DevOps & Cloud Computing Roadmap (Beginner to Advanced)

Stage 1: Basics of DevOps

- What is DevOps and Why is it important?

- DevOps Culture and Lifecycle

- Traditional vs DevOps Approaches

- Introduction to SDLC and Agile Practices

- Key DevOps Practices: CI/CD, Automation, Monitoring, Collaboration

Stage 2: Version Control Systems

- Git Basics (init, add, commit, push, pull)

- Branching and Merging

- GitHub/GitLab Basics

- Collaboration with Pull Requests

Stage 3: Linux & Shell Scripting

- Basic Linux Commands and File System Navigation

- Permissions, Processes, Services

- Writing Shell Scripts (.sh files)

- Automating tasks with Cron

Stage 4: Continuous Integration (CI)

- What is CI?

- Tools: Jenkins, GitHub Actions, GitLab CI

- Writing CI pipelines

- Build Triggers and Webhooks

Stage 5: Continuous Deployment (CD) & Configuration Management

- What is CD?

- Tools: Ansible, Chef, Puppet

- Infrastructure as Code (IaC)

- Automating deployments to environments

Stage 6: Containerization with Docker

- What is Docker?

- Docker Images, Containers, Volumes

- Dockerfile and Docker Compose

- Managing containers and networks

Stage 7: Orchestration with Kubernetes

- Introduction to Kubernetes (K8s)

- Pods, Deployments, Services

- ConfigMaps and Secrets

- Helm Charts for package management

Stage 8: Cloud Fundamentals (AWS, Azure, GCP)

- Cloud Basics: IaaS, PaaS, SaaS

- Core Services: Compute, Storage, Networking

- IAM (Identity and Access Management)

- Hands-on with AWS/GCP/Azure Free Tier

Stage 9: Monitoring & Logging

- Importance of Monitoring in DevOps

- Tools: Prometheus, Grafana, ELK Stack, Datadog

- Centralized Logging & Alerting Systems

Stage 10: Security in DevOps (DevSecOps)

- Secure CI/CD Pipelines

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- Secrets Management (Vault, AWS Secrets Manager)

- Image Scanning and Dependency Audits

- Compliance and Audit Logs

Stage 11: Final Projects & Real World Practice

- Build a CI/CD Pipeline using Jenkins & GitHub

- Deploy Docker containers with Kubernetes

- Automate AWS Infrastructure using Terraform/Ansible

- Monitor & Secure Application with Prometheus + Vault