Docker –

A platform for building, running & shipping applications.

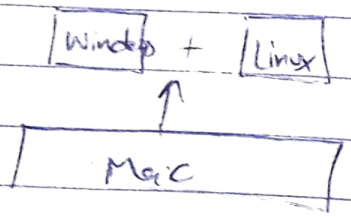
Reason we need docker –

1) One or more files missing
2) Software version mismatch
3) Different configuration settings

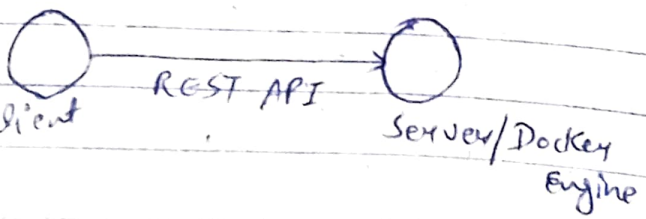
Containers / Process	Virtual machines
1) An isolated env. for running an application.	1) An abstraction of a machine (Physical hardware).
2) Allow running multiple apps in isolation.	Eg –
3) Are lightweight	app1 (Node14 Mon3) app2 (Node9 Mon2)
4) Use OS of the host.	
5) Start quickly.	
6) Need less hardware resources	

Hypervisor – Used to manage virtual machines.

Hyper-V
Virtual Box VMware (Windows only)

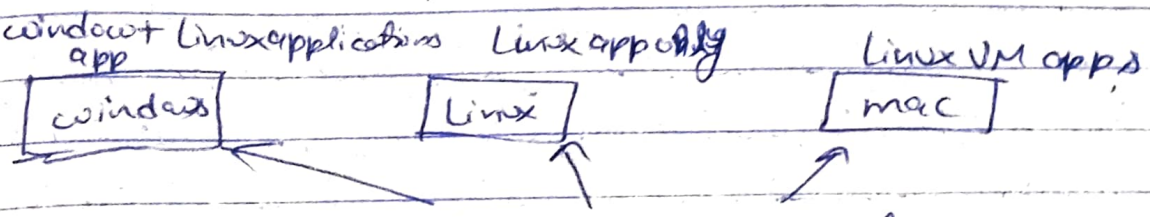


Docker architecture –



Kernel – It manages applications and hardware resources

Note – All the containers shares Kernel of the system host



- Supported applications

Install docker for version 20.10.5 –

Google – https://docs.docker.com/get-docker/

Development workflow –

1) Add docker file to the application
   docker file → Plain text file contain instruction
2) Added package of the application into a image
3) Image contains –
   i) (Image) A cut down OS
   ii) A runtime Env. (Eg – node)
   iii) Application files
   iv) Third party libraries
   v) Env. variables

Docker Actions –

Commands –

```
mkdir hello-docker
cd hello-docker
code .
```

VS code Editor —

A) create file named app.js in same dir.

(app.js)

```
console.log("Hello Docker!");
```

Command line in same dir.

```
node app.js
```

Op- Hello Docker!

Instruction —

1) Start with an OS
2) Install node
3) Copy app files
4) Run node app.js

B) Create file named Dockerfile in same dir

(Dockerfile)

or { FROM linux → Base images (like inheritence)
FROM node

i) FROM node:alpine ← linux distribution
ii) COPY ./app
iii) CMD node app.js
iv) WORKDIR /app

Terminal Commands —

i) docker build -t hello-docker .
ii) docker images ls
iii) docker run hello-docker

Return to docker hub - (online)

(Sign in) → create "codewithmosh" repo.

Docker playground —
$ docker image ls
$ docker run codewithmosh/hello-docker

Linux commands for docker (Preferred) —

Linux distributions / Distros —
1) Ubuntu (Using)
2) Debian
3) Alpine
4) Fedora
5) Centos

back to hub.docker.com/—/ubuntu (install)
command — i) docker run ~~de~~ ubuntu
ii) docker ps -a
iii) docker run -it ubuntu
root :/# echo hello
o/p - hello
root :/# whoami
o/p - root
root :/# echo $0
o/p - /bin/bash
root :/# history or ! (Past commands will be o/p)
o/p - 1. *
2. whoami
3 Echo $0
4. history
root :/# !2
o/p 1. whoami
2. Echo $0

Managing packages –

Package managers – (tool for user)
1) npm
2) yarn
3) pip
4) nuget

(– root : / # apt

Most used commands –
list – list packages based on package names
search – search in package descriptions
show – show package details
install – install packages
reinstall – reinstall ''
remove – remove ''
autoremove – remove automatically all unused ''
update – update list of available packages.
upgrade – upgrade the system by installing/upgrading ''
fullupgrade – Upgrade the system by removing/installing/upgrading
Edit-sources – Edit the source information file
satisfy – satisfy dependency strings

root : / # apt-get or
root : / # nano or (if not available)
root : # apt install nano
root : / # apt list
Root : / # apt update
root : # apt remove nano

root:/# python
root:/#

Linux file system –

Windows – C:\
* Program Files
* Windows

Linux – / – (Backslash)
* bin – binary files
* boot – Files related to booting
* dev – Stored for devices
* etc – Editable text configuration
* home – home directories
* root – for root user
* lib – libraries files
* var – Stored for variable
* proc – file represent running processes

Navigating the file system –
root:/# pwd
o/p – /
root:# ls
o/p – (packages list)
root:/# ls -1
root:/# ls -l
o/p – (long list)
root:/# ~~cd~~ cd ~~root~~ etc/a
o/p – adduser.conf alternatives/ apt/

root :# cd etc/apt/
root : /etc/apt # ls
root : /etc/apt # cd ../..
root :/#
root :/# ls
o/p (list of packages)

Manipulating files and directories –
root :# cd ~
root :~# mkdir test
root :~# ls
o/p - test
root :~# mv test docker
root :~# ls
o/p - docker
root :~# cd docker/
root :~/docker # touch hello.txt
↘ used for creating multiple .txt files
root :~/docker # rm hello.txt
or root :~/docker # rm file *
↘ for removing files or dir

Editing & viewing files –
root :# nano
root :# apt install nano
root :# nano file1.txt
root :# ls
o/p file1.txt
root :# cat file1.txt
Hello
world

root :~# more
root : ~# more /etc/adduser.conf
root : ~# apt install less
root : ~# less
root : ~# less /etc/adduser.conf
root : ~# head -n 5 /etc/adduser.conf
root : ~# tail -n 5 /etc/adduser.conf

Redirection –
root : ~# cat file1.txt
o/p – Hello
World
root : ~# cat file1.txt > file2.txt
root : ~# ls -l /etc > files.txt
root : ~# cat files.txt