Learn DevOps

Step 1: Understand Core DevOps Principles & Foundations

- Define DevOps, its culture, and key methodologies (Agile, Lean, CALMS).
- Research the history and evolution of DevOps practices and tools.
- Review fundamental Linux commands, file system structure, and user management.
- Understand basic networking concepts: IP addresses, DNS, HTTP/S, ports.
- Explore different types of software development lifecycles (SDLCs).

Step 2: Master Version Control & Scripting

- Install Git and configure user credentials globally.
- Practice core Git commands: clone, add, commit, push, pull, branch, merge, rebase.
- Create a GitHub/GitLab account and host a personal project repository.
- Learn Bash scripting fundamentals: variables, loops, conditionals, functions, I/O redirection.
- Write a Python script to automate a simple system task (e.g., file backup, log parsing).

Step 3: Implement CI/CD & Containerization

- Understand the stages of a Continuous Integration/Continuous Delivery (CI/CD) pipeline.
- Set up a local Jenkins/GitLab CI/CD pipeline for a simple application (e.g., build, test).
- Write a Dockerfile to containerize a basic web application (e.g., Nginx, Python Flask app).
- Build and run Docker images locally, managing containers, volumes, and networks.
- Push a custom Docker image to Docker Hub or a private registry.

Step 4: Explore Infrastructure as Code & Cloud Platforms

- Create a free-tier account on a major cloud provider (AWS, Azure, or GCP).
- Provision a simple virtual machine and network using the cloud provider's console.
- Install Terraform and write a basic HCL configuration to deploy a cloud resource (e.g., EC2 instance).
- Use Ansible to automate configuration management on a remote server (e.g., install Nginx, deploy a simple app).

• Understand the concepts of immutable infrastructure and desired state configuration.

Step 5: Dive into Container Orchestration & Monitoring

• Understand the core concepts of Kubernetes (Pods, Deployments, Services, Namespaces, Ingress).

• Set up a local Kubernetes cluster using Minikube or Kind.

• Deploy a containerized application to Kubernetes using YAML manifests and `kubectl` commands.

• Learn basic `kubectl` commands for managing deployments, services, and logs.

• Explore basic monitoring concepts: metrics, logs, alerts, and identify common tools (Prometheus, Grafana, ELK stack).