**Docker:-**

Docker is a set of platform as a service products that use OS-level virtualization to deliver software in packages called containers. The service has both free and premium tiers. The software that hosts the containers is called Docker Engine. It was first released in 2013 and is developed by Docker, Inc.

**What is container?**container provides isolated environment to run an application.  container contains everything needed to run an application –code, dependencies, version and libraries.

- Containers:

- Share the host OS kernel.

- Lightweight and fast to start.

- Suitable for micro services and modern cloud applications.

- Virtual Machines (VMs):

- Include a full OS with its own kernel.

- More resource-intensive and slower to start.

- Useful for running multiple different os on a single host

**Why use Docker?**

Using Docker can help you ship your code faster, gives you control over your applications.

You can deploy applications on containers that make it easier for them to be deployed, scaled, perform rollbacks and identify issues.

1.Docker Engine: The runtime that executes and manages containers on a host operating system.

It consists of the Docker daemon (dockerd), which manages Docker objects (images, containers, networks, and volumes), and the Docker CLI, which allows users to interact with the Docker daemon.

2. Docker client: is the primary way to interact with Docker. Docker client can communicate with multiple daemon

3. Docker Daemon: It listen of Docker API request and manages docker object such as images, containers, and network. A daemon can also communicate with other daemons to manage Docker services.

It is responsible for building, running, and managing Docker containers.

4. Docker registries: Docker registry stores Docker images. Docker Hub is a public registry that anyone can use, and Docker looks for images on Docker Hub by default.

Q What is docker file?

Docker can build images automatically by reading the instructions from a Dockerfile.

A Dockerfile is a text document that contains all the commands a user could call on the command line to assemble an image.

## Commands :-

Docker container ls  :- it shows running container list

Docker container run ubuntu

Docker container ls -a

Docker container ls == docker ps

Docker container rm [container id (first 2 r 3 words required onl)] (we can delete multiple container at once by define container ids)

Docker container start  [container id]

Docker container stop  [container id]

Docker container run -d ubuntu [-d for detach]

Docker container run -it ubuntu /bin/bash :- to enter a running container

Docker container ls -aq :- it shows the all containers ids

Docker container rm $(docker container ls -aq) :- it deletes all containers at once

Docker container run -d nginx

Sudo docker container inspect [img id]

Docker container logs [id] :- it shows logs

Docker container top [container id] :- it shows processes inside a container

Docker container inspect [imgb id] :- to inspect container and network configuration settings

Docker container ststs :- list all container memory utilization