

DevOps - Training

Pramoth Ravi

Course Introduction

- ▶ Core DevOps concepts.
- ▶ Real-time DevOps workflows.
- ▶ Proficiency in Linux & shell scripting.
- ▶ Mastery of Git and branching strategies.
- ▶ Build tools (Maven | Npm).
- ▶ CI/CD pipelines with Jenkins & GitHub Actions.
- ▶ Security in DevOps pipelines.
- ▶ Artifact management using Nexus.
- ▶ Containerization with Docker.
- ▶ Kubernetes for container orchestration.
- ▶ Infrastructure as Code with Terraform.
- ▶ Monitoring and alerting systems.
- ▶ Real-world project applications.
- ▶ Troubleshooting DevOps pipelines.
- ▶ DevOps interview preparation.
- ▶ Importance of DevOps in Modern Software Development

Module 1 - DevOps & Real-Time DevOps Workflow

- What is DevOps?
- Definition and evolution.
- Cultural shift: Collaboration and automation.

Key Concepts

- CI: Automating build and testing.
- CD: Automating deployment.
- Continuous Delivery: Keeping software deployable.
- Real-time DevOps Workflow
- Process from code commit to deployment.
- Tools and practices at each stage.

Module 2 - Linux & Shell Scripting

- ▶ Introduction to Linux
- ▶ Overview of Linux OS.
- ▶ Its role in the DevOps ecosystem.
- ▶ Basic Linux Commands
- ▶ Navigating the file system, managing files.
- ▶ Process management, package installation, system monitoring.

Shell Scripting Fundamentals

- ▶ Writing and executing scripts.
- ▶ Variables, control structures, functions.
- ▶ Common Shell Scripts for Automation
- ▶ Examples of automated tasks.

Module 3 - Git & Git Branching

- ▶ Introduction to Version Control
- ▶ Importance in software development.
- ▶ Git Basics
- ▶ Committing, pushing, and pulling changes.
- ▶ Branching Strategies
- ▶ Feature and release branches.
- ▶ Git Workflows
- ▶ Git Flow and Forking Workflow.

Module 4 - Build Tools [Maven | Npm]

Overview of Build Tools

- ▶ Their role in the development lifecycle.
- ▶ Maven for Java Projects
- ▶ Dependency management, building projects.
- ▶ Maven lifecycle and plugins.
- ▶ Npm for JavaScript Projects

Module 5 - CI/CD Tools [Jenkins | GitHub Actions]

- ▶ Continuous Integration and Continuous Deployment
- ▶ Importance in DevOps.
- ▶ Jenkins Setup and Configuration
- ▶ Installing Jenkins, creating jobs, configuring plugins.
- ▶ GitHub Actions for Automation
- ▶ Setting up CI/CD workflows.

Module 6 - Security in DevOps

- ▶ Importance of Security in the DevOps Pipeline
- ▶ The necessity of security.
- ▶ Security Practices
- ▶ Static code analysis, vulnerability scanning.
- ▶ Tools and Techniques for Secure DevOps
- ▶ SonarQube, OWASP Dependency Check, Snyk.

Module 7 - Artifact Management [Nexus]

- ▶ What is Artifact Management?
- ▶ Role in DevOps.
- ▶ Introduction to Nexus
- ▶ Features and capabilities.
- ▶ Repository Management

Module 8 - Docker Deep Dive

- ▶ Introduction to Docker
- ▶ Containerization benefits.
- ▶ Containerization vs. Virtualization
- ▶ Differences and use cases.
- ▶ Docker Commands
- ▶ Building, running, and managing containers.
- ▶ Dockerfile and Docker Compose.

Module 9 - Kubernetes Deep Dive

- ▶ Kubernetes Architecture
- ▶ Overview of components.
- ▶ Core Components
- ▶ Pods, Services, Volumes.
- ▶ Deployment Strategies
- ▶ Rolling updates, Blue-Green deployments.
- ▶ Ingress Controller
- ▶ Helm
- ▶ Etc, (Karpenter, Kubecost, Upgrade)

Module 10 - IAC [Terraform]

- ▶ Introduction to Infrastructure as Code
- ▶ Benefits and best practices.
- ▶ Writing Terraform Configurations
- ▶ Terraform syntax and resources.
- ▶ Applying and Managing Infrastructure
- ▶ Terraform commands and state management.

Module 11 - Monitoring

- ▶ Importance of Monitoring in DevOps
- ▶ Essential monitoring practices.
- ▶ Monitoring Tools
- ▶ Prometheus and Grafana.

Module 12 - Projects

- ▶ Real-World Project Scenarios
- ▶ Case studies of DevOps implementations.
- ▶ Case Studies
- ▶ Analysis of successful projects.
- ▶ Practical Applications of DevOps Principles
- ▶ Hands-on projects.

Module 13 - Troubleshooting

- ▶ Common Issues in DevOps Pipelines
- ▶ Identifying problems.
- ▶ Troubleshooting Techniques
- ▶ Diagnosis and resolution steps.
- ▶ Best Practices for Resolving Issues
- ▶ Documentation, communication, post-mortem analysis.

Module 14 - Interview Preparation

- ▶ Preparing for DevOps Interviews
- ▶ Understanding the process.
- ▶ Common Interview Questions
- ▶ Interview performance tips.