

Module 1 — Fundamentals & Installation

1. Introduction

- What is Application Stack
- Challenges with Deployments
- What is Virtualization & its Problems
- Containerization Introduction
- What is Docker & Docker Features
- Applying the Solution with Docker

2. Docker Installation

- Install Docker on Linux/Mac/Windows
- Start, Stop & Uninstall Docker Service
- Docker ECS Introduction

Module 2 — Architecture & Commands

3. Docker Architecture

- Docker Client & Docker Engine
- Dockerfile, Docker Images & Docker Hub
- Docker Containers — Lifecycle Overview
- Docker Hub Account Creation

4. Docker Commands

- docker version, info, help
- docker images, pull, rmi
- docker ps, login, push, rm
- Hands-on practice with all core commands

Module 3 — Images & Containers

5. Writing Dockerfile

- Creating a Dockerfile
- Visual Source Code IDE Setup
- Instructions — FROM, MAINTAINER, COPY, ADD
- Instructions — RUN, CMD, ENTRYPOINT, VOLUME

6. Docker Images

- Base Image & Layered Structure

- Internals of Docker Image
- Build Process — Tagging & Generation
- Run, Inspect, Remove and Prune Images
- Image Generation with Docker Commit

7. Docker Containers

- Running Containers from Images
- Container Lifecycle — Start, Stop, Restart, Remove
- Multi-container with Dependencies
- Running Containers in Bash Mode (IT flag)
- Container Isolation

Module 4 — Volumes, Compose & Networking

8. Docker Volume

- Advantages of Volumes
- Bind Mounts vs Volumes
- Creating, Listing & Removing Volumes
- Running Containers on Volumes

9. Docker Compose

- Installation & Docker Compose File
- Check File Validity
- Run, Stop & Scale Containers with Compose

10. Docker Networking

- Types of Networks — Host, Bridge, None
- Creating Custom Bridge Networks
- Creating Containers in Custom Networks