Docker

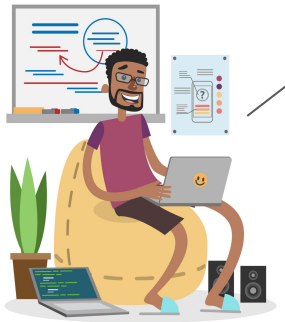
Agenda

1. What is Docker?
2. Virtual Machine Vs Containerization
3. Architecture of Docker
4. Example
5. Docker-compose
6. Exercise

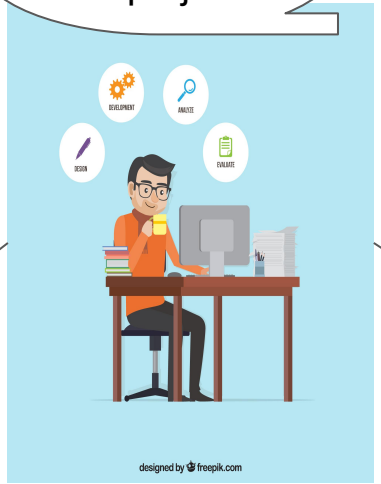
WHY DOCKER ??

It's working in my system

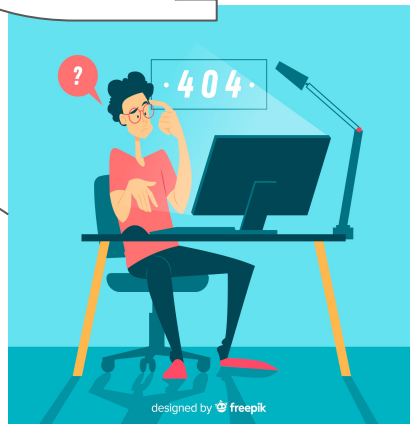
APP DEVELOPMENT



Test out our new project



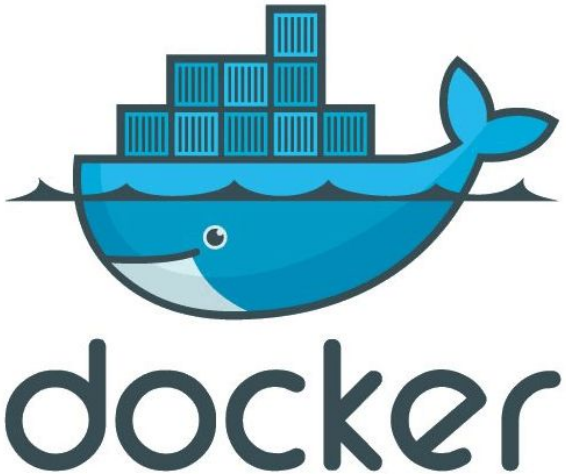
I'm facing an error



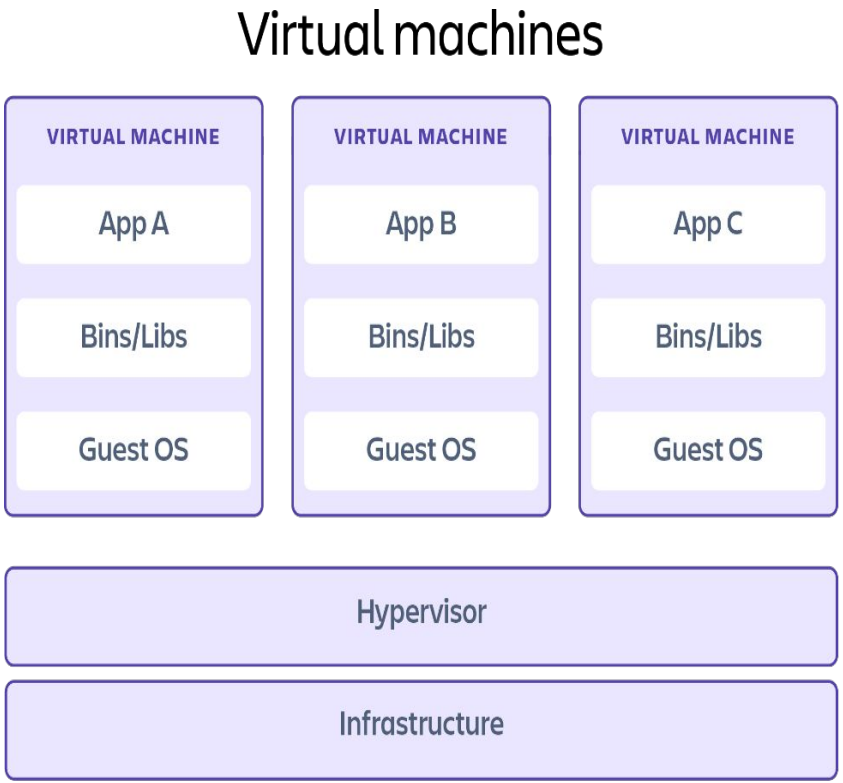
What is Docker?

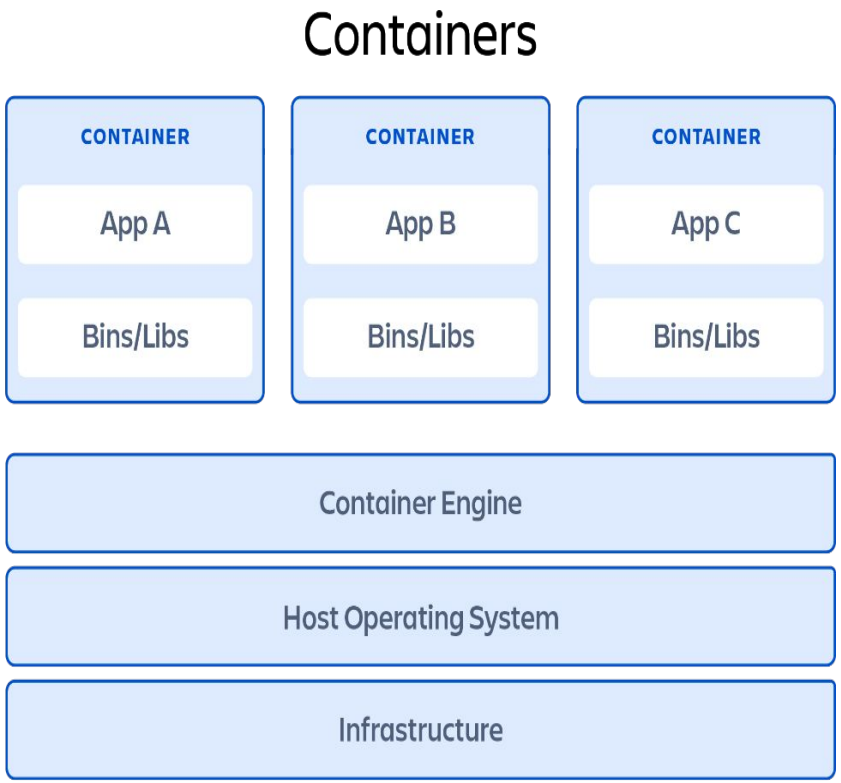
- Docker is an open platform for developing, shipping, and running applications.
- Docker provides the ability to package and run an application in a loosely isolated environment called a container.

SHIPPING EXAMPLE



Virtualization Vs Containerization

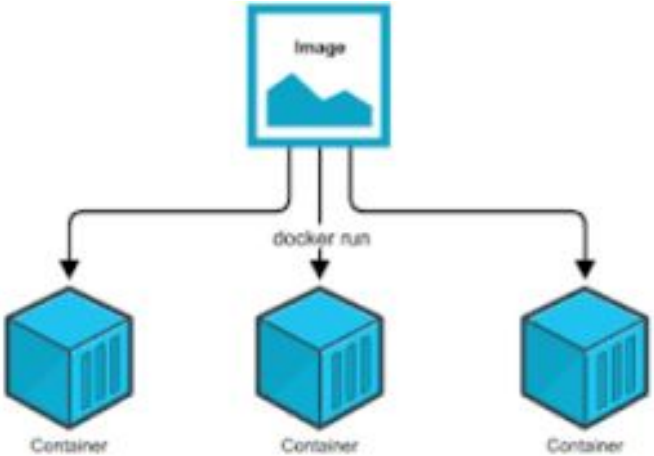




Docker Tools and Terms

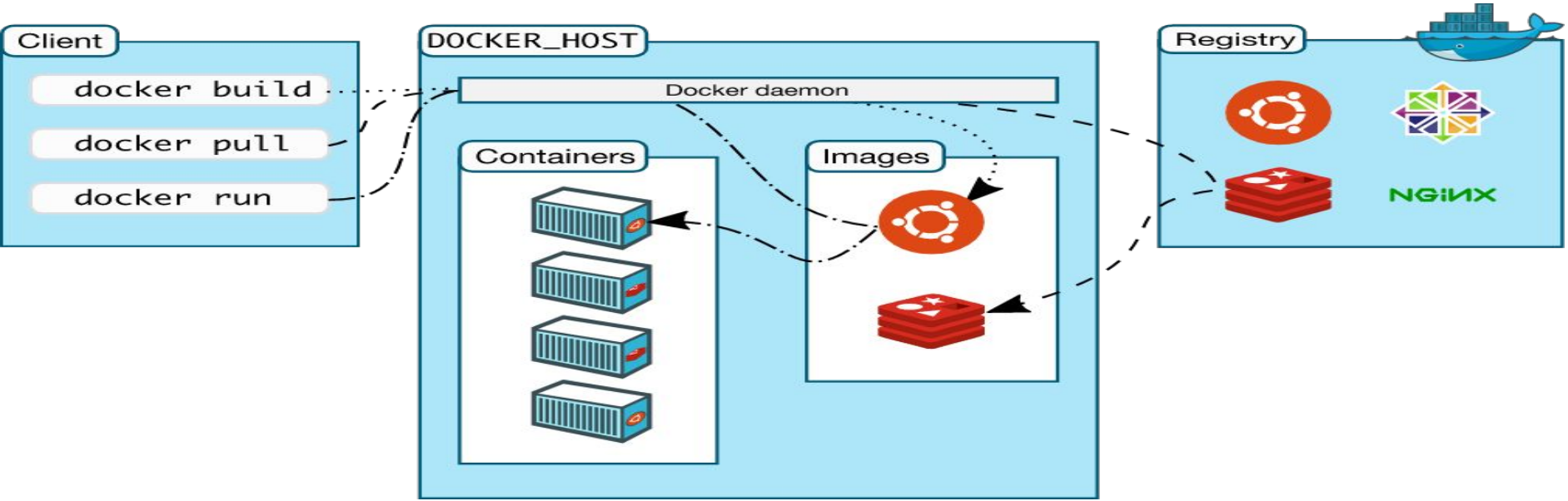
- Docker file
- Docker images
- Docker containers
- Docker Hub
- Docker daemon
- Docker registry

```
FROM ubuntu:16.04

MAINTAINER Abhishek

RUN apt-get update
RUN apt-get install -y python3 python3-pip
COPY . /app

WORKDIR /app

EXPOSE 5000

ENTRYPOINT echo "Hello World !"
```

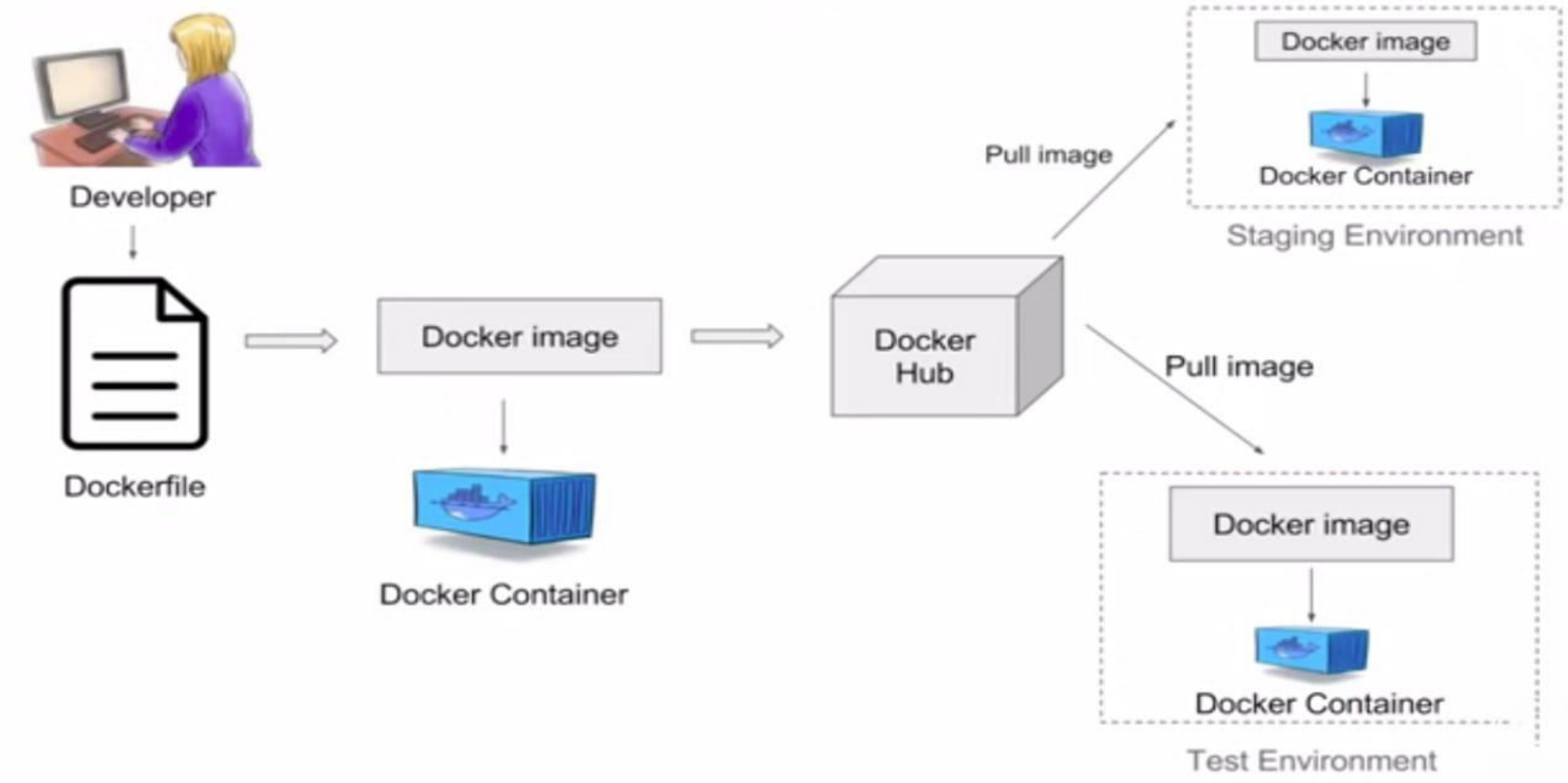


Docker architecture

Build—> Pull—>Run



How it works?


Developer
Dockerfile
Docker image
Docker Container
Docker Hub
Pull image
Docker image
Docker Container
Staging Environment
Pull image
Docker image
Docker Container
Test Environment

Dockerfile

- A Dockerfile is simply a text-based script of instructions that is used to create a container image
- Automation of Docker image creation
- Instruction sets used in the dockerfile:

  FROM

  RUN

  CMD

  EXPOSE

Steps to create a Dockerfile

Step 1: Create a file named Dockerfile

Step 2: Add instructions in Dockerfile

Step 3: Build Dockerfile and create the image using command :

docker build -t <imagename>:<tagDirectory of Dockerfile> .

Step 4: Run image to create container

docker run <imagename>:<tagDirectory of Dockerfile>

Docker-Compose

- Tool for defining and running multiple containers

Three steps

1. Define your app's environment with a `Dockerfile`.
2. Define the services that make up your app in `docker-compose.yml`
3. Run `docker compose up` and the Docker compose command starts and runs your entire app.

Steps to create docker compose file

Step 1: Install docker compose

Step 2: Create docker compose file at any location on your system

docker-compose.yaml

Step 3: Check validity of file by command: docker-compose config

Step 4: Run docker-compose.yaml file by command:

docker-compose up -d

Step 5: Bring down application by command:

docker-compose down

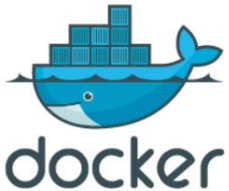
CHEAT SHEET

BASIC COMMANDS

Reminder

If You Have Installed Docker and Docker-compose using sudo , then

$ sudo <command>



CONTAINERS

#To Run A Container
$ docker run < image name >

#To Start A Container
$ docker start <container name>

#To Stop A Container
$ docker stop <container name>

Restart A Container
$ docker restart <container name>

To list running Containers
$ docker ps

To Remove A Container
$ docker rm <container name>

Execute Command Inside Container
$ docker exec <container_name> <command>

Get Into A Container
$ docker exec -it <container_name> bash

Get Logs Of A Container
$ docker logs <container_name>

DOCKER COMPOSE

#To Create & Run Containers
$ docker-compose -f <yaml file> up

#To stop & Remove Containers
$ docker-compose -f <yaml file> down

IMAGES

#To Pull An image from repository
$ docker pull < image name >

#To List Image Digest
$ docker images

#To Remove Image
$ docker rmi <image name>

To Build Image From Dockerfile
$ docker build -f < Dockerfile >

DOCKER CLEANUP

#Delete all stopped containers
$ docker container prune

#Delete All Unused Images
$ docker image prune

#To clear entire docker
$ docker system prune

KBA

THANK YOU