**Introduction to Docker:**  
Docker is a very popular and powerful open-source containerization platform that is used for building, deploying, and running applications.

**What is a Container?**  
A container is a standard unit of software bundled with dependencies so that applications can be deployed fast and reliably b/w different computing platforms.

* Docker container doesn’t require the installation of a separate operating system. Docker makes use of the kernel’s resources and uses resource isolation for CPU and memory
* The main aim of docker containers is to get rid of the infrastructure dependency while deploying and running applications

**Docker Images:**

They are executable packages (bundled with application code & dependencies, software packages, etc.) for the purpose of creating containers.

**Docker File:**

It is a text file that has all commands which need to be run for building a given image.

**What is the functionality of a hypervisor?**

* A hypervisor is a software that makes virtualization happen. This divides the resources of the host system and allocates them to each guest environment installed.
* This means that multiple OS can be installed on a single host system.

**What can you tell about Docker Compose?**

It is a YAML file consisting of all the details regarding various services, networks, and volumes that are needed for setting up the Docker-based application. So, docker-compose is used for creating multiple containers, host them and establish communication between them. For the purpose of communication amongst the containers, ports are exposed by each and every container.

**Can you tell something about docker namespace?**

Namespaces introduce a layer of isolation amongst the containers. In docker, the namespaces ensure that the containers are portable and they don't affect the underlying host.

**What is docker image registry?**

* A Docker image registry, is an area where the docker images are stored. Instead of converting the applications to containers each and every time, a developer can directly use the images stored in the registry.
* This image registry can either be public or private and Docker hub is the most popular and famous public registry available.

**Differentiate between virtualization and containerization.**

| **Virtualization** | **Containerization** |
| --- | --- |
| This helps developers to run and host multiple **OS** on the hardware of a single physical server. | This helps developers to deploy multiple **applications** using the same operating system on a single virtual machine or server. |
| **Hypervisors** provide overall virtual machines to the guest operating systems. | **Containers** ensure isolated environment/ user spaces are provided for running the applications. Any changes done within the container do not reflect on the host or other containers of the same host. |
| These virtual machines form an **abstraction of the system hardware** **layer**this means that each virtual machine on the host acts like a physical machine. | Containers form **abstraction of the application** **layer** which means that each container constitutes a different application. |

### Can you tell the difference between CMD and ENTRYPOINT?

* CMD commands can be changed at run time (while creating the container), but not at the ENTRYPOINT run time.
* ENTRYPOINT specifies that the instruction within it will always be run when the container starts.   
  - The most commonly used ENTRYPOINT is /bin/sh or /bin/bash for most of the base images.
* Every DockerFile should have at least one of these two commands

### Can you tell the difference between ADD and COPY?

**COPY** provides just the basic support of copying local files into the container whereas **ADD** provides additional features like remote URL and tar extraction support.