* What does it mean to create a Docker image and why do we use Docker images?

A Docker image is a file used to execute code in a Docker container. Docker images are built by writing a Dockerfile for the application we want to run, after which we build the image with a docker build command. Then the image is hosted and run on a machine. The Docker images act as a set of instructions to build a Docker container, like a template. Docker images also act as the starting point when using Docker. A Docker image is a read-only template that contains a set of instructions for creating a container that can run on a Docker platform. It provides a convenient way to package applications and preconfigured server environments which one can use for one’s own private use or share with other Docker users. Docker is a platform that allows us to build, test, deploy applications quickly. Docker packages software into standardized units called containers that have everything the software needs to run - including libraries, system tools, code, and runtime.

* Explain what is the difference from a Container vs a Virtual Machine?

Containers are lightweight software packages that contain all the dependencies required to execute the software application. These include systems libraries, operating system level applications, and all other external software packages. Docker is the most popular and widely used container. Containers on Docker can be instantly downloaded and deployed.

VM are heavy software packages that provide complete emulation of hardware devices like CPU, Disk, and Networking devices. VM run in isolation as a standalone system. VM run multiple OS on a single server whereas Containers run a single OS instance with multiple user spaces to isolate the processes from one another. Containers virtualize OS so the application can run independently on any platform. VM go beyond to virtualize physical machines so you can use your hardware resources efficiently. Containers are generally faster and less resource intensive than VM. VM virtualization have unique benefits – such as security and isolation. Containers are packages of software that contain all the necessary elements to run in any environment, because of which they virtualize the OS and run anywhere – from a private data center to the public cloud.

* What are 5 examples of container orchestration tools (please list tools)?

Kubernetes is the most popular orchestration platform and the leading of the public cloud providers - including AWS, Google Cloud Platform, IBM Cloud, and Microsoft Azure. These all offer managed Kubernetes services. Azure AKS, Google GKE, Amazon EKS, Red Hat OpenShift, Platform9, and IBM Cloud Kubernetes Service. Nearly all Kubernetes users use cloud-managed services.

Kubernetes is an open-sourced, out-of-the-box container orchestration tool. It comes with an excellent scheduler and resource manager for deploying highly available containers more efficiently.

* How does a Docker image differ from a Docker container?

To make Docker image, we create Dockerfile. The images are used to package up applications and pre-figured server environments. Images are shared on Docker Hub. Images are created only once. Docker containers are created any number of times using images. Containers require computing resources to run. Containers use server information and file system provided by an image to operate.