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DOCKER

Objectives:

- What are containers?
- What is docker?
- Why do you need it?
- What can it do?

- Run docker Containers.
- Create a Docker Image
- Networks in Docker
- Docker Compose

- Docker Concepts in Depth

- Docker for windows/mac

- Docker Swarm
- Docker Vs Kubernetes.

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Why do you need docker?

- Compatibility / Dependency
- Long setup time
- Different Dev / Test / Prod Environments.

What can it do?

- Containerize Applications
- Run each service with its own dependencies in seperate containers.

What are containers?

Containers are completely isolated environments. As in they can have their own processes or services, their own network interfaces, their own mounts.
Docker utilizes LXC (Linux containers).

Container vs image

An image is a package or a template which is used to create one or more containers.
Containers are running instances of images

that are isolated and have their own environment and set of processes.

DOCKER COMMANDS:

→ **Run - start a container**

The docker run command is used to run a container from an image.
If the image is not present on the host, he will go out to Docker Hub and pull the image down.
e.g docker run nginx

→ **PS - list containers**

The docker ps command lists all running containers and some basic information about them. Such as container ID, name of the image, the current status, etc.
Each container gets a random ID automatically and name created for it by Docker.
e.g docker ps
docker ps -a

To see all containers running or not, use the dash a option. This outputs all running as well as previously stopped or exited containers.

→ Stop - stop a container.

To stop a running containes use the Docker stop command, but you must provide either the container ID or the container name in the stop command.
e.g docker stop [container ID]

→ Rm - Remove a containes

Use the docker command "rm" to remove a stopped or exited containes permanently. If it prints the name back, we are good.
e.g docker rm [containes name]

→ images - List images

Use the docker command "images" to see a list of available images and their sizes.
e.g docker images

→ rmi - Remove images

Use the docker command "rmi" to remove an image that you no longer plan to use. Remember you must ensure that no

containers are running off of that image before attempting to remove the image. You must stop and delete all dependent containers to be able to delete an image.

e.g docker rmi [container name]

→ Pull - download an image

Use the docker pull command to only pull the image and not run the container.

e.g docker pull [container name]

Note:

Unlike virtual machines, containers are not meant to host an operating system. Containers are meant to run a specific task or process such has host an instance of a web server or application server or a database, or simply to carry some kind of computation or analysis task. Once the task is complete, the container exits. a container only lives as long as the process inside it is alive.