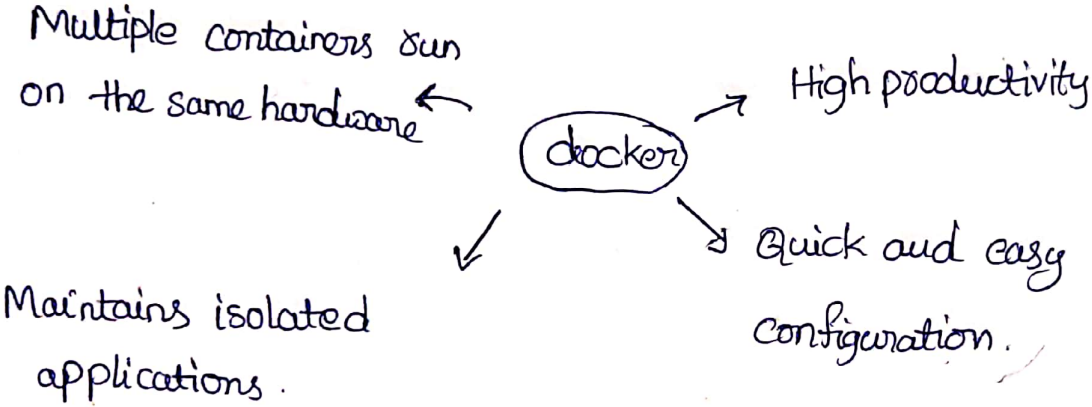
Devops

Devops is a collaboration between development and operation teams which enables continuous delivery of applications and services to our end users.

Docker

Docker is a tool which is used to automate the deployment of applications in lightweight containers so that applications can work efficiently in different environments.

Note: Container (VM) is a software package that consists of all the dependencies required to run an application.



Docker is a configuration management tool that helps a developer to wrap an application and its dependencies into a Docker Container for the development and deployment of software.

→ where as kubernet is a platform for running and managing from many container runtimes.

→ So in that kubernetes is better bcz it can manage container resources from a single control plane.

Dockerfile, Dockerimage, (Application, exe)

Dockerfile :- Dockerfile is nothing but textfile, which is having bunch of lines. Its always starts with From instruction (it specifies the base image from which we are building. with the use of docker file we have to create the images.

Container :- It is like a virtual machine and it does not have any OS.

Virtualization : It is the process that allows for more efficient utilization of physical computer hardware and is the foundation of cloud computing.

Hypervisor : helps to make virtualization and create a vm.

Containerization :- process of packing application along with its dependencies.

Commands

docker ps : It will show the container, only which containers in running presently.

docker ps -a : It will show the all container (either it is run state or stopped). started container and also stopped containers

docker pull ubuntu : It will pull the ubuntu image.

docker run ubuntu : It will checks first ubuntu is present in the docker-hub, then it will pull the image as well as container.

Suppose If we want to create container for particular image. Then we use following command.

docker run -it ubuntu (it means interactive mode)

→ After executing this command we will present in the container.

→ Now, we need to check if this container is belongs to our required image or not

→ ~~In order~~ so for this we need to execute below command

cat /etc/os-release

→ To change the name of the container, we can use below command.

"docker run -it --name ramya ubuntu"

→ docker start ramya
docker stop ramya

To build image from container:

To show all the files in container (use) "docker exec -t -i"

docker exec -t -i container name command

Docker registry is a place to store and distribute Docker images.

Docker File (bcz to build our own image)

→ It is basically a text file which contains basic set of instructions.

→ Automation of docker image creation.

Docker File Components:

docker build -t (basically builds the image)
t means tagname.

docker push will push the image into docker hub.

docker compose:- we can run multiple applications at a time. Using these compose Command we can create and start one or more containers for each dependency with a single command.

→ docker compose config.

docker-compose up-d command is used to starts the containers in the background and leaves them running state.

docker-compose down - it stops the containers.

Docker Hub

→ It is the public repository provided by the Docker itself for pushing and pulling the images.

→ when any particular image is required by the container, docker first checks the local system if the required image is present. If not it simply doconloads.

Docker Registry

→ Registry is the feature provided by the Docker to create our own private repository for storing the images

docker port <container_id> (It will check exposed ports of a container)

docker top containerId (shows the running process of a container.)

docker ps -q (list only container id's of running container)

docker ps -n 5 (prints 5 recently created containes.

docker stats (This shows cpu and memory percentage used by Containers)

docker cp (This can be used to copy files from local system to docker container)

docker login (command to login to docker registry)

-d (It is used to run the container in the background).

docker commit <id> -m (Commit changes done in a docker image)

docker exec -it container_id bash (Accessing a running container)

Image: Image is a layered architecture, it is immutable

Image is created from docker file

→ Image contains OS and application code every thing is build in image.

container engine: It is used to create the containers.

containerization: It is used to lunch the applications with less resources.

Docker Architecture

Whenever the client push a docker commands like push, pull, build that client commands goes to the docker demon in that it trys to the image found are not if found it creates the container otherwise it goes to the docker hub registry it will pull the image and create the container.

Security groups It is used to control the traffic of incoming & outgoing traffics