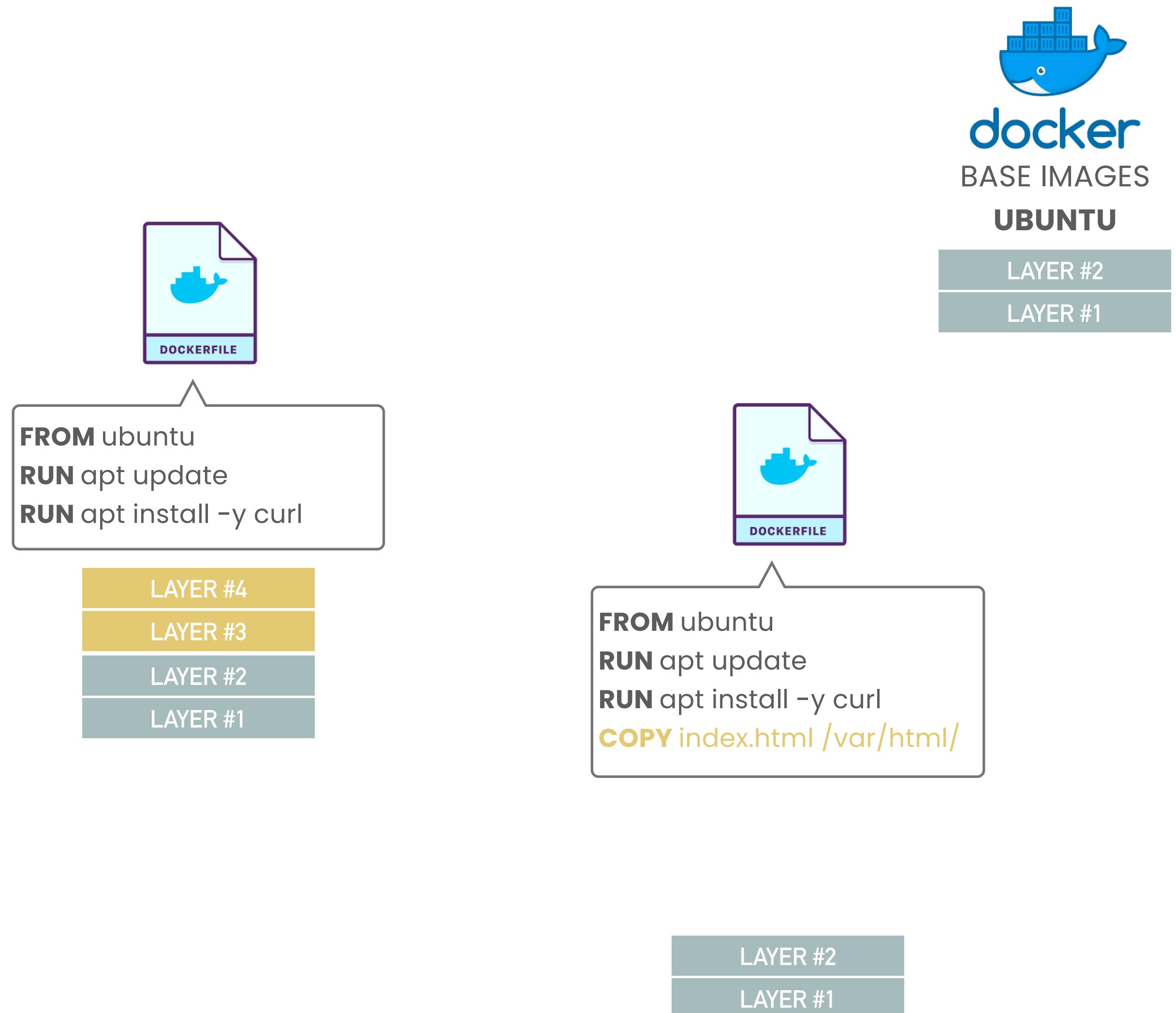
# IMAGE LAYERS

---



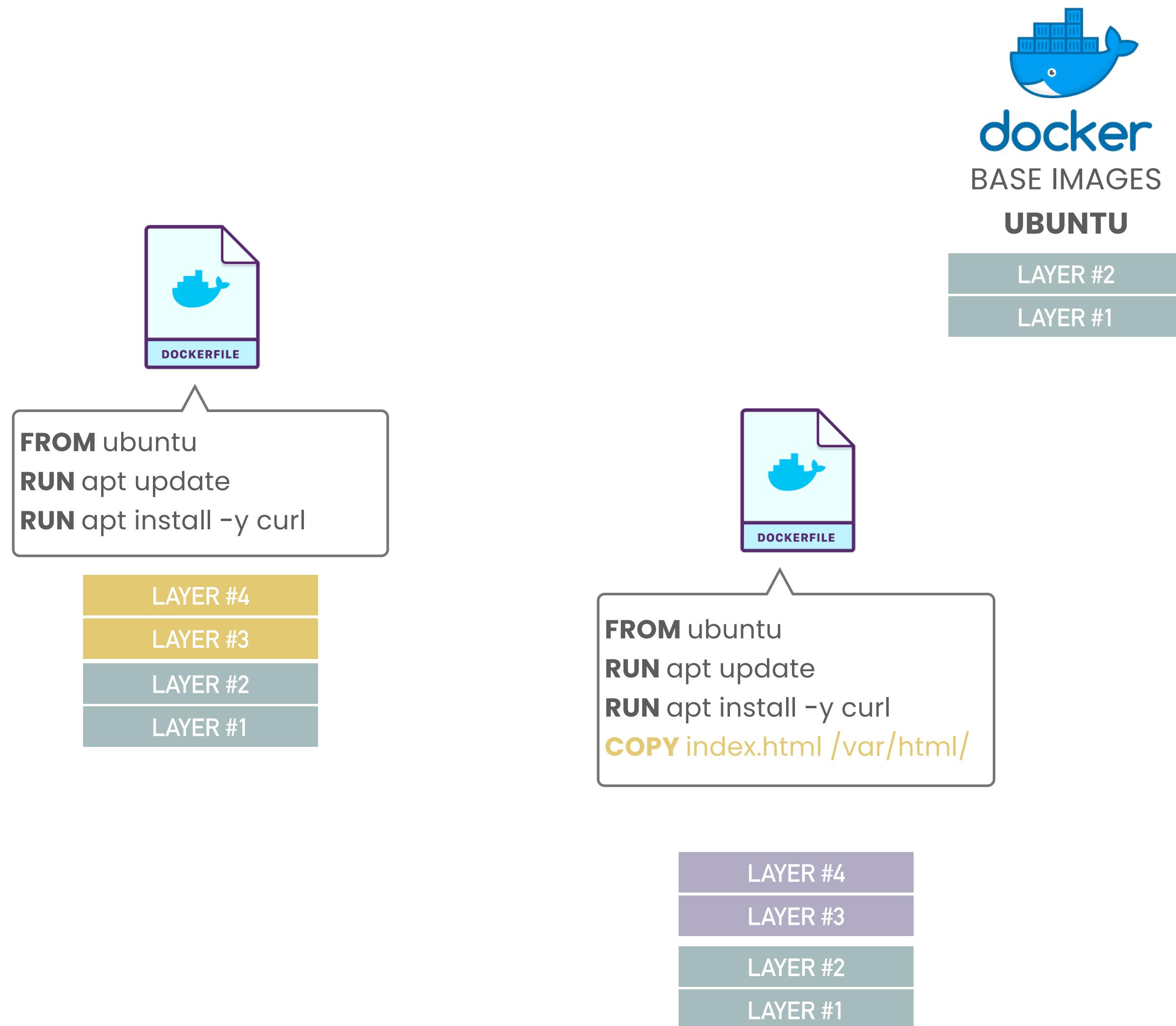
# IMAGE LAYERS

---



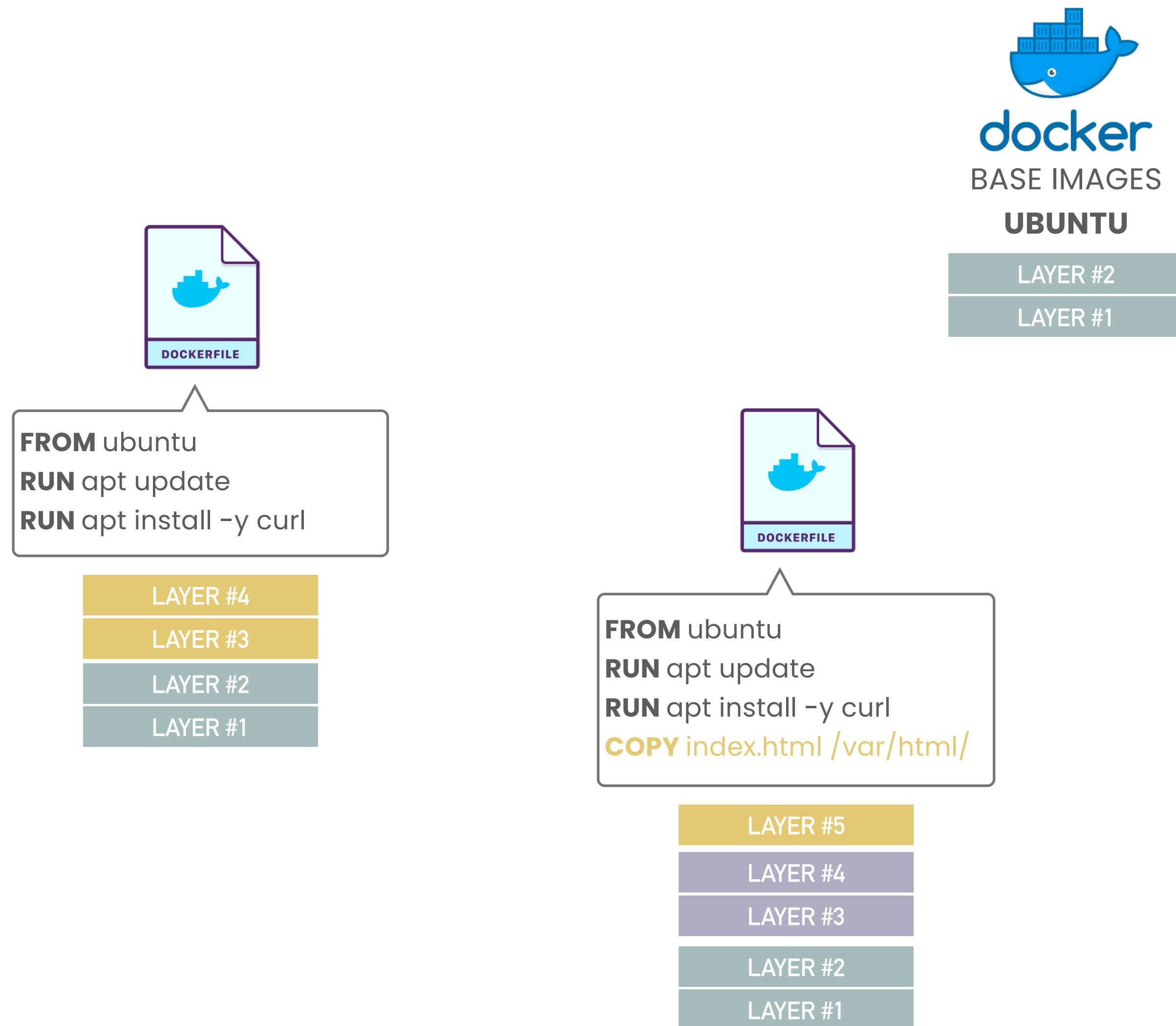
# IMAGE LAYERS

---

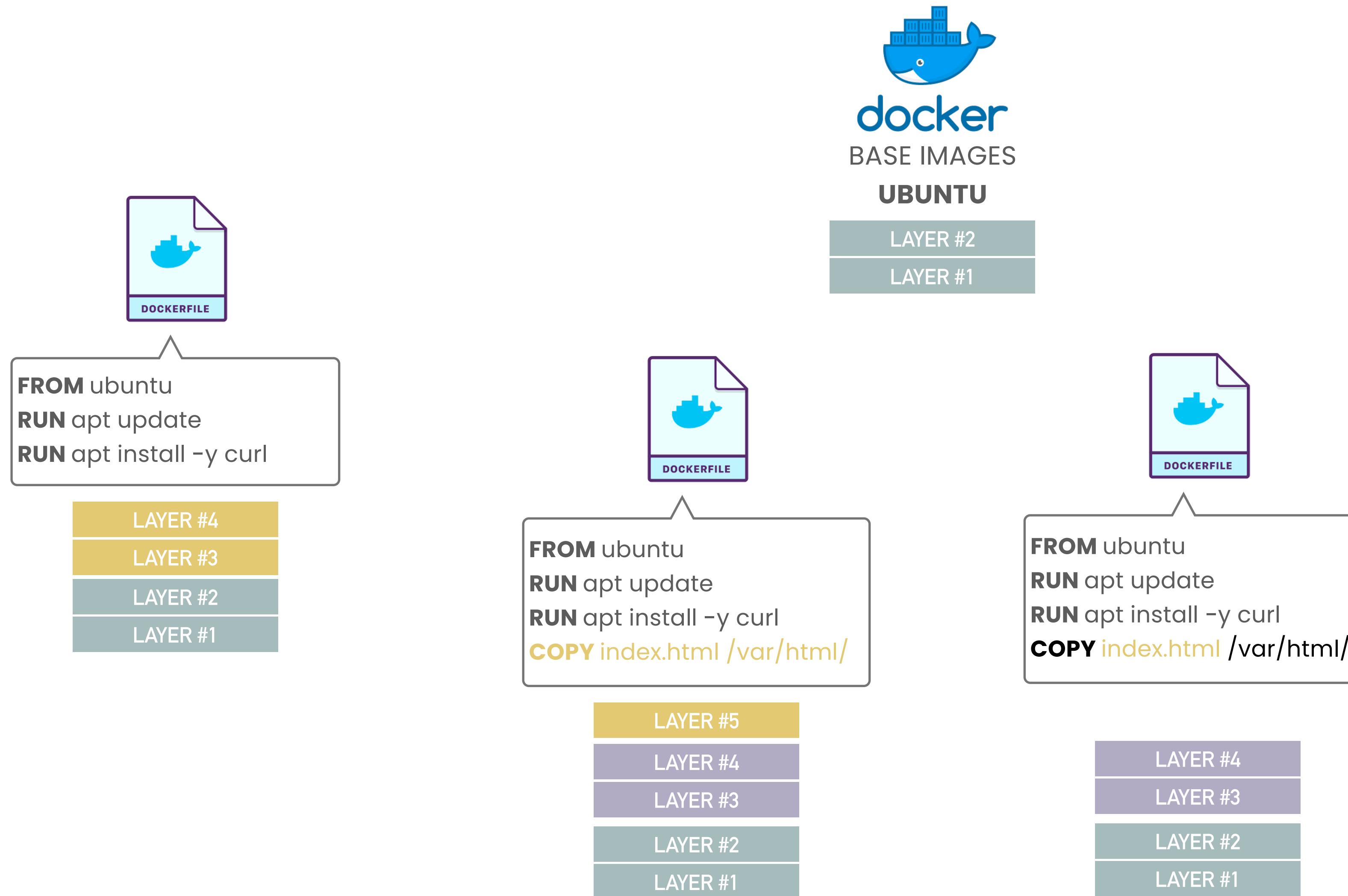


# IMAGE LAYERS

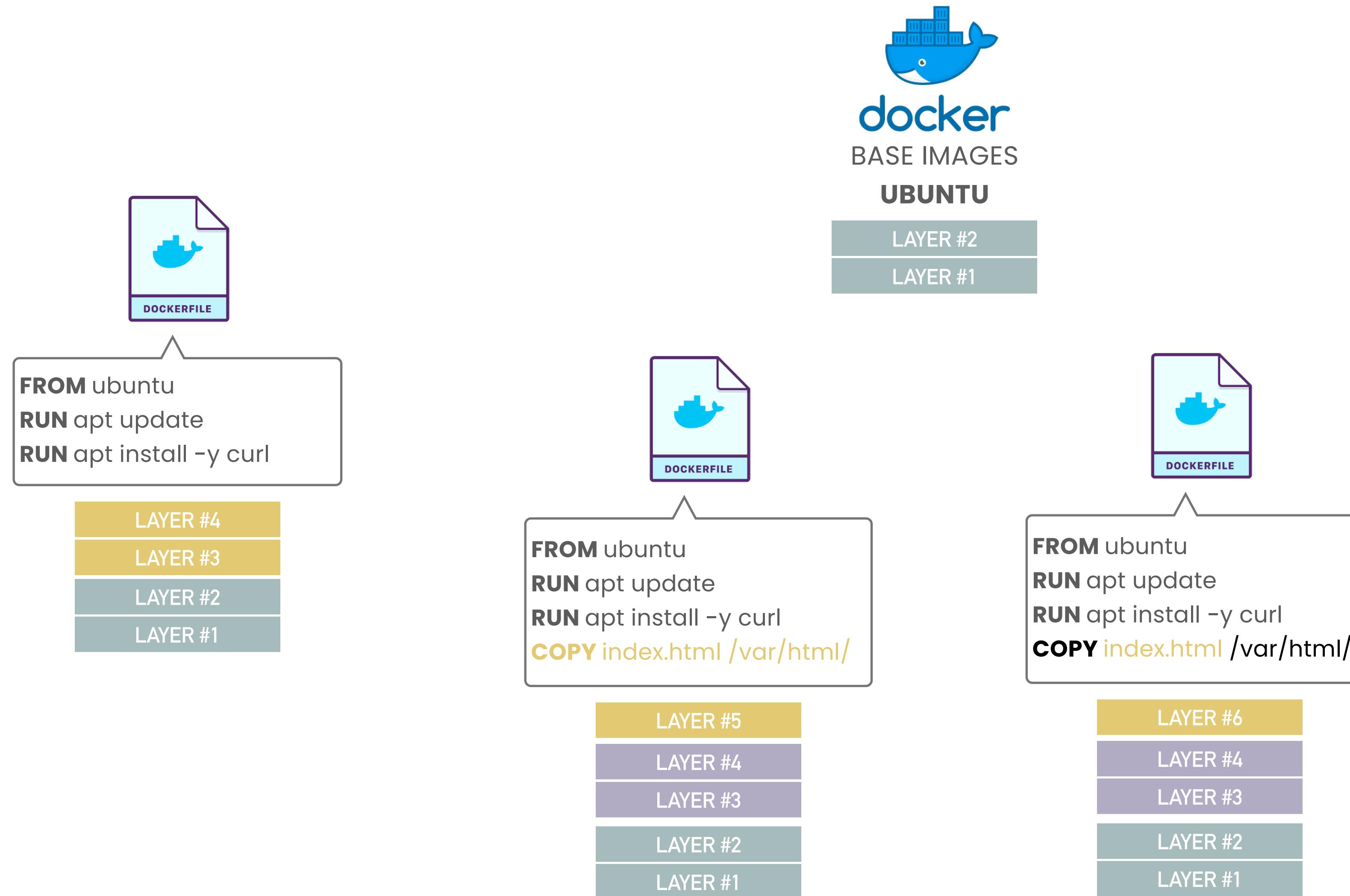
---



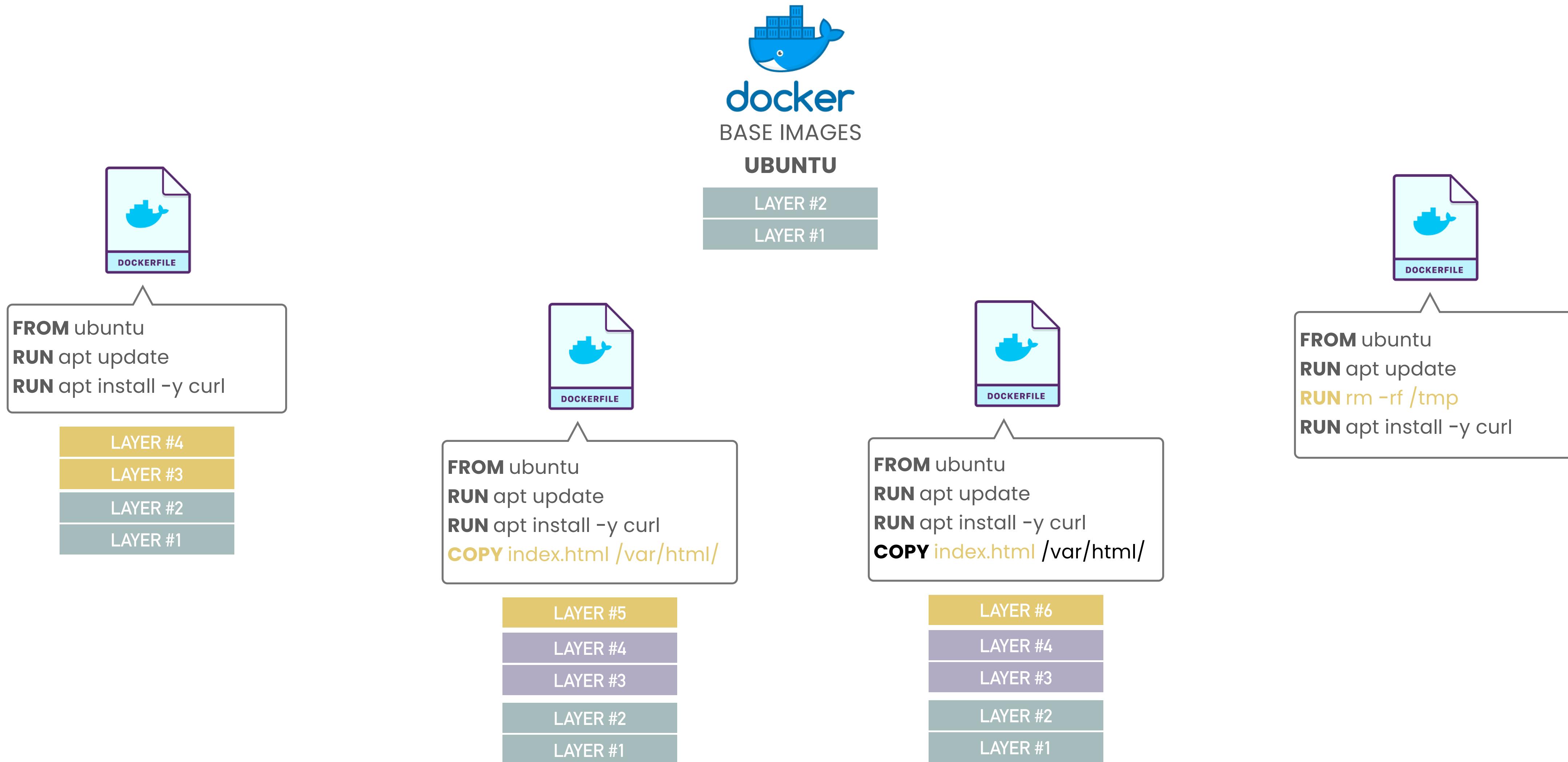
# IMAGE LAYERS



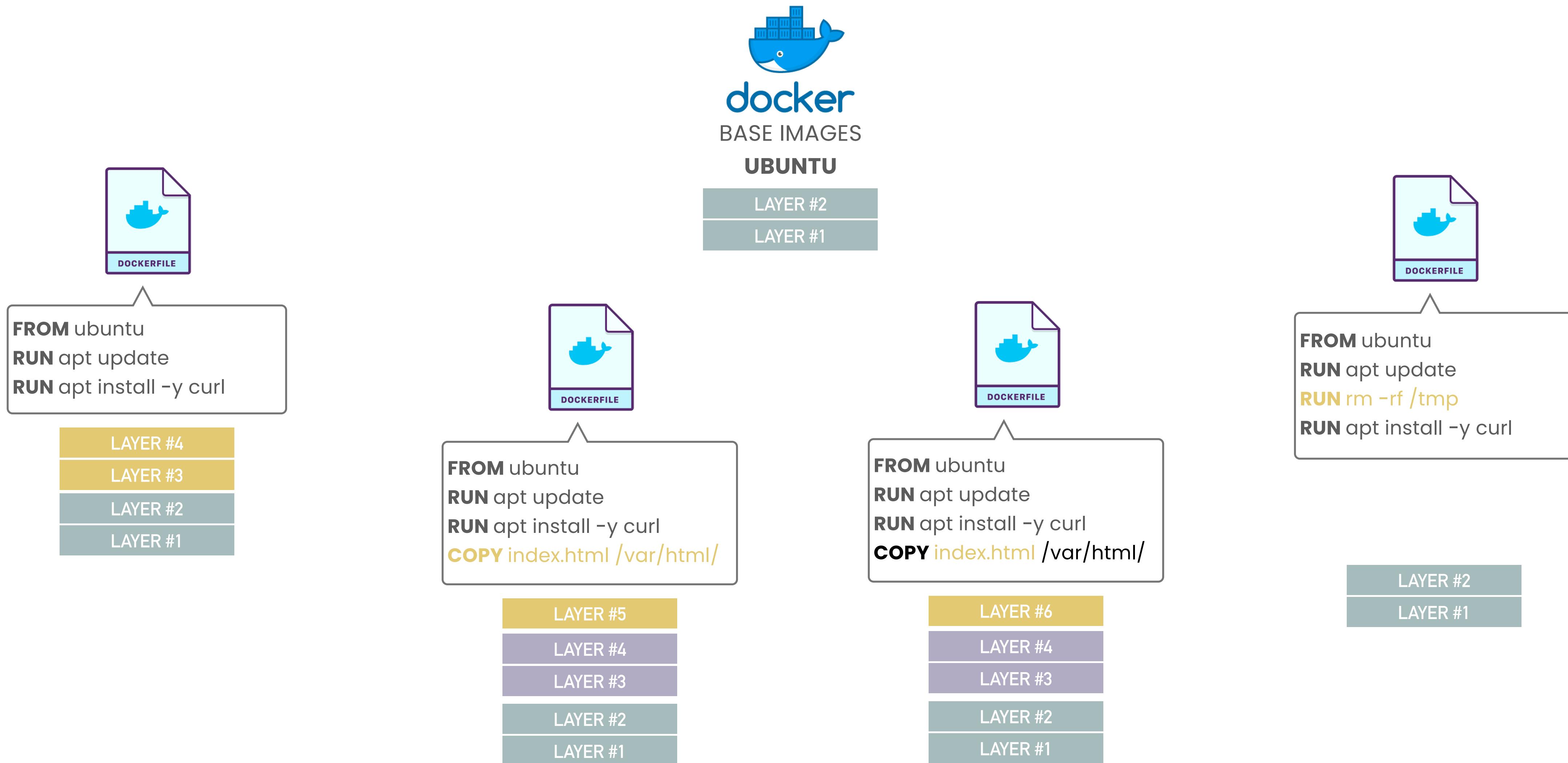
# IMAGE LAYERS



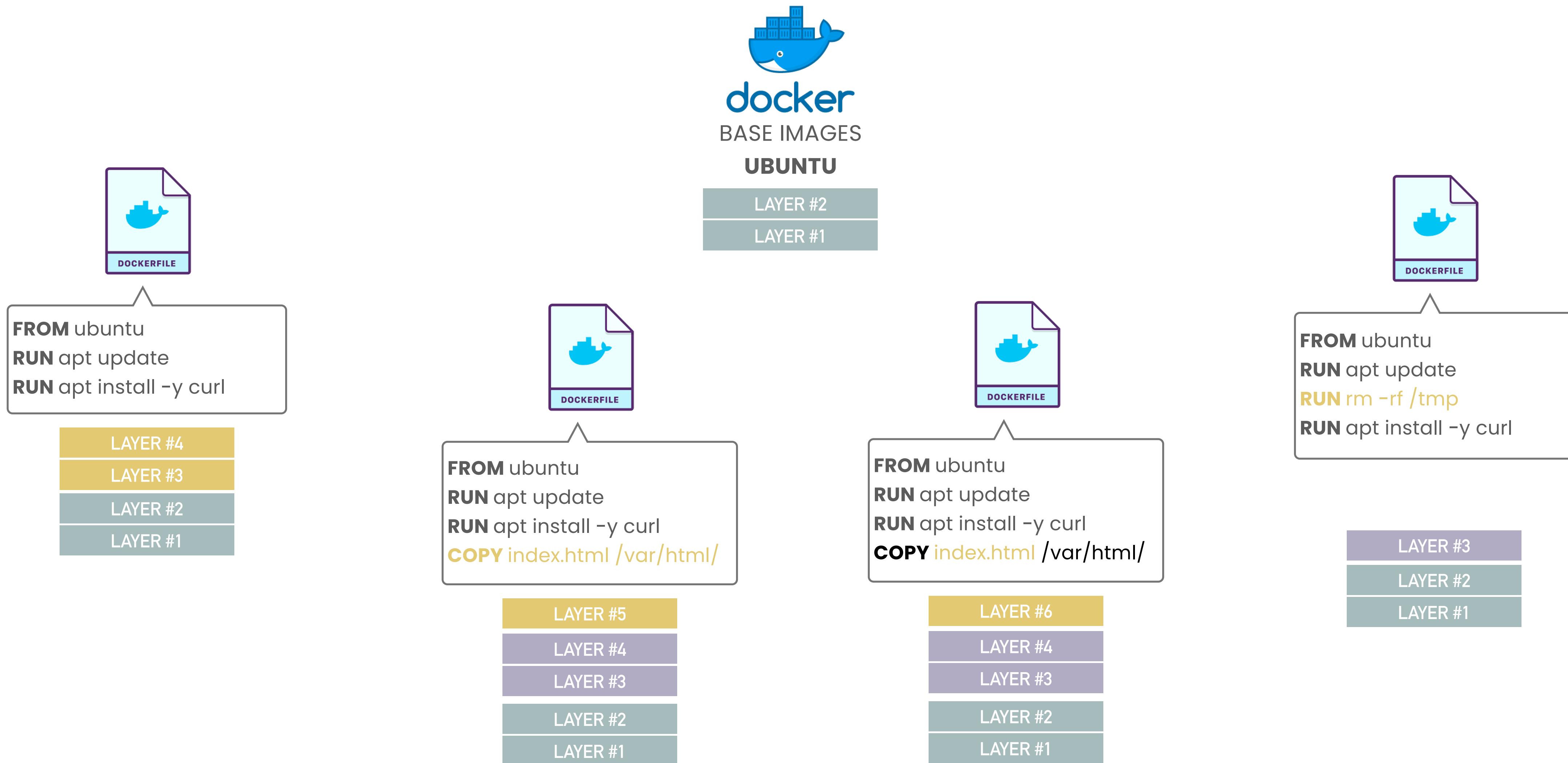
# IMAGE LAYERS



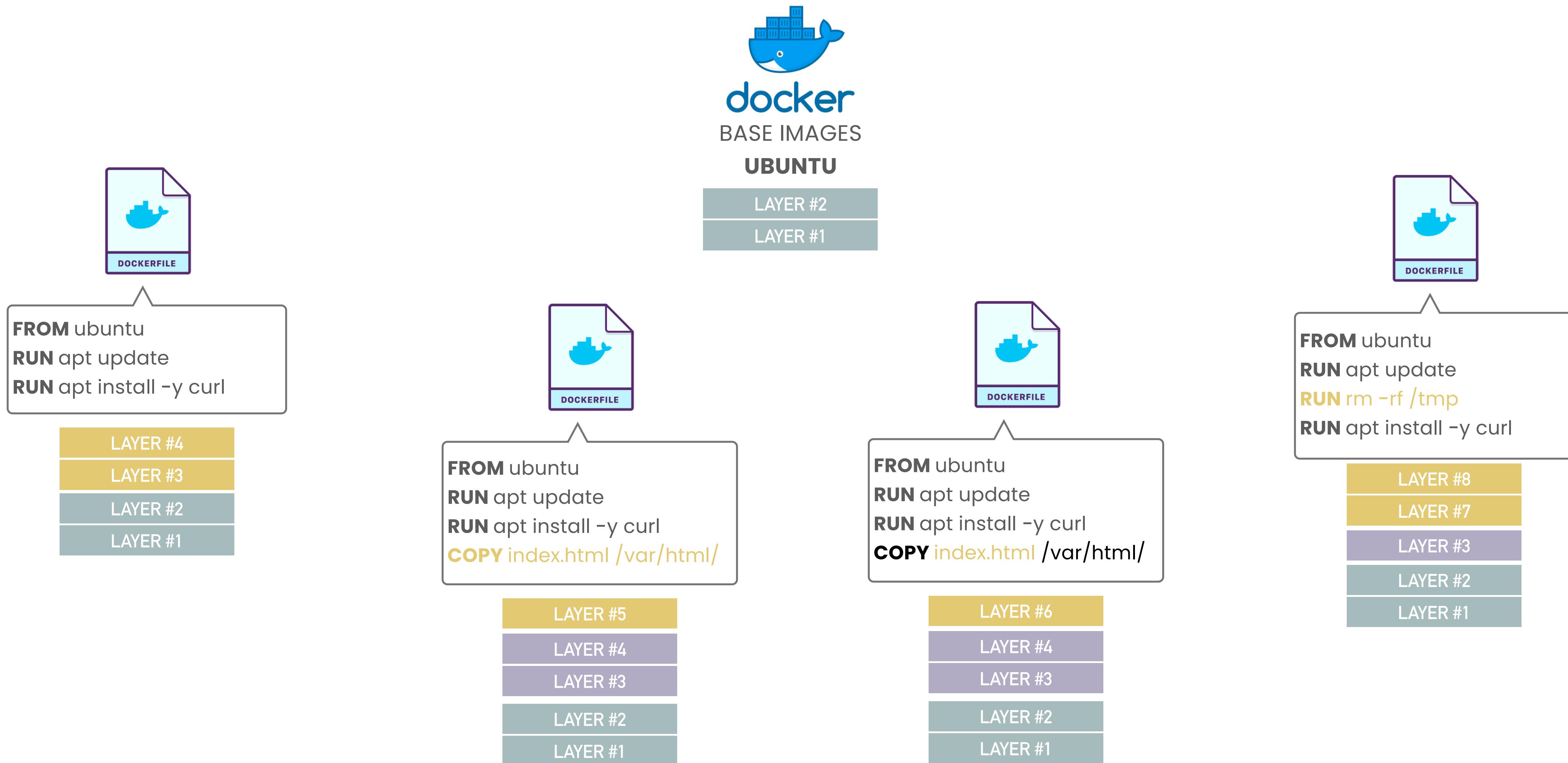
# IMAGE LAYERS



# IMAGE LAYERS



# IMAGE LAYERS



# DOCKER BUILD COMMAND

---

# DOCKER BUILD COMMAND

```
C:\Users\karan>docker build --help

Usage: docker build [OPTIONS] PATH | URL | -

Build an image from a Dockerfile

Options:

--add-host list          Add a custom host-to-IP mapping (host:ip)
--build-arg list          Set build-time variables
--cache-from strings      Images to consider as cache sources
--cgroup-parent string    Optional parent cgroup for the container
--compress                 Compress the build context using gzip
--cpu-period int          Limit the CPU CFS (Completely Fair Scheduler) period
--cpu-quota int           Limit the CPU CFS (Completely Fair Scheduler) quota
-c, --cpu-shares int      CPU shares (relative weight)
--cpuset-cpus string      CPUs in which to allow execution (0-3, 0,1)
--cpuset-mems string      MEMs in which to allow execution (0-3, 0,1)
--disable-content-trust   Skip image verification (default true)
-f, --file string          Name of the Dockerfile (Default is 'PATH/Dockerfile')
--force-rm                  Always remove intermediate containers
--iidfile string            Write the image ID to the file
--isolation string          Container isolation technology
--label list                 Set metadata for an image
-m, --memory bytes          Memory limit
--memory-swap bytes         Swap limit equal to memory plus swap: '-1' to enable unlimited swap
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---

# DOCKERFILE AND DOCKER BUILD COMMAND

---

build/command/lab1/**Dockerfile**

```
1 | FROM ubuntu:22.04
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---

build/command/lab1/**Dockerfile**

```
1 | FROM ubuntu:22.04
```



```
$ docker build .
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---

build/command/lab1/**Dockerfile**

1 | **FROM ubuntu:22.04**



\$ docker build .



```
[+] Building 13.0s (5/5) FINISHED
=> [internal] load build definition from Dockerfile                               0.1s
=> => transferring dockerfile: 54B                                              0.1s
=> [internal] load .dockerignore                                               0.1s
=> => transferring context: 2B                                                 0.0s
=> [internal] load metadata for docker.io/library/ubuntu:22.04                  3.4s
=> [1/1] FROM docker.io/library/ubuntu:22.04@sha256:0ad36748089181d832164977bdeb56d08672e3521731 9.2s
=> => resolve docker.io/library/ubuntu:22.04@sha256:0ad36748089181d832164977bdeb56d08672e3521731 0.0s
=> => sha256:c68f8d0eb3f063896e40d4ef7652b2901eeb2d35281104a4d2132d8df4ba9e34 1.46kB / 1.46kB 0.0s
=> => sha256:25f4cd1d54a5120c409f812234ad6f2266a5ae22fe0cf58c3ffab80bedc4368c 30.50MB / 30.50MB 5.0s
=> => sha256:0ad36748089181d832164977bdeb56d08672e352173127d8bfcd9aa4f7b3bd41 1.42kB / 1.42kB 0.0s
=> => sha256:74075bbbd941a1766a0db1d66e617a0ab82ab54dd23e0b55bebd7e62d9e9b7be 529B / 529B 0.0s
=> => extracting sha256:25f4cd1d54a5120c409f812234ad6f2266a5ae22fe0cf58c3ffab80bedc4368c 3.6s
=> exporting to image                                                       0.0s
=> => exporting layers                                                       0.0s
=> => writing image sha256:ed1547df94ab254c7c3c733ebd6dfcf4721d1f4b08e7cd01b30777e3c19b45fc 0.0s
```

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

# CHECKING BUILD RESULT

---

# CHECKING BUILD RESULT

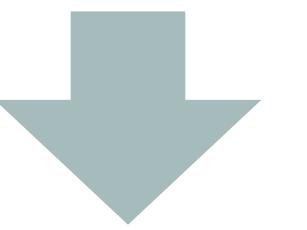
---

```
$ docker image ls
```

# CHECKING BUILD RESULT

---

```
$ docker image ls
```



REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
<none>	<none>	ed1547df94ab	3 weeks ago	78.1MB

# BUILD WITH NAME AND (OPTIONAL) TAG (-T)

---

-t, --tag list

Name and optionally a tag in the 'name:tag' format

# BUILD WITH NAME AND (OPTIONAL) TAG (-T)

---

-t, --tag list      Name and optionally a tag in the 'name:tag' format

```
$ docker build -t name .
```

# BUILD WITH NAME AND (OPTIONAL) TAG (-T)

---

-t, --tag list      Name and optionally a tag in the 'name:tag' format

```
$ docker build -t name .
```



```
$ docker build -t name:tag .
```

# BUILD WITH NAME AND (OPTIONAL) TAG (-T)

---

-t, --tag list      Name and optionally a tag in the 'name:tag' format

```
$ docker build -t name .
```



```
$ docker build -t name:tag .
```



```
$ docker build --tag name:tag .
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---

# DOCKERFILE AND DOCKER BUILD COMMAND

---

build/command/lab2/**Dockerfile**

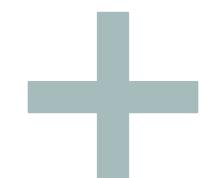
```
1 | FROM ubuntu:22.04
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---

build/command/lab2/**Dockerfile**

```
1 | FROM ubuntu:22.04
```



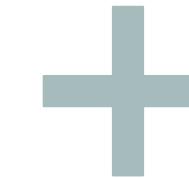
```
$ docker build -t myubuntu:22.04 .
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---

build/command/lab2/**Dockerfile**

1 | **FROM ubuntu:22.04**



\$ docker build -t myubuntu:22.04 .



```
[+] Building 13.0s (5/5) FINISHED
=> [internal] load build definition from Dockerfile                               0.1s
=> => transferring dockerfile: 54B                                              0.1s
=> [internal] load .dockerignore                                               0.1s
=> => transferring context: 2B                                                 0.0s
=> [internal] load metadata for docker.io/library/ubuntu:22.04                  3.4s
=> [1/1] FROM docker.io/library/ubuntu:22.04@sha256:0ad36748089181d832164977bdeb56d08672e3521731 9.2s
=> => resolve docker.io/library/ubuntu:22.04@sha256:0ad36748089181d832164977bdeb56d08672e3521731 0.0s
=> => sha256:c68f8d0eb3f063896e40d4ef7652b2901eeb2d35281104a4d2132d8df4ba9e34 1.46kB / 1.46kB 0.0s
=> => sha256:25f4cd1d54a5120c409f812234ad6f2266a5ae22fe0cf58c3ffab80bedc4368c 30.50MB / 30.50MB 5.0s
=> => sha256:0ad36748089181d832164977bdeb56d08672e352173127d8bfcd9aa4f7b3bd41 1.42kB / 1.42kB 0.0s
=> => sha256:74075bbbd941a1766a0db1d66e617a0ab82ab54dd23e0b55bebd7e62d9e9b7be 529B / 529B 0.0s
=> => extracting sha256:25f4cd1d54a5120c409f812234ad6f2266a5ae22fe0cf58c3ffab80bedc4368c 3.6s
=> exporting to image                                                       0.0s
=> => exporting layers                                                       0.0s
=> => writing image sha256:ed1547df94ab254c7c3c733ebd6dfcf4721d1f4b08e7cd01b30777e3c19b45fc 0.0s
```

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

# CHECKING BUILD RESULT

---

# CHECKING BUILD RESULT

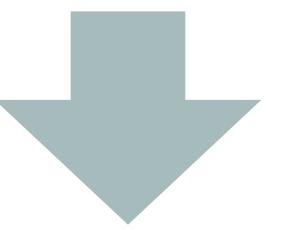
---

```
$ docker image ls
```

# CHECKING BUILD RESULT

---

```
$ docker image ls
```



REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
myubuntu	22.04	ed1547df94ab	3 weeks ago	78.1MB

# BUILD WITH NAME OF DOCKERFILE (-F)

---

-f, --file string

Name of the Dockerfile (Default is 'PATH/Dockerfile')

# BUILD WITH NAME OF DOCKERFILE (-F)

---

-f, --file string      Name of the Dockerfile (Default is 'PATH/Dockerfile')

```
$ docker build -f Dockerfile.database .
```

# BUILD WITH NAME OF DOCKERFILE (-F)

---

-f, --file string      Name of the Dockerfile (Default is 'PATH/Dockerfile')

```
$ docker build -f Dockerfile.database .
```



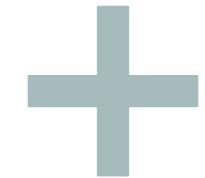
```
$ docker build -f backend/Dockerfile.app .
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---

# DOCKERFILE AND DOCKER BUILD COMMAND

---



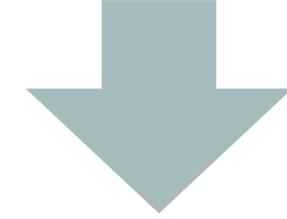
```
$ docker build -t backend:1.0 -f backend/Dockerfile.app backend
```

# DOCKERFILE AND DOCKER BUILD COMMAND

---



```
$ docker build -t backend:1.0 -f backend/Dockerfile.app backend
```



```
[+] Building 1.4s (5/5) FINISHED
=> [internal] load build definition from Dockerfile.app          0.0s
=> => transferring dockerfile: 63B                            0.0s
=> [internal] load .dockerignore                                0.0s
=> => transferring context: 2B                                0.0s
=> [internal] load metadata for docker.io/library/ubuntu:22.04   1.3s
=> CACHED [1/1] FROM docker.io/library/ubuntu:22.04@sha256:0ad36748089181d832164977bdeb56d08672e352173127d8bfcd9a 0.0s
=> exporting to image                                         0.0s
=> => exporting layers                                       0.0s
=> => writing image sha256:ed1547df94ab254c7c3c733ebd6dfcf4721d1f4b08e7cd01b30777e3c19b45fc 0.0s
=> => naming to docker.io/library/backend:1.0                 0.0s
```

```
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
```

# DOCKERFILE AND DOCKER BUILD COMMAND

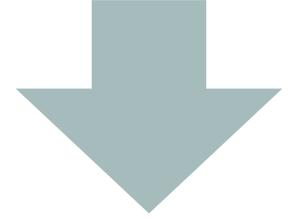
---

build/command/lab3/backend/Dockerfile

```
1 | FROM ubuntu:22.04
```



```
$ docker build -t backend:1.0 -f backend/Dockerfile.app backend
```



```
[+] Building 1.4s (5/5) FINISHED
=> [internal] load build definition from Dockerfile.app
=> => transferring dockerfile: 63B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/ubuntu:22.04
=> CACHED [1/1] FROM docker.io/library/ubuntu:22.04@sha256:0ad36748089181d832164977bdeb56d08672e352173127d8bfcd9a
=> exporting to image
=> => exporting layers
=> => writing image sha256:ed1547df94ab254c7c3c733ebd6dfcf4721d1f4b08e7cd01b30777e3c19b45fc
=> => naming to docker.io/library/backend:1.0
```

```
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
```

# CHECKING BUILD RESULT

---

# CHECKING BUILD RESULT

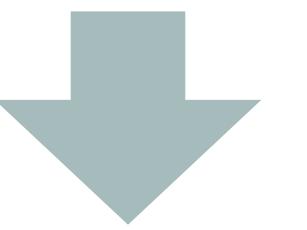
---

```
$ docker image ls
```

# CHECKING BUILD RESULT

---

```
$ docker image ls
```



REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
myubuntu	22.04	ed1547df94ab	3 weeks ago	78.1MB
backend	1.0	ed1547df94ab	3 weeks ago	78.1MB

**THANK YOU**