DevOps Fundamentals (Developer)

Duration: 5 Days

Day wise Course Outline:

Day 1:

DevOps Fundamentals

- Introduction to DevOps
- DevOps Process
- DevOps Team
- Architecture application for DevOps
- DevOps Technology Reference Architecture

Linux Fundamentals

- Linux File system
- Working with File permissions
- Essential Commands
- Manipulating processes

Automate Cloud IaaS for DevOps

- Cloud Fundamentals:
  - Different Cloud computing service models.
  - Understanding IAAS, PAAS and SAAS.
  - Automate Cloud IaaS for DevOps
- Introduction to AWS
- AWS EC2 Overview
- AWS Storage overview
- AWS Network Overview
- AWS Automation using Cloud formation
- Lab: Automating Infrastructure in Cloud
- DIY: Create a Reference Architecture Automation

Day 2:

Source Code Repository in GIT

- GIT Fundamentals
- GIT Branching and Merging
- Various GIT Commands
- Working with Remote repositories - GITHub and BitBucket
- Lab: Working With GIT
- Lab: GIT Branching and Merging
- Lab: Code Commit, Code PUSH, PULL – GITHub, BitBucket.

Continuous Integration, Delivery and Deployment.

- Continuous Integration Fundamentals
- Continuous Delivery Fundamentals
- CI/CD with Jenkins.

- Various Jenkins JOB templates.
- Pipeline as a code.
- Discuss and work towards setting up End-to-End delivery Pipeline
- Understand all required components of delivery Pipeline.
- Lab: Install and Configure Jenkins
- Lab: Create a Simple pipeline in Jenkins
- Lab: Configuring Jenkins in CentOS server procured in Lab 1
- Lab: Integrating Jenkins with GIT
- Lab: Configuring Sample Maven Build in Jenkins

Day 3

CI/CD continued

- Lab: Integrating Jenkins with Docker
- Lab: Integrating Jenkins with Ansible
- Lab: Configuring End to End Delivery Pipeline in Jenkins
- Lab: Running Continuous Deployment Using Jenkins
- LAB: Jenkins Administration, Backup and Security.

Configuration Management using Ansible

- Ansible Fundamentals
- Ansible setup and configuration
- Ansible Modules
- Ansible in adHoc mode – Ansible commands
- Introduction to YAML
- Ansible playbooks – writing multiple playbooks
- Introduction and working with Ansible Roles
- Working with variables
- Working with Facts and Decision statements.
- Ansible Playbook for Java application deployment.
- Introduction to Ansible Galaxy.

Day 4

Ansible Continued,

- Code Portability
- Masking data using Ansible Vaults.
- Introduction to Ansible Tower.
- Automating Application setup using Ansible playbooks.
- Jenkins and Ansible Integration:
    - Perform App deployment to TOMCAT using Jenkins and Ansible integration.
- Lab: Managing Application config in Ansible
- Lab: Creating and Running Docker using Ansible

Container Concepts

- Containers Fundamentals
- Why containers

- Containers V/S VM's
- Docker Architecture and Dataflow
- Docker Installation and Setup
- Docker commands.

Day 5:

Docker Containers

- Docker Container and Operations
- Docker Image and Operations
- Docker Hub
- Docker Custom Image creations
- Docker Network Fundamentals
- Persistent Volumes with Docker
- Deploying applications to Containers
- Lab: Various application docker containers for webservers like nginx, httpd and tomcat.

Introduction to Kubernetes

- Kubernetes architecture
- Working with Minikube
- Introduction to RedHat OpenShift with Minishift.
- Hosting Containerized Application in OpenShift Kubernetes cluster environment.
- Various Kubernetes cloud services. (Introduction to EKS)