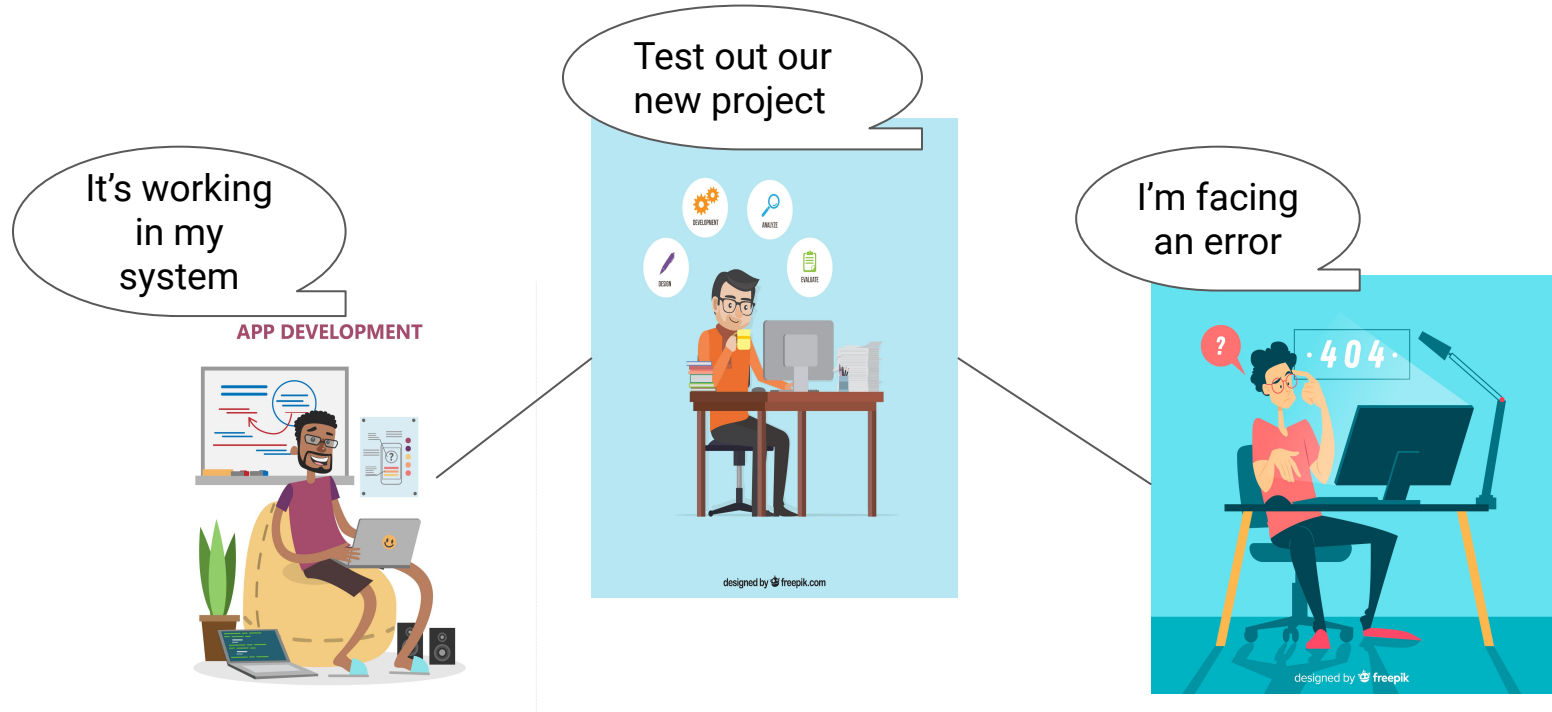


Docker

Agenda

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

WHY DOCKER ??



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.



Dockerfile

build



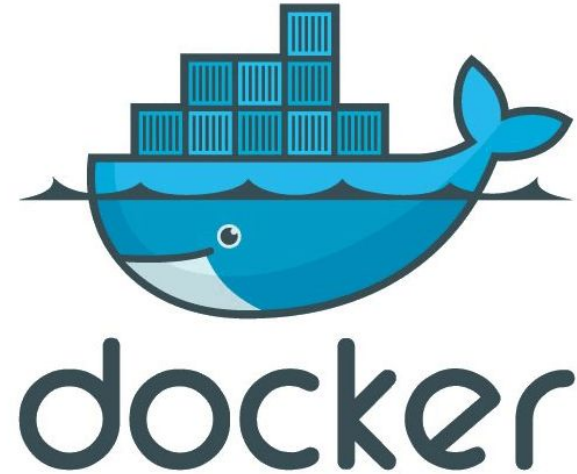
Docker Image

run



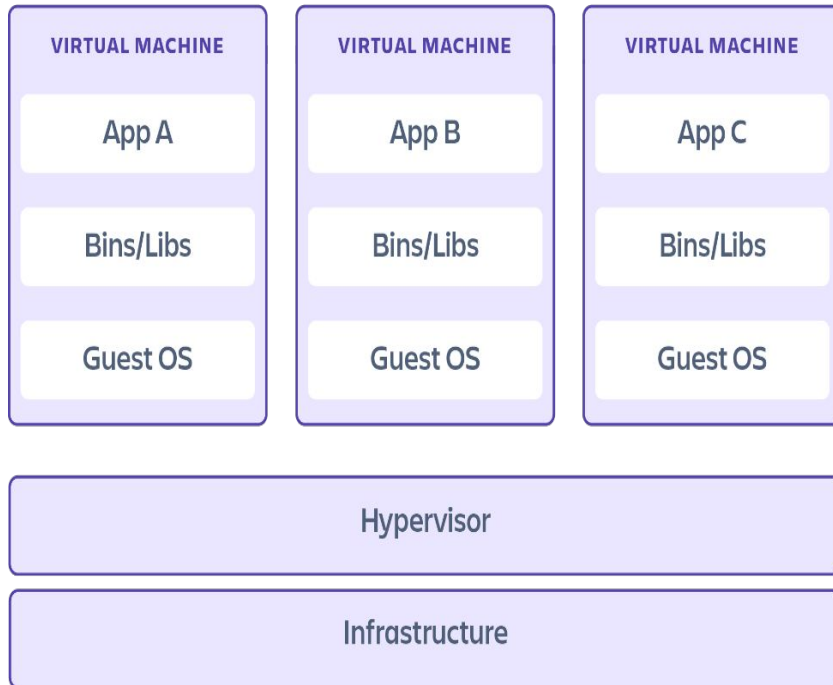
Docker Container

SHIPPING EXAMPLE

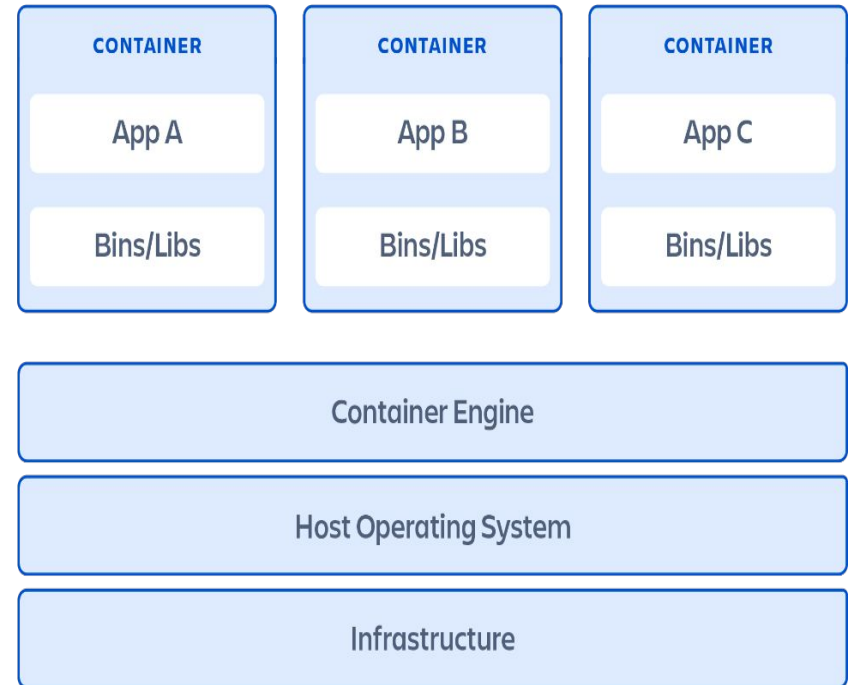


Virtualization Vs Containerization

Virtual machines



Containers



Docker Tools and Terms

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

```
FROM ubuntu:16.04

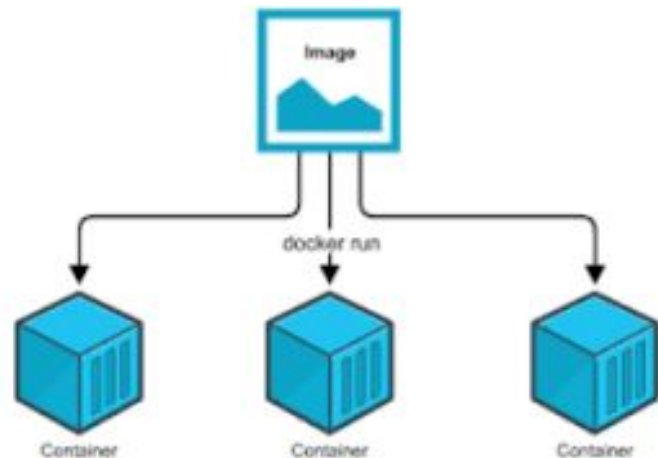
MAINTAINER Abhishek

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

WORKDIR /app

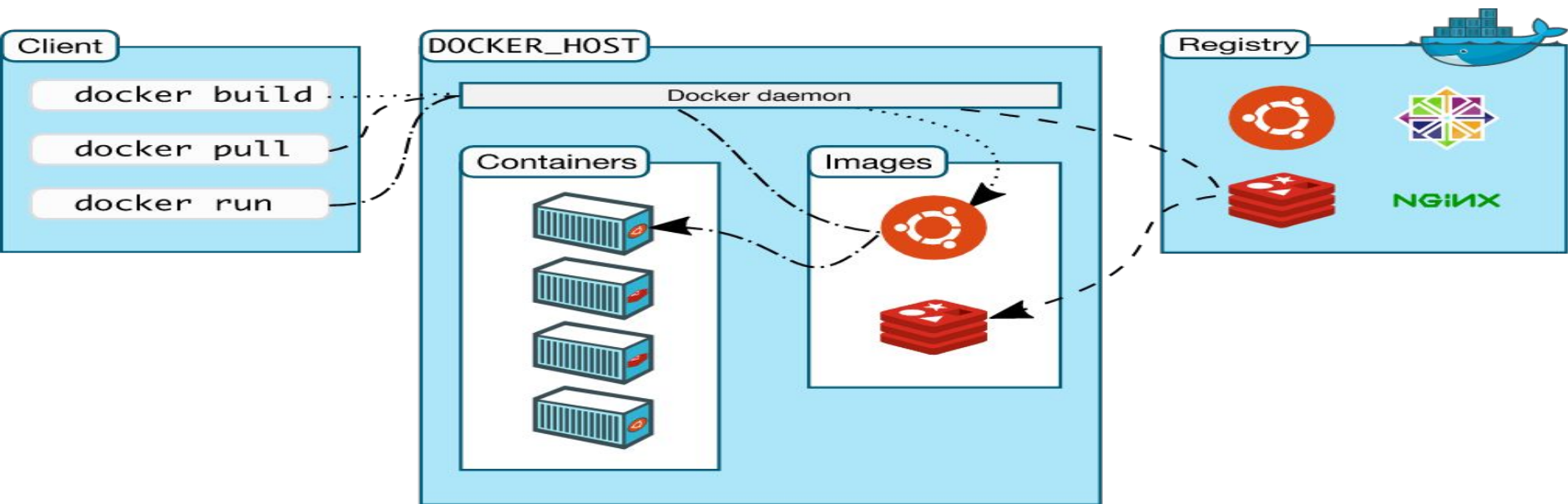
EXPOSE 5000

ENTRYPOINT echo "Hello World !"
```

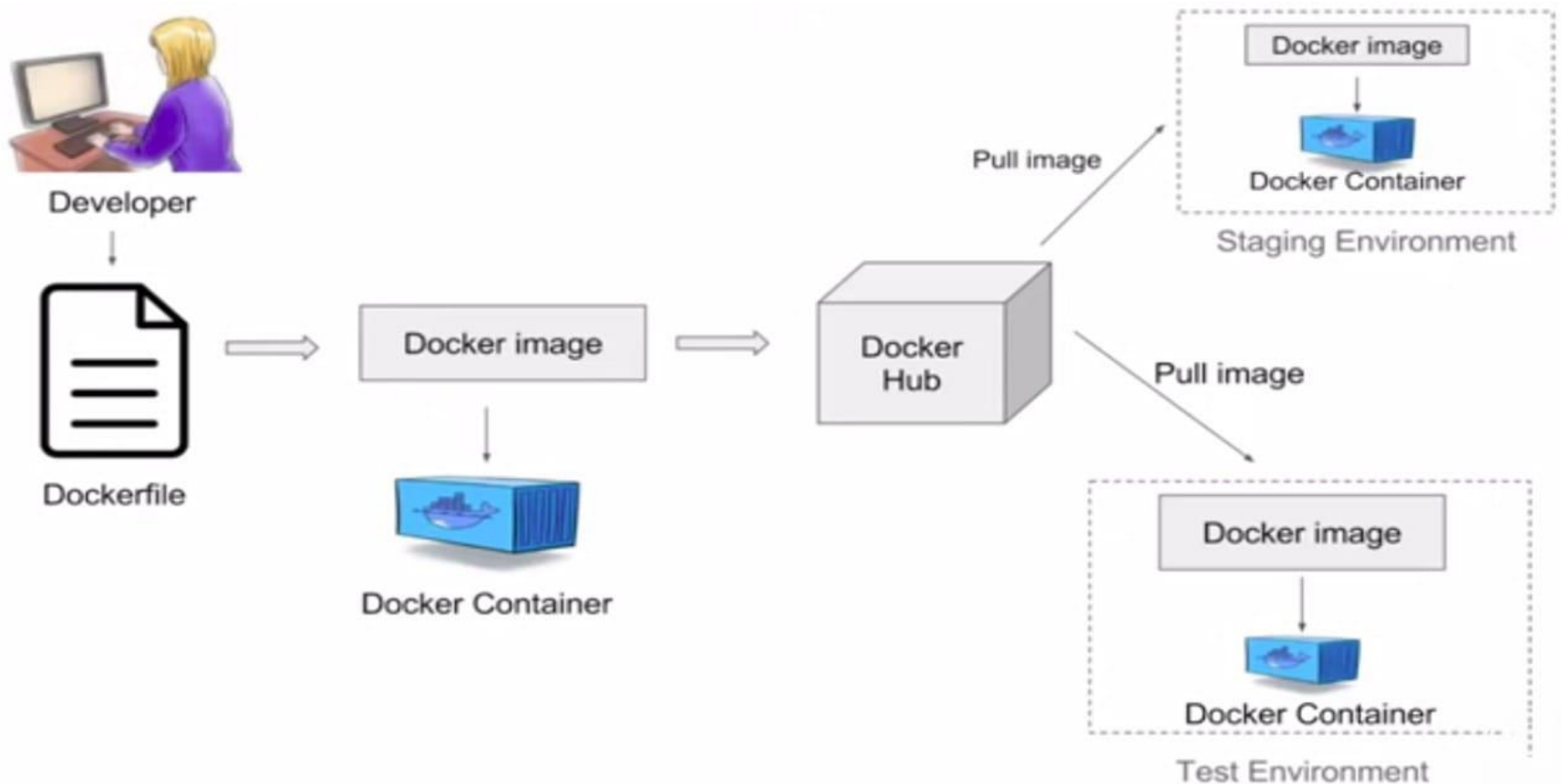


Docker architecture

Build→ Pull→Run



How it works?



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
```



THANK YOU