#Docker

Docker:- Docker is a containerization platform for developing, packaging, shipping, and running applications.

- It provides the ability to run an application in an isolated environment called a **container**.

- It make deployement & development efficient.

→ **A container includes :-**

- Your app's code that way to package an application
- Dependencies (like Node, Python) etc.
- Environment configuration.
- OS-level tools / libralies.
- It can be shared easily

This ensure you app run the same on any system.

But Docker runs the same software-wise, but not the same performance-wise, that depends on the recivers system hardware.

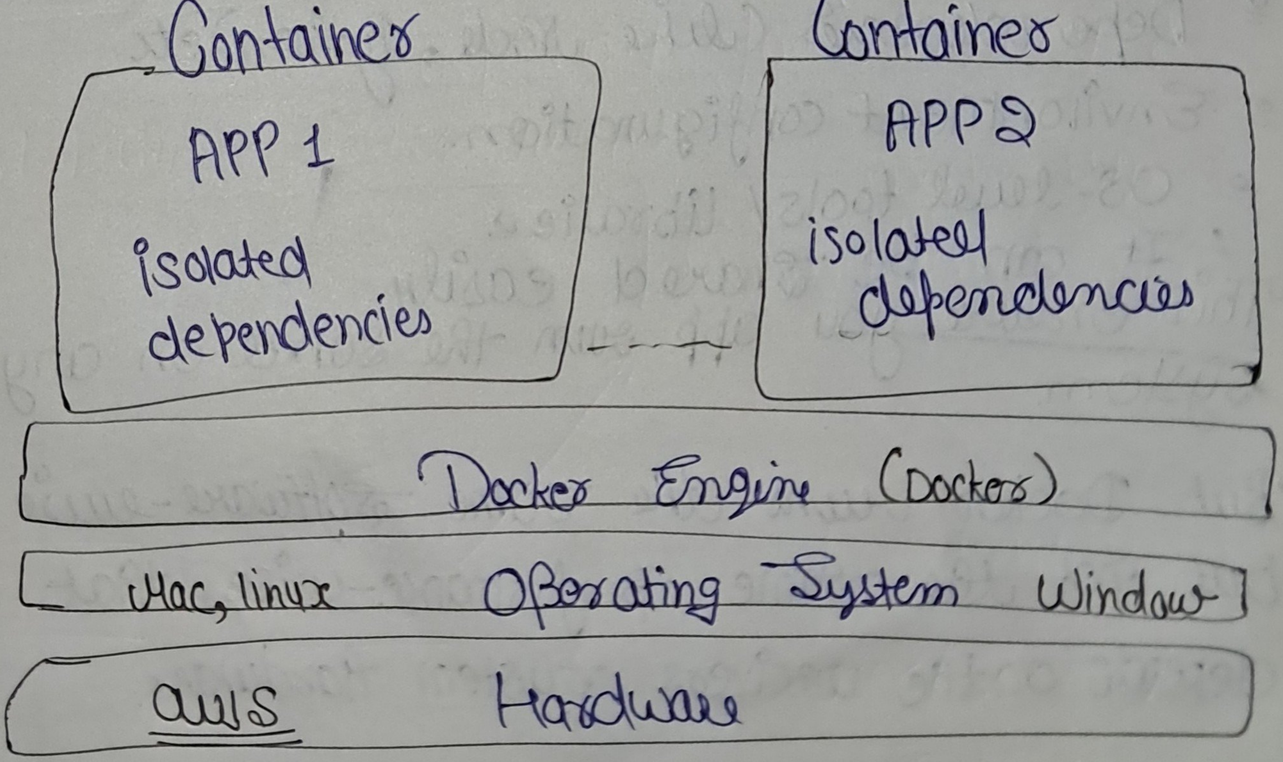
Why do we need docker

Docker lets us package apps with everything they need, so they can run the same everywhere — on the machine, server or cloud — without setup problem.

“It solve the 'It works on my machine problem'”

Architecture of docker

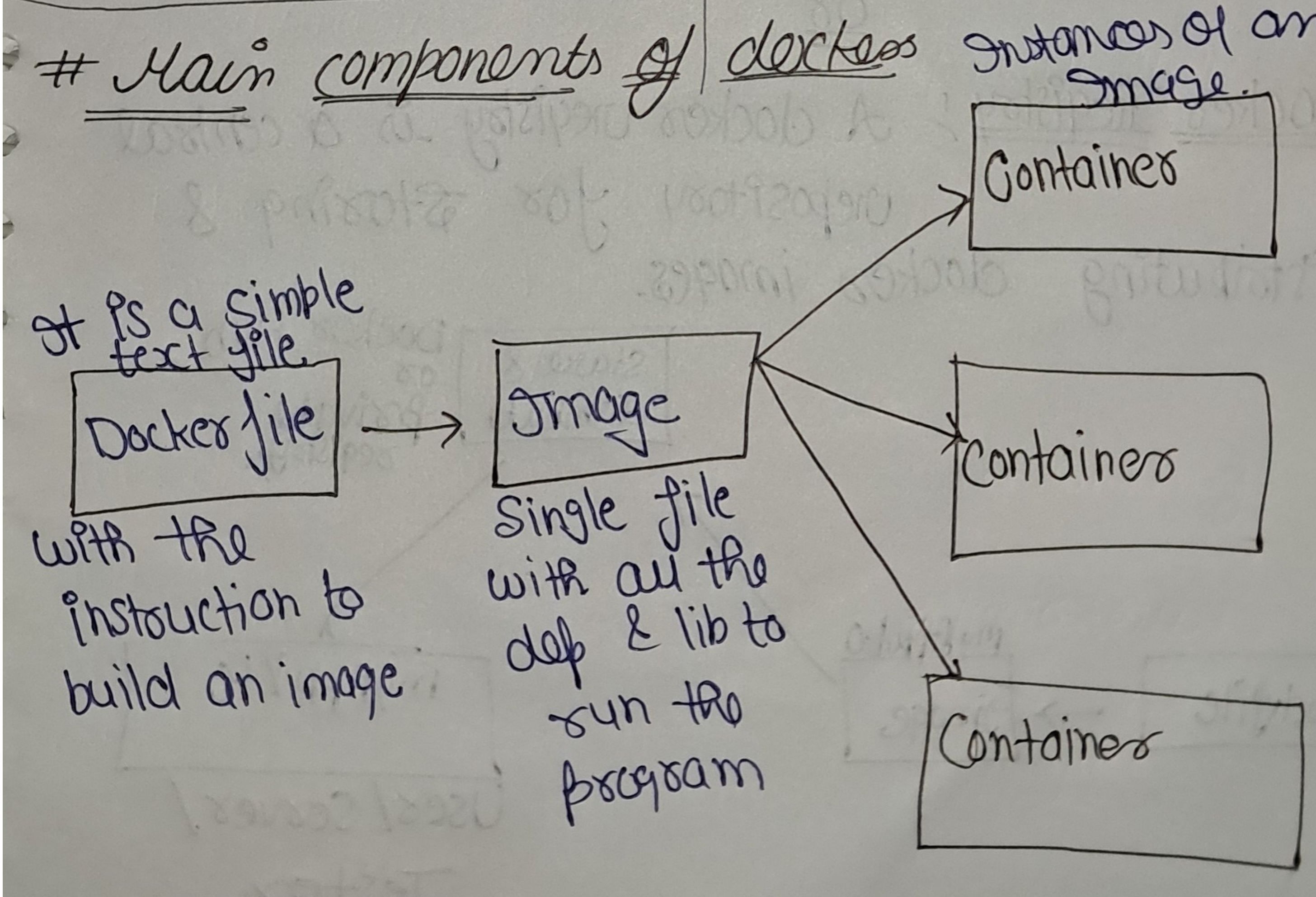
Docker allows you to run multiple apps with different environment (like Node V14 & V18 on the same system, without conflicts — thanks to Containers & docker engine).



Docker V/S VMs

Dockers	VMs
Low impact on OS, very fast, low disk space usage.	High impact on OS, slower, high disk, space wage.
Sharing, re-building and distribution is easy.	Sharing re-building & distribution is challengins
Encapsulation apps instead of whole machine.	Encapsulate whole machine.

Main components of docker


instances of an image.
Container
Container
Container
It is a simple text file.
Docker file
with the instruction to build an image
Image
Single file with all the dep & lib to run the program

Key Docker terms

1. Docker file:- A file with instruction to build your docker image.

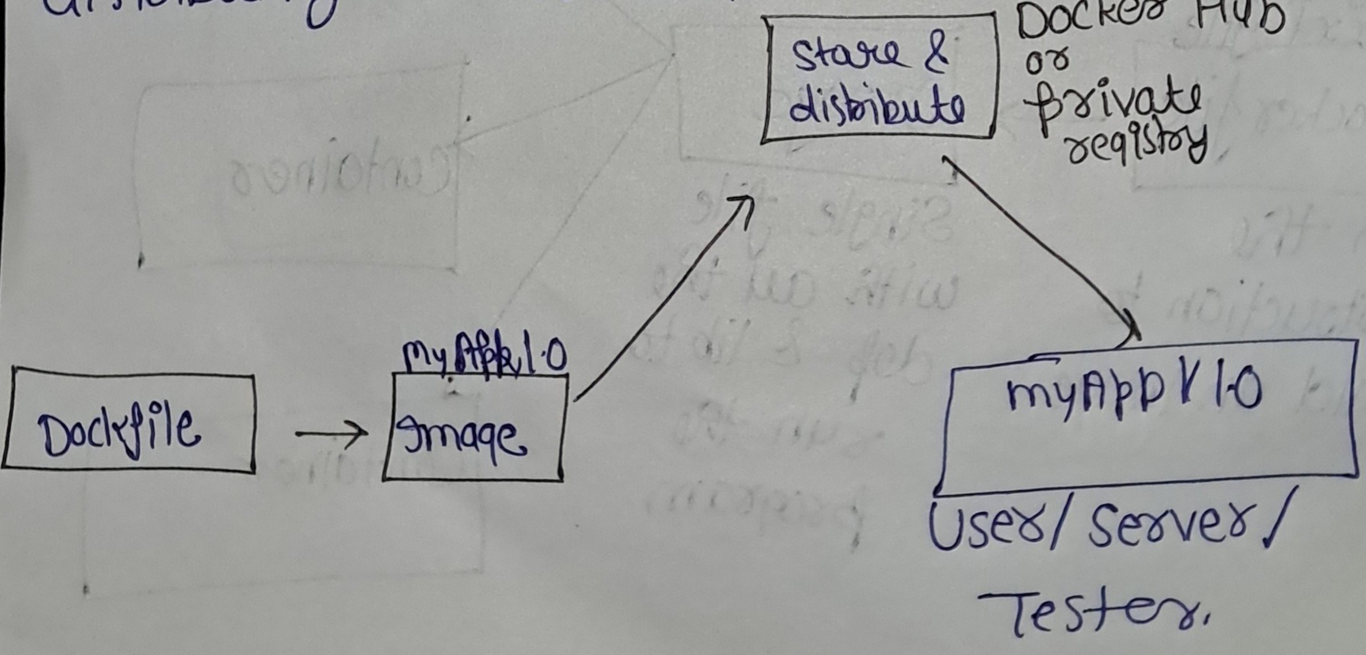
2. Image:- A packaged version of your application (like a snapshot /blueprint).

3. Container:- A running instance of Docker image.

4. Docker Hub:- Online storage (registry) to upload / share your Docker image.

or

Docker Registry:- A docker registry is a central repository for storing & distributing docker images.


Dockfile
myApp1.0
Image
Store &
distibute
Docker Hub
or
private
registry
myApp V1.0
User/ Server/
Tester.