TECHNOCATION FREELANCING TRAINING INSTITUTE & SOFTWARE HOUSE

Professional DevOps Course Outline

Module 1: Introduction to DevOps

- What is DevOps?
- DevOps Principles and Benefits
- DevOps vs Traditional IT Operations
- Key DevOps Tools and Technologies

Module 2: Version Control Systems (VCS)

- Introduction to Git & GitHub/GitLab
- Git Commands and Branching Strategies
- Code Collaboration & Pull Requests
- Git Workflows: Git Flow, Trunk-Based Development

Module 3: Continuous Integration (CI)

- CI Concepts and Benefits
- Jenkins, GitHub Actions, GitLab CI/CD
- Writing CI Pipelines
- Automated Testing and Code Quality Checks

Module 4: Continuous Delivery & Deployment (CD)

- CD Concepts: Blue-Green, Canary, Rolling Updates
- Infrastructure as Code (IaC) Overview
- Deploying Applications with Docker & Kubernetes
- Helm Charts for Kubernetes Deployments

Module 5: Infrastructure as Code (IaC)

- Introduction to IaC and Its Importance
- Terraform: Installation and Basic Configuration

- Writing Terraform Scripts for Cloud Infrastructure
- Managing Infrastructure on AWS/Azure/GCP

Module 6: Configuration Management

- Introduction to Ansible, Chef, and Puppet
- Automating Server Provisioning with Ansible
- Writing Playbooks and Roles
- Infrastructure Scaling & Maintenance

Module 7: Containers and Kubernetes

- Introduction to Docker and Containers
- Docker Compose for Multi-Container Applications
- Kubernetes Fundamentals (Pods, Services, Deployments)
- Kubernetes Networking and Security
- Kubernetes Cluster Management with Kubeadm, EKS, GKE, AKS

Module 8: Cloud & DevOps Integration

- Cloud Platforms: AWS, Azure, GCP
- Deploying Applications on the Cloud
- Serverless Computing with AWS Lambda, Azure Functions
- CI/CD Pipelines on Cloud Platforms

Module 9: Monitoring, Logging, and Security

- Importance of Monitoring in DevOps
- Prometheus & Grafana for Monitoring
- Log Management with ELK Stack (Elasticsearch, Logstash, Kibana)
- DevOps Security Best Practices (DevSecOps)

Module 10: Site Reliability Engineering (SRE) & Performance Optimization

- SRE Principles and Implementation
- Incident Management and Disaster Recovery
- Load Testing and Performance Optimization
- Chaos Engineering

Module 11: DevOps Culture & Best Practices

- DevOps Roles and Responsibilities
- Collaboration & Communication in DevOps Teams
- Business Benefits of DevOps
- Case Studies of Successful DevOps Implementations

Module 12: Capstone Project & Certification

- End-to-End CI/CD Pipeline Implementation
- Deploying a Scalable Application with DevOps Tools
- Final Assessment & Certification