AIOPS Assignment 4

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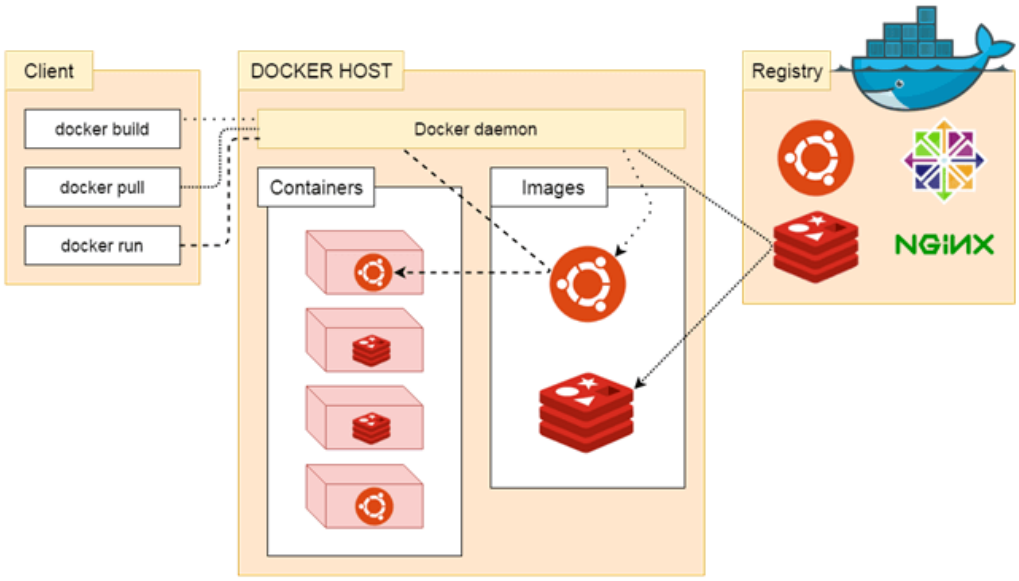
1. **What is Docker, and why is Docker used?**
   Docker is an open-source containerization platform used for developing, deploying, and managing applications in lightweight virtualized environments called containers.
   It is mainly used as a software development platform for developing distributed applications that work efficiently in different environments. By making the software system agnostic, developers don't have to worry about compatibility issues. Packaging apps into isolated environments (containers) also makes it easier to develop, deploy, maintain, and use applications.
   Since Docker utilizes virtualization to create containers for storing apps, the concept may seem similar to virtual machines. Although both represent isolated virtual environments used for software development, there are important differences between containers and VMs. The most crucial distinction is that Docker containers are lighter, faster, and more resource efficient than virtual machines.

2. **Explain the Docker architecture?**



a. Docker Client
Docker client uses commands and REST APIs to communicate with the Docker Daemon (Server). When a client runs any docker command on the docker client terminal, the client terminal sends these docker commands to the Docker daemon. Docker daemon receives these commands from the docker client in the form of command and REST API's request.

Note: Docker Client has an ability to communicate with more than one docker daemon. Docker Client uses Command Line Interface (CLI) to run the following commands -

- docker build
- docker pull
- docker run

b. Docker Host

Docker Host is used to provide an environment to execute and run applications. It contains the docker daemon, images, containers, networks, and storage.

c. Docker Registry

Docker Registry manages and stores the Docker images.

There are two types of registries in the Docker -

- Public Registry - Public Registry is also called as Docker hub.
- Private Registry - It is used to share images within the enterprise.

3. What do you mean by a Dockerfile?

Dockerfile is a text document containing all the commands the user requires to call on the command line to assemble an image. With the help of a Dockerfile, users can create an automated build that executes several command-line instructions in succession.

4. What do you mean by Docker Images?

Docker Image is an executable package of software that includes everything needed to run an application. This image informs how a container should instantiate, determining which software components will run and how. Docker Container is a virtual environment that bundles application code with all the dependencies required to run the application. The application runs quickly and reliably from one computing environment to another.

5. What do you mean by Docker Hub?

Docker Hub is a repository service and it is a cloud-based service where people push their Docker Container Images and also pull the Docker Container Images from the Docker Hub anytime or anywhere via the internet. It provides features such as you can push your images as private or public. It is like storage where we store the images and pull the images when it is required.

6. Which command can be used to check Docker Client and Docker Server Version?

docker version

Show the Docker version information

```
docker version [OPTIONS]
```

By default, this will render all version information in an easy to read layout. If a format is specified, the given template will be executed instead.

7. How to create a Docker container from an Image?

We can create Docker Images in 3 ways:
1. Take image from Docker Hub
2. Create image from existing docker containers
3. Create image from Docker file

Steps to Follow

1. Take Image from Docker Hub.
2. create a container from image (take from docker hub).
3. Search images in in online docker registry (Docker Hub).
4. Download images from online docker registry (Docker Hub).
5. Create container from image “chef/chefdk”.
6. Create container “ktexperts-container” (give container name while creating a container).
7. Rename the containers.
8. Go inside the exisitng container “ktexperts-container”.
9. Delete Containers.
10. Delete Images.