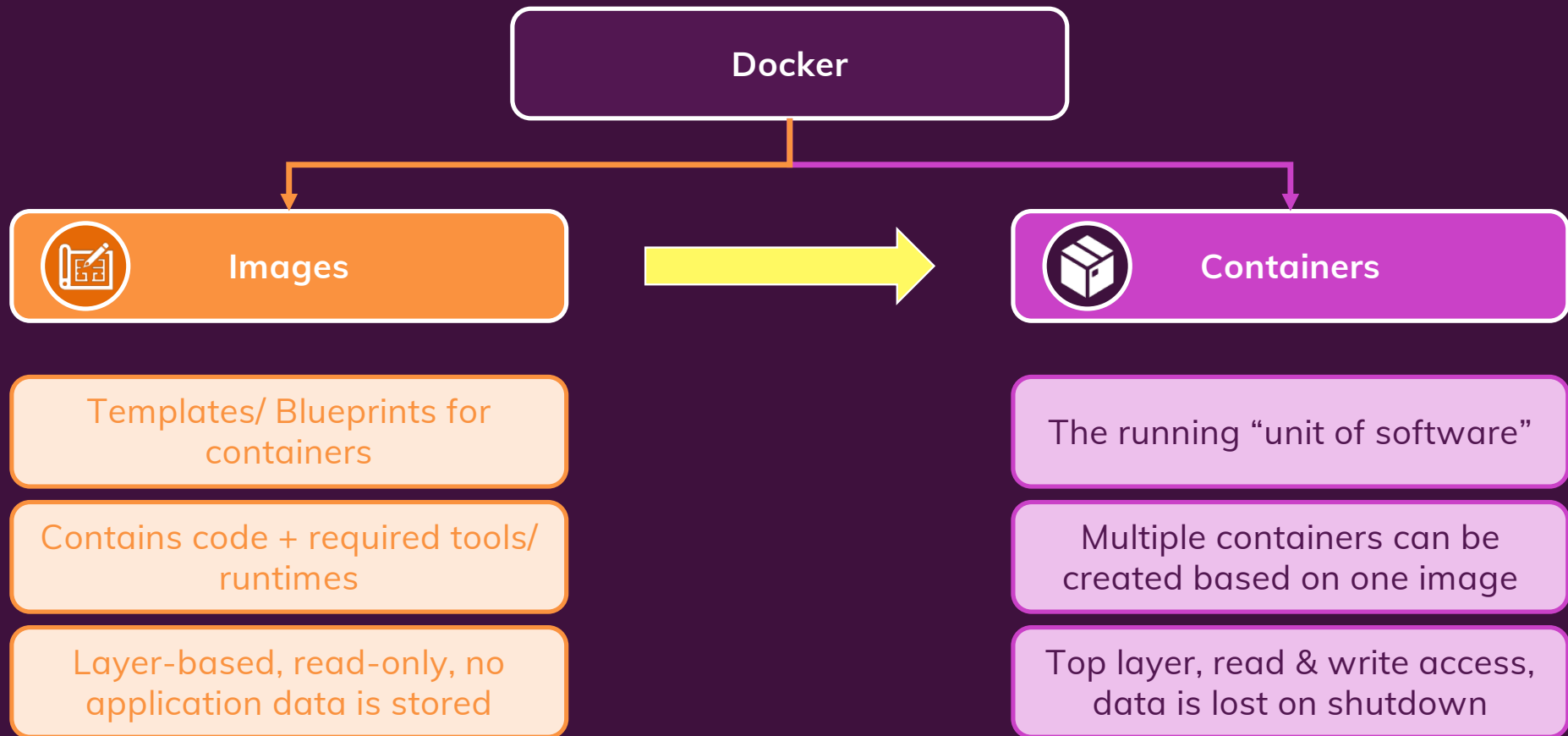
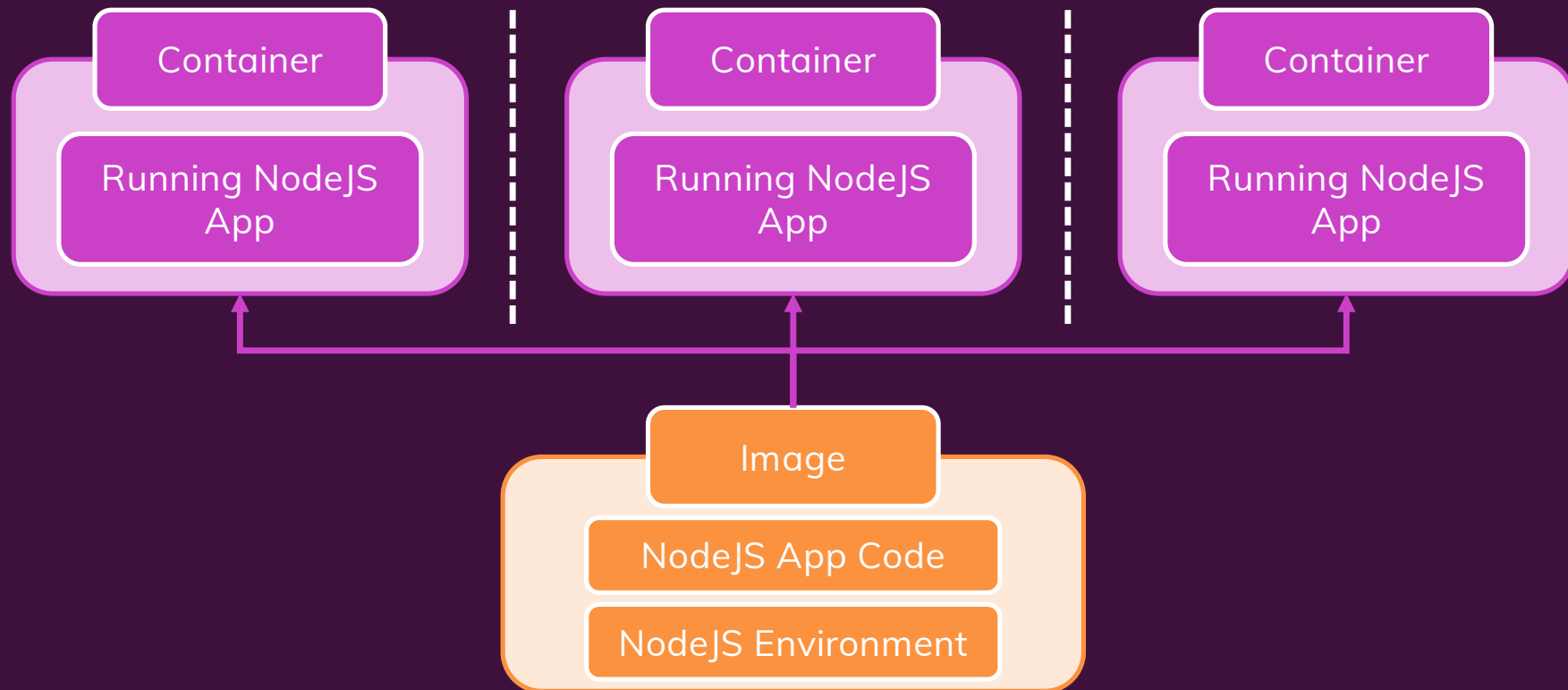


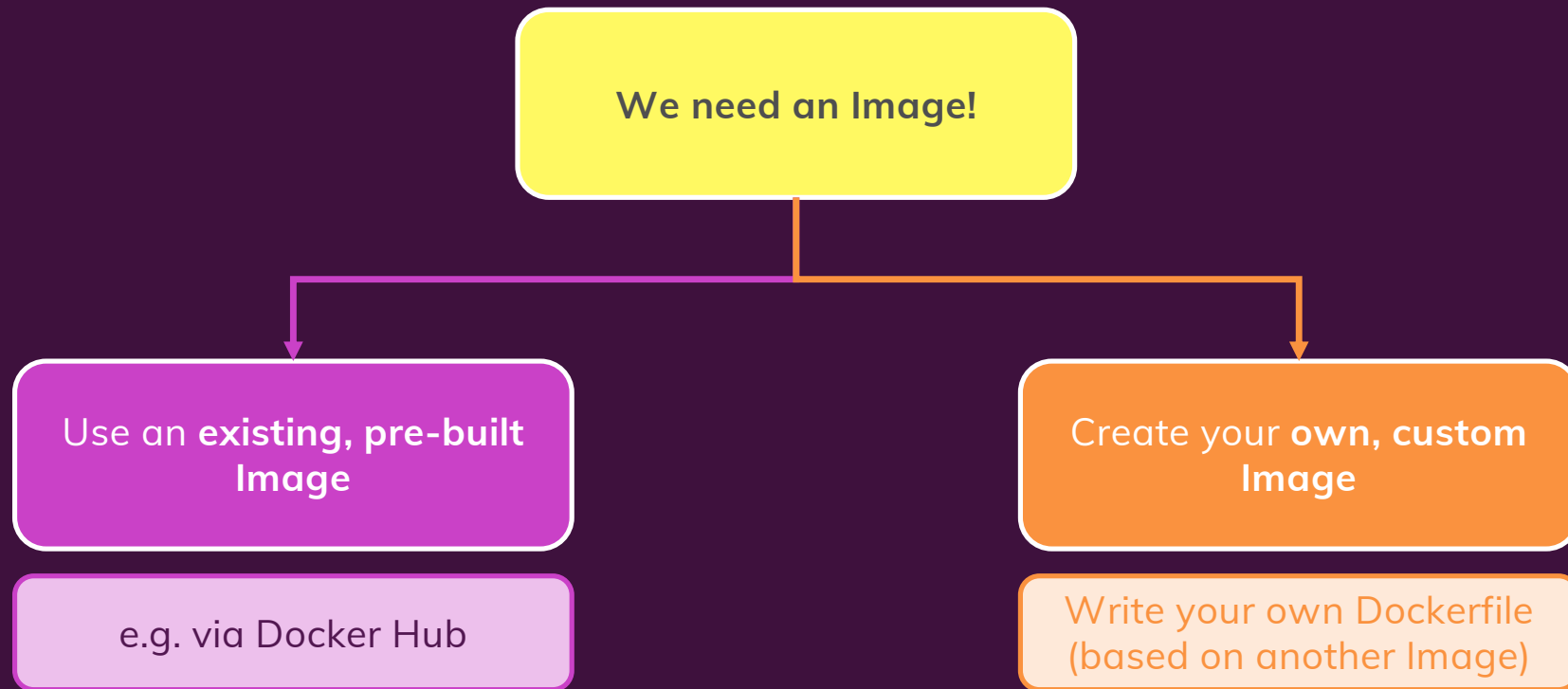
Images vs Containers



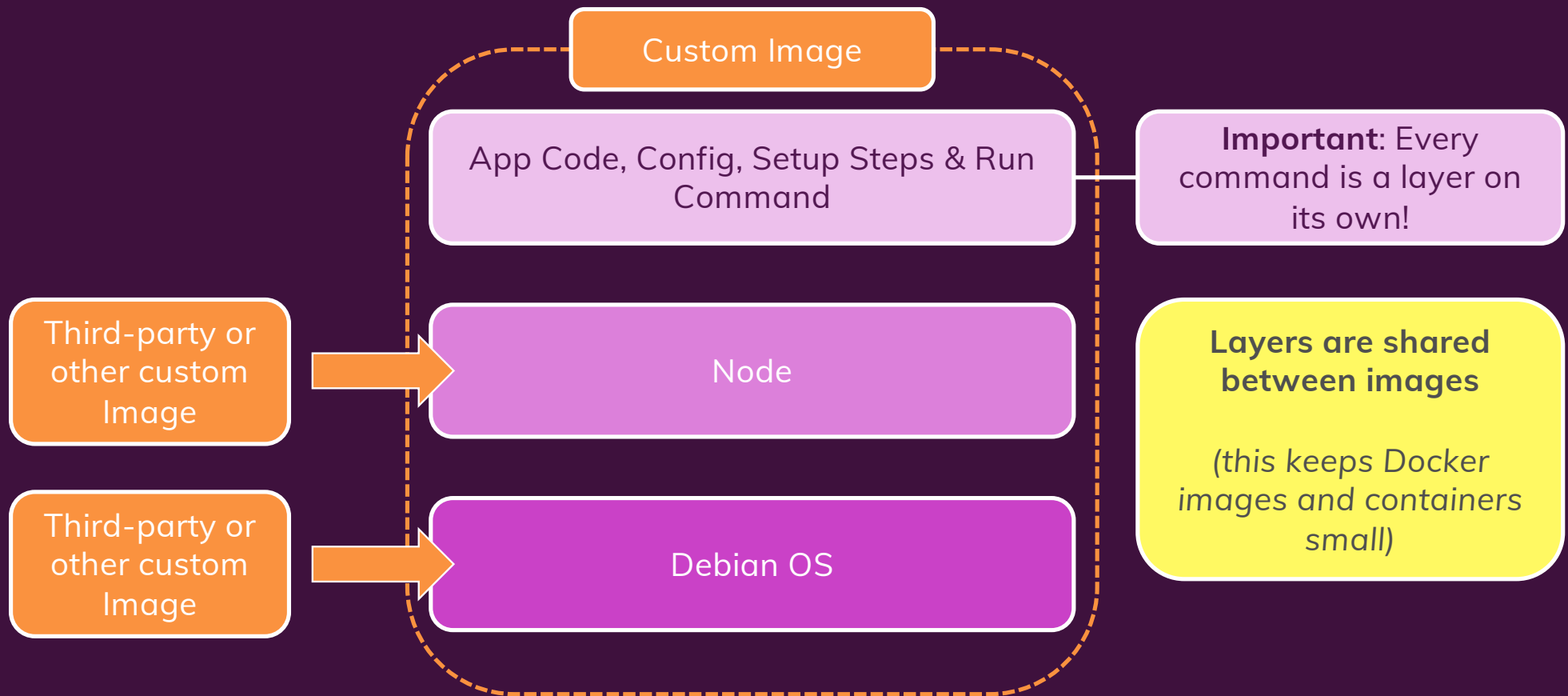
One Image, Multiple Containers



Finding / Creating Images



Images & Image Layers



A Container Is Based On An Image

When you re-build an image, only the layers that changed will be re-built

Container Layer (read-write)

Instruction #3: Image Layer 3

Instruction #2: Image Layer 2

Instruction #1: Image Layer 1

Container

Read-write

Image

Read-only

Multiple Containers Can Be Based On The Same Image

3 different containers, separated data

Container Layer 1

Container Layer 2

Container Layer 3

Image Layer 3

Image Layer 2

Image Layer 1

Where To Get Images

Docker Hub

or

Build your Own

Cloud registry for third-party images

You can pull them to run as container

You can build your own images based on other images

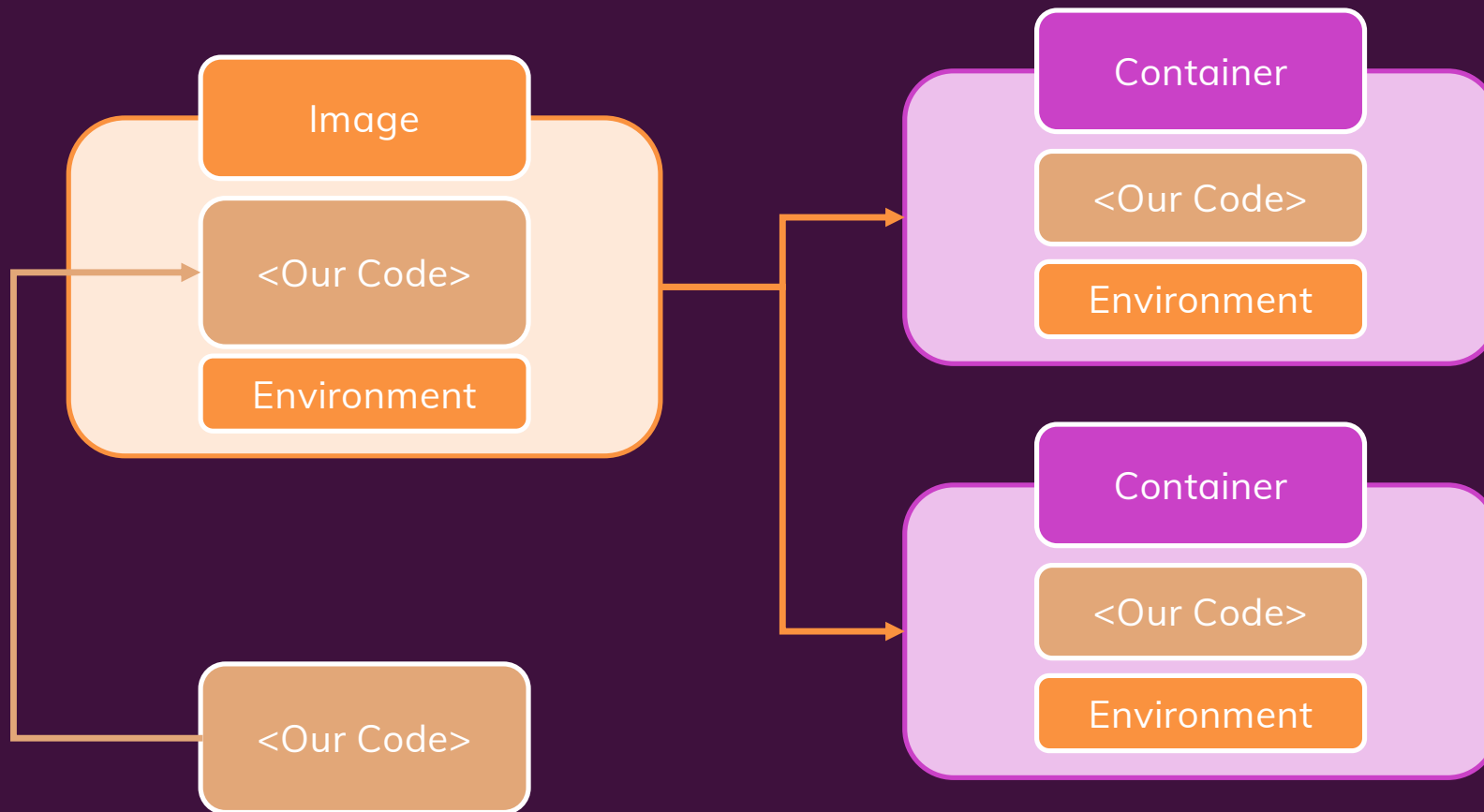
Configure all tools and setup steps you need in your containers

Possibly share with other developers

Combine third-party images with custom setup steps and tools

Typically, you'll combine both

Images & Containers – First Summary



Managing Images & Containers

Add `--help` to see all options

Images

Can be **tagged** (named)
-t, docker tag ...

Can be **listed**
docker images

Can be **analyzed**
docker image inspect

Can be **removed**
docker rmi, docker prune

Containers

Can be **named**
--name

Can be **configured in detail**
see --help

Can be **listed**
docker ps

Can be **removed**
docker rm

Understanding Image Tags

name : tag

Defines a **group** of,
possible more
specialized, images

Example: "node"

Defines a **specialized**
image within a group of
images

Example: "14"

Combined: A unique identifier

Sharing Images & Containers

Everyone who has an image, can create containers based on the image!

Share a Dockerfile

Simply run **docker build .**

Important: The Dockerfile instructions **might need surrounding files / folders** (e.g. source code)

Share a Built Image

Download an image, **run a container** based on it

No build step required, **everything is included in the image** already!

Sharing via Docker Hub or Private Registry

Free Usage Possible!

Docker Hub

Official Docker Image Registry

Public, private and "official"
Images

Private Registry

Any provider / registry you want to use

Only your own (or team) Images

Share: `docker push` **IMAGE_NAME**

Use: `docker pull` **IMAGE_NAME**

Needs to be
HOST:NAME to
talk to private
registry

Key Commands

`docker create`

Create a new container

`docker run`

Create and start a new container based on an image

`docker stop`
`docker start`

Stop a running container
Start a stopped container

`docker rm`

Removed a stopped container (delete it)

`docker push / pull`

Share / Download a remote image

`docker build`

Build a new image based on a Dockerfile

`docker rmi`

Remove a local image

Module Summary

Docker is all about **Images** & **Containers**

Images are the **templates / blueprints** for **Containers**, multiple **Containers** can be created based on one **Image**.

Images contain **multiple layers** (1 Instruction = 1 Layer) to optimize build speed (caching!) and re-usability

Containers can be **listed** (*docker ps*), **removed** (*docker rm*) and **stopped + started** (*docker stop / start*)

Images are either downloaded (*docker pull*) or created with a **Dockerfile** and *docker build*.

Containers are created with *docker run IMAGE* and can be configured with **various options / flags**

Images can also be **listed** (*docker images*), **removed** (*docker rmi*, *docker image prune*) and **shared** (*docker push / pull*)