Mastering DevOps on OCI with Git, Maven, Jenkins, Docker and Kubernetes Clusters

Duration – 4 Days (32 Hours)

Introduction

This course is designed for developers who possess a strong foundation knowledge in managing and operating infrastructure using Oracle Cloud Infrastructure services. This course helps them acquire advanced DevOps skills including but not limited to using Docker, Kubernetes and Container Clusters at OCI to deploying and scaling Containerized Application on Oracle Cloud Infrastructure. Who have considerable experience with Kubernetes and want a baseline deployment process in order to create their own Clusters (Can we Write this)

Course Objective

- *Refresh DevOps and Oracle Cloud Infrastructure Concepts*
- *Understand version control with **git***
- *Explore Release management with **maven***
- *Work with **Jenkins** for CI/CD*
- *Install Docker on a local VM*
- *Create Docker Images from an App*
- *Containerize an Application from one or more Images*
- *Install Kubernetes in Local Environment with three nodes.*
- *Create Container Engine for K8s in Oracle Infrastructure*
- *Deploy a Containerized Application in Container Engine at OCI*
- *Scaling Application Deployments in K8s at OCI*

Audience

- *Developers*
- *Oracle Cloud Infrastructure Architect Associates*
- *System Integrators*

Pre-Requisite:

- *Working Knowledge of Oracle Cloud Infrastructure Web Console*
- *Provisioning of Resources using Web Console*
- *Working knowledge of Linux- Basic Commands, Editing Files using vi, Files and Directory Permissions, Installation Process etc.*

Pre Leaning Track

- *Oracle Cloud Infrastructure Architect Associate Certification (1072)*
- *Essential of Infrastructure as a Code on OCI*
- *Linux Foundation Course*

Next Leaning Track

- *Mastering DevOps on OCI with Ansible and Terraform*

Topics

Day 1.

1. Overview of DevOps

- Introduction to DevOps and Benefits
- DevOps life cycle
- DevOps terminologies
- DevOps Concepts and Practices
- Agile Methodology
- DevOps Tools and Environments
- Commonly used tools

Lab 1 Launch a Compute Instance Using Console

2. Version Control with Git

- Version control and Git
- Install Git
- Common commands in Git
- Working with Remote Repositories
- Branching and Merging in Git

3. Oracle Developer Cloud

- Key components of Oracle Developer Cloud
- Using an IDE with Oracle Cloud
- Eclipse Overview
- Support for DevOps in OCI
- Build Process & Project Management

Lab 2 Getting Started with DevCs and Git

4. Maven Overview and Release Management

- DevCs support for Maven
- Continuous Integration & Continuous Delivery (CI/CD)
- Release Management in DevOps
- Role of Release Manager in software delivery

Lab 3 Create and build a Java project with Maven

Day 2.

5. Jenkins CI – Introduction and Installation

- Understanding continuous integration
- Introduction about Jenkins
- Build Cycle

- Jenkins Architecture
- Obtaining and installing Jenkins
- Installing and configuring Jenkins using WAR and RPM
- Java installation and configuration
- Exploring Jenkins Dashboard

Lab 4 Installing Jenkins

6. Jobs in Jenkins

- Creating Jobs
- Running the Jobs
- Setting up the global environments for Jobs
- Adding and updating Plugins
- Disabling and deleting jobs

Lab 5. Setup Build Jobs

7. Build Deployments and Security

- Understanding Deployment.
- Tomcat installation and configuration
- Authentication
- Authorization
- Creating users

Lab 6. Tomcat installation and configuration
Lab 7 Manage Users and Roles

8. Docker - Introduction

- What is a Docker
- Use case of Docker
- Platforms for Docker
- Dockers vs. Virtualization
- Docker Architecture.
- Understanding the Docker components

Day 3

9. Docker Installation

- Installing Docker on Linux.
- Understanding Installation of Docker on windows.
- Some Docker commands.

Lab 8. Installing Docker in local VM

10. Docker Hub.

- Downloading Docker images.
- Modifying Images
- Uploading images in Docker Registry
- Running multiple containers.

Lab 9. Working with Images and Containers

11. Custom images

- Design and code a Docker file to build a custom container image.
- Containerizing Apps using multiple images.
- Running a container from the custom image.

Lab 10. Building Custom Images

12. Docker Networking

- Accessing containers
- Linking containers
- Exposing container ports
- Container Routing

Lab 11 Build a Docker Image and Push it to OCIR

13. Docker Compose

- Installing Docker compose
- Terminology in Docker compose
- Build word press site using Docker compose

Day 4.

14. Introduction to Kubernetes

- What is Kubernetes
- Kubernetes Terminology
- Installing Kubernetes in local environment.
- Initialize the cluster
- Setup the POD network

Lab 12. Install Kubernetes in Local Environment

15. Kubernetes Cluster Architecture

- Master & Minions
- Kube Apiserver
- Etcd - key-value store
- kube Scheduler
- kube Controller-manager
- kubelet
- kube-proxy
- kubectl Client

16. Kubernetes Cluster on Oracle Infrastructure

- Containers and Container Orchestration
- Setting up the Kubernetes Cluster in OCI
- Installing Kubernetes Dashboard
- Exploring your Cluster

Lab 13. Setting up Container Clusters in OCI

17. Deploying Apps on Container Cluster at OCI

- Understanding YAML
- Creating a Deployment in Kubernetes using YAML Preview
- Creating a Service in Kubernetes
- Deploying an App using YAML Menifest
- Deploying an App using Dashboard
- Accessing your application through service
- Rolling updates in Kubernetes
- Performing an App Scaling

Lab 14. Deploy and Mange Apps in Container Clusters at OCI