KARTHIK R NAYAK 4NI19IS051 7TH 'A'

DevOps Assignment-02

1. Comparison between hypervisor and docker

A hypervisor is software that allows multiple operating systems to run on a single physical host by abstracting the underlying hardware and creating virtual machines (VMs). Each VM is a self-contained environment that includes its own operating system, applications, and configuration settings.

Docker is a containerization platform that allows developers to package applications and their dependencies into lightweight, portable containers. Unlike VMs, which include a full operating system and virtual hardware, containers share the host operating system and use resource isolation to run multiple applications on a single host.

Here are some key differences between hypervisors and Docker:

Isolation: VMs provide stronger isolation between applications, as each VM runs in its own self-contained environment with its own operating system. Containers provide less isolation, as they share the host operating system and rely on resource limits to prevent one application from consuming too many resources.

Performance: Containers generally have lower overhead than VMs, as they do not require a full operating system and virtual hardware. This makes them faster and more efficient to run.

Scalability: Containers are more scalable than VMs, as they are lightweight and can be quickly started and stopped as needed. This makes it easier to scale applications up and down in response to changing demand.

Portability: Containers are more portable than VMs, as they can be easily moved between hosts without requiring any configuration changes. This makes it easier to deploy applications in different environments.

Both hypervisors and Docker have their own strengths and use cases, and the right choice will depend on your specific needs and requirements.

2. Comparison between container and virtual machine

Sl.No	VM	Container
1	The hardware is virtualized to execute several Operating system instances with VMs	Containers facilitate a way for virtualizing the operating system so that several workloads can execute on an individual operating system instance
2	VM is managed via hypervisor and uses VM hardware.	Containers give services of OS from an underlying host and also separate the applications utilizing virtual-memory hardware.
3	VM facilitates the abstract machine which utilizes device drivers addressing an abstract machine.	Container facilitates the abstract operating system.
4	VM technologies are well-known within various embedded communities.	The container has been grown on several clouds and servers with organizations like Google and Facebook. For example, all services of Google Docs get a container/instance.
5	Higher overhead	Lower overhead
6	VM permits us for installing other software so virtually we control it as disputed to install the software on a computer directly.	The containers are software that permits distinct application's functionalities independently.
7	Applications executing on virtual machine system can execute distinct OS.	Applications executing within the container environment contribute to an individual OS.
8	VMs have a large size.	Containers are very light (some megabytes).
9	It utilizes a lot of memory of the system.	Containers utilize very less system memory.
10	VM is helpful if we need each resource of OS to execute several applications.	A container is helpful if we needed to maximize various executing applications with minimal servers