Softy EDUCATION

DevOps Roadmap

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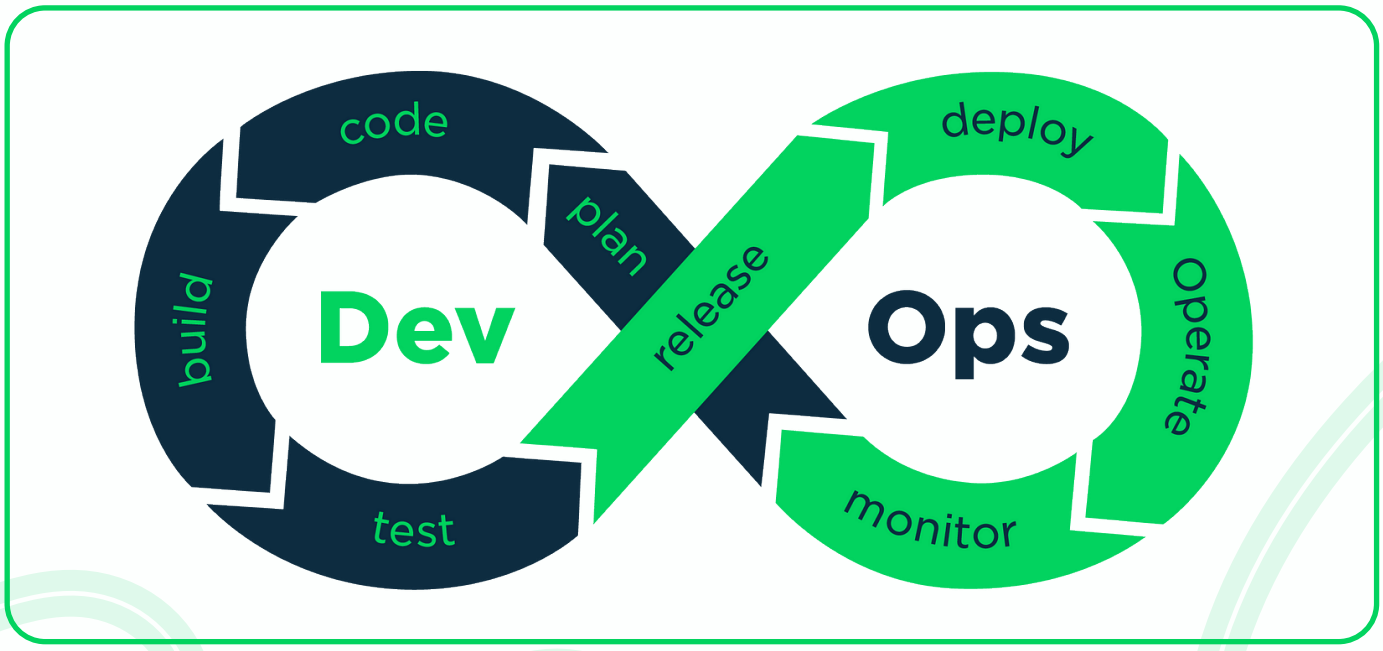
STARTING WITH DEVOPS

Starting with DevOps can be overwhelming.
This DevOps engineer roadmap will guide you to start with it in the proper way. We will cover the most important building blocks of DevOps practices and tools. This guide will help you to become a modern DevOps engineer.



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This guide will provide you with useful information and actionable steps, but if you truly want to dominate the competition and secure a high-paying job as a **Devops** engineer, **Softy Education** is the answer.

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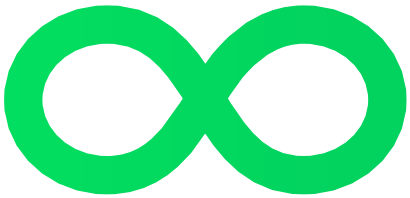
Read until the end for more information and special discounts!

LEARN THE BASICS: DEVOPS FOUNDATIONS

DevOps is a way of working that helps developers and IT teams work together to build, test, and deliver software faster and more reliably.



- Origin and evolution of DevOps
- Avoiding common DevOps antipatterns
- Cultural values and cross-functional teams
- Automation and LEAN principles for optimization
- Technology patterns and team benefits

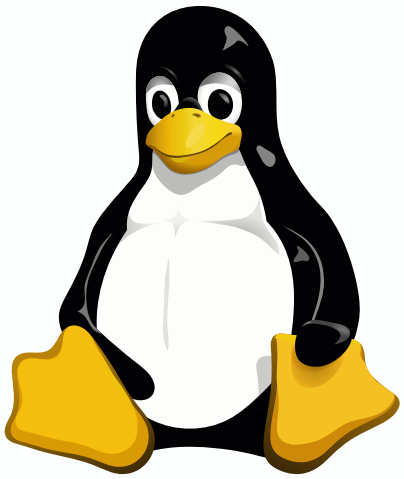
LEARN THE BASICS: LINUX ESSENTIALS

Linux is crucial in DevOps as it powers servers, tools, and automation, enabling efficient software development and deployment.

- Overview and history of Linux
- Key commands and utilities
- Linux kernels and file types
- Package management in distributions
- Navigating the Linux shell
- Basic networking tools
- User account management
- Creating systemd services
- Managing storage

LEARN THE BASICS: SHELL SCRIPTING

Shell scripting, a scripting language to automate tasks and execute commands in Linux, is crucial in DevOps for managing servers, streamlining deployments, and minimizing errors.



- Introduction to automation with shell scripts
- Shell types and features
- Basic commands and operators
- Control structures, loops, and conditionals
- Reading and writing files
- Task automation
- Advanced techniques and best practices

LEARN THE BASICS: PROGRAMMING LANGUAGE

(Preferred: Go / Python)

Programming languages are essential in DevOps for automating processes, building tools, managing infrastructure as code, and creating reliable CI/CD pipelines.

- Introduction to the programming language
- Basics: data types, variables, etc.
- Object-oriented programming concepts
- Working with collections (arrays, lists, maps, dictionaries, etc.)
- Memory management and pointers
- Testing and debugging programs
- Best practices for efficient, maintainable code

LEARN GIT AND VERSION CONTROL

Git is a version control system that tracks changes in code, enabling collaboration, rollback, and efficient management of software development projects.

- Introduction to GIT and version control systems
- Install and configure GIT
- Basic GIT workflow: add, commit, push, pull
- Creating and managing GIT repositories
- Tracking changes in files and directories
- Resolving merge conflicts
- Using GIT with popular hosting services (e.g., GitHub, GitLab)
- Understanding and using GIT tags

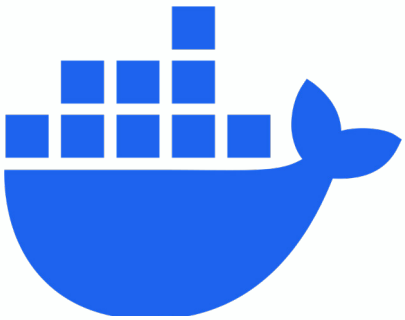
LEARN CI/CD WITH JENKINS

Jenkins is a powerful automation tool that facilitates continuous integration and continuous delivery (CI/CD), automating the process of building, testing, and deploying software to improve development workflows.

- Installing and Configuring Jenkins
- Creating and Managing Jenkins Jobs & Pipelines
- Integrating Version Control Systems (e.g., Git)
- Writing and Using Jenkinsfiles
- Automating Builds and Tests
- Extending Jenkins with Plugins
- Ensuring Security and Access Control

LEARN DOCKER ESSENTIALS

- Introduction to Docker & Containerization
- Installing Docker on Different OS
- Basic Docker Commands & Usage
- Creating & Managing Docker Containers & Images
- Building Docker Images with Dockerfiles
- Networking & Linking Containers
- Data Persistence & Storage in Docker
- Orchestrating Containers with Docker Swarm



LEARN KUBERNETES ESSENTIALS

- Introduction to Containerization & Kubernetes
- Installing and Setting Up a Kubernetes Cluster
- Deploying and Managing Applications in Kubernetes
- Kubernetes Architecture & Components
- Networking & Service Discovery in Kubernetes
- Managing Storage in Kubernetes
- Configuration Management in Kubernetes
- Orchestrating Containers with Docker Swarm

LEARN HELM FOR KUBERNETES

- Introduction to Helm & Its Architecture
- Installing Helm Locally & on Kubernetes Cluster
- Understanding Helm Charts, Releases, & Repositories
- Creating & Customizing Helm Charts and Templates
- Managing Helm Chart Dependencies
- Publishing & Distributing Helm Charts

LEARN MONITORING WITH PROMETHEUS & GRAFANA

- Prometheus Architecture & Installation
- Configuring Prometheus Targets & Exporters
- Querying Data with PromQL
- Creating Grafana Dashboards
- Setting Up Alerts with Alertmanager
- Configuring Remote Write & Federation
- Monitoring Kubernetes Clusters with Prometheus
- Securing Prometheus & Alertmanager
- Integrating Prometheus with Grafana for Visualization
- Configuring Grafana Alerts

LEARN LOGGING AND TRACING IN KUBERNETES

- Introduction to Logging and Tracing
- Kubernetes Logging Overview
- Centralized Logging with ELK Stack
- Setting up Elasticsearch, Logstash, and Kibana in Kubernetes
- Tracing with Jaeger
- Setting up Jaeger in Kubernetes
- Correlating Logs and Traces
- Best Practices for Logging and Tracing
- Troubleshooting Logging and Tracing

LEARN INFRASTRUCTURE AS CODE (IAC) WITH TERRAFORM

- Introduction to IaC & Terraform
- Installing and Setting Up Terraform
- Defining Infrastructure with Terraform Configuration Files
- Managing Terraform State & Remote State Storage
- Using Terraform Providers, Variables, and Outputs
- Managing Terraform Resources & Dependencies
- Working with Terraform Data Sources
- Troubleshooting & Debugging Terraform Configurations
- Troubleshooting Logging and Tracing

EXPLORE ISTIO FOR SERVICE MESH MANAGEMENT

- Introduction to Istio & Its Architecture
- Installing Istio on a Kubernetes Cluster
- Understanding Service Mesh in Istio
- Traffic Management & Load Balancing
- Security in Istio: Authentication & Authorization
- Security in Istio: Authentication & Authorization
- A/B Testing & Blue-Green Deployments with Istio

Istio

EXPLORE ARGO CD FOR GITOPS DEPLOYMENT

- Overview of Argo CD & Its Architecture
- Installing and Configuring Argo CD
- Managing Applications with Argo CD CLI & Web UI
- Deploying Applications Using GitOps
- Synchronizing Application State
- Configuring Rollbacks & Rollouts
- Deploying Helm Charts with Argo CD