Docker is the world’s leading software container platform. Developers use Docker to eliminate “works on my machine” problems when collaborating on code with co-workers. Operators use Docker to run and manage apps side-by-side in isolated containers to get better compute density. Enterprises use Docker to build agile software delivery pipelines to ship new features faster, more securely and with confidence for both Linux and Windows Server apps.

1. **Introduction**

■ Container vs Virtualization

■ Container solution available in market

■ Why Docker  
 ■ Docker Story  
 ■ Types of Docker(CE & EE)  
 ■ Docker releases

1. **Docker Setup**

■ Installing Docker on Linux   
■ Installing Docker on Windows  
■ Important configuration files/directories

1. **Docker Components**

 ■ Docker daemon  
 ■ Dockerfile  
 ■ Docker images  
 ■ Docker containers

■ Docker compose  
 ■ Swarm (Service/Stack)

1. **Explore Docker Daemon**

 ■ What is Docker daemon/services  
 ■ Configuration and settings  
 ■ Useful commands and troubleshooting

1. **Explore Dockerfile**

 ■ What is Dockerfile  
 ■ How to create Dockerfile

■ Explore various DIRECTIVE in Dockerfile (like FROM, ENV, CMD, etc)

■ Best practices for writing Dockerfile

1. **Explore Docker Images**

 ■ What is docker images  
 ■ How to create images from Dockerfile  
 ■ How to manage images

1. **Docker Resitory**

■ What is docker repositories  
■ Docker official repository (Docker Hub)  
■ Play with Docker Hub (Register/Login/Image Pull/Push)

1. **Docker Containers**

 ■ What is docker containers  
 ■ How to spin up containers  
 ■ How to manage containers

■ Life-cycle of containers (Ephemeral)

1. **Docker Volumes**

 ■ Types of volumes

* Volumes
* Bind mounts
* tmpfs mounts

■ Maintain application data persistency

1. **Docker Storage drivers**

 ■ Types of storage drivers

■ How to use docker storage drivers

■ Exploring layers of docker image

1. **Docker Networking**

 ■ Understanding docker networking  
 ■ Use bridge networks  
 ■ Use overlay network  
 ■ Use host networking

■ Use MacVLAN

■ Disable networking for container  
 ■ Binding containers with host ports  
 ■ DNS configuration inside container

 ■ Useful commands and settings

1. **Docker Clustering**

 ■ How clustering works in docker  
 ■ Docker native clustering using Swarm

 ■ Writing compose file  
 ■ Docker swarm configuration and set up  
 ■ Demonstration of multi node clustering

■ Join nodes to a swarm

■ Manage nodes in swarm

■ Run application on swarm multi-node cluster  
 ■ Use case scenarios and troubleshooting

1. **Docker Administration**

 ■ Collecting Docker metrics  
 ■ Limiting resources (CPU/RAM) inside containers  
 ■ Docker waste management (Prune unused objects)  
 ■ Docker Logging and Troubleshooting

1. **Docker Advance coverage**

■ Apply custom metadata to objects  
 ■ Format command and log customization

■ Start containers automatically  
 ■ How to manage private registry

■ Use of Docker in Jenkins build

■ AWS Container (ECS)