

The logo for HACKERU, featuring a stylized blue 'H' followed by the word 'ACKERU' in a bold, blue, sans-serif font.

Docker Introduction

24
Academic Hours

Docker Introduction

Outline

Docker is a minimal Linux sandbox environment, an open-source engine which automates the deployment of applications as highly portable, self-sufficient containers which are independent of hardware, language, framework, packaging system and hosting provider.

Docker containers are designed to run isolated services or applications with the ability to share OS, resources, data and more.

Users will know what is Docker, how to install, create, publish and deploy both Docker images & containers.

At the end of this session users will create deploy and consume Docker containers and will get familiar with Docker file.



Objectives

User will learn

- | What is Docker?
- | The concept and architecture of Docker
- | How to install & use Docker
- | Upload self-made container to public registry
- | What are container
- | Create and execute Docker containers
- | What are Docker files
- | How to use existing container
- | How to create & publish containers (Hub)
- | What is the difference between Docker & virtual machines
- | How to install Docker
- | How to install use Docker images
- | How to create & publish custom-made Docker images
- | What is Docker Swarm / scale/ services
- | Docker compose





Content

Module 01 Docker Introduction

- | What is Docker
- | Docker architecture
- | Why Docker is better than other VM's
- | Docker use cases
- | Docker limitations

Module 02 Architecture

- | What is LXC
- | CGroups
- | Union File system (AUFS)
- | Kernel Namespaces
- | Controlled OS resources
- | Docker images
- | Docker containers
- | Repositories

Module 03 Images & Containers

- | What are images
- | What are containers
- | The difference between the 2
- | Using Docker hub registry
- | Building images

Module 04 Advanced stuff

- | Install Docker
- | What is Docker file:
 - Building image from a Docker file
- | Download and install Docker images/containers
- | Docker as daemon
- | Docker registry & Hub
- | Docker container lifecycle
- | Container lifetime
- | Container volumes

Module 05 Docker CLI

- | Build
- | Run
 - Background / detached
 - In foreground
 - Interactive
 - Expose ports for communication
- | Commit
- | Pull
- | Push
- | Diff
- | Tag
- | Inspect
- | Logs
- | And more.....



Module 06 Docker File

- | From
- | Run
- | CMD
- | Expose
- | Env
- | Add /Copy
- | Volume
- | Entrypoint
- | Workdir

Module 07 Docker and Kubernetes

- | Deploy Docker containers with K8S
- | Scale up
- | Scale down
- | Automation
- | Blue/green deploy (no downtime)
- | Networking / Services
- | Debugging / Logging
- | Build & Deploy Cluster of Dockers and all required resources

Module 08 Docker Compose

- | What is Docker compose
- | Yml syntax
- | Services/ multiple containers

Module 09 Hands on

Practice all we have learned. In this hands on we will build & deploy Docker container to cloud provider & register them under the Docker registry.



Users will **create deploy and consume** Docker containers"



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