Docker
Kubernetes
Introduction to CI/CD

32 hours

Required Skills

- Basic GIT
- Linux - command line
- Basic programming skills

Course Contents

Introduction to Microservices architecture (2h)

- Microservices architecture vs Monolithic architecture
  - Monolithic to Microservices movement
  - Monolithic to Microservices best practices

Docker (8h)

- Docker Architecture overview
- Docker concepts:
  - Volumes
    - Deme/lab
  - Networks
    - Demo/lab
- Docker Image
  - Image Layer
  - Image management
    - Demo/lab
- Docker security
  - Rootless mode
  - Trusted images (Scan Docker Vulnerabilities)
- Docker Advance

- Dockerfile best practises
- Multi-Stage build
  - Demo/Lab
- Docker-compose.yml
  - Demo/Lab
- Introduction to container orchestration with Swarm
  - Swarm concepts
  - Cluster overview
  - Administration
    - Demo/Lab (Swarm)
    - Docker services
      - Demo/Lab (Container orchestration with native Swarm cluster)

Kubernetes (24h)

- Kubernetes Architecture
  - Cluster Concepts, Design and Node Roles
- Kubernetes objects:
  - Pods
  - Services
  - Labels
  - Namespaces, Annotations
  - Deployments
  - DaemonSets
  - ReplicaSets
  - Jobs
  - ConfigMaps and Secrets
    - Demos/Labs (For each topic)
- Kubernetes Volumes
  - Demo/Lab
- Stateless Set vs Stateful Set
  - Demo/Lab
- Kubernetes RBAC
  - Demo/Lab
- Helm charts
  - Using Helm

- Helm command
- Monitoring Kubernetes Cluster
  - Prometheus helm operator