DevOps Learning Roadmap

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- What is a DevOps Engineer?
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  - DevOps Fundamentals
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  - Linux for Beginners
  - Learn to Live in Terminal
  - Linux 101
  - Other OS - Alma Linux, RHEL, Ubuntu, SUSE Linux
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  - Shell Scripts for Beginners
  - Golang
- Learn Networking, Security, and Protocols
  - Networking Protocols
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  - Forward and Reverse Proxy
  - Caching Server
- Learn Cloud Provider (at least One)
- Learn Version Control System (VCS)
  - Git for Beginners
  - Learn VCS Hosting
- Learn the most popular CI/CD tools
- Learn SAST and DAST pipeline scanning
- Learn Secrets & Artifacts Management
- Learn Infrastructure Provisioning
- Learn Configuration Management
- Learn Infrastructure Monitoring
- Learn Centralized Log Management
- Learn Application Monitoring and Observability
- Prometheus Certified Associate
- Learn Container Concepts
- Learn Container Orchestration
- Learn Helm and GitOps with FluxCD and ArgoCD
- Learn Istio Service Mesh
- Learn Container Security
- Learn Software Engineering Practices

What is DevOps?

DevOps is a cultural and collaborative mindset that emphasizes communication, collaboration, integration, and automation between development and operations teams **in order to achieve faster and more reliable software delivery**.

DevOps is not a specific job title or role, but rather **a set of practices and principles** that can be applied across a variety of roles in software development and IT operations. Anyone involved in the software development and delivery process can adopt a DevOps mindset and apply DevOps practices in their work, including developers, testers, operations engineers, product managers, and others.

What is a DevOps Engineer?

While DevOps is not a specific job title or role, organizations often hire for a "DevOps Engineer" role. A DevOps Engineer is a software engineer who specializes in the practices and tools that enable the continuous delivery of software. DevOps Engineers are responsible for the design and implementation of applications, software, and services for their organization, and they work closely with developers, testers, and operations staff to oversee the code releases.

DevOps Roadmap
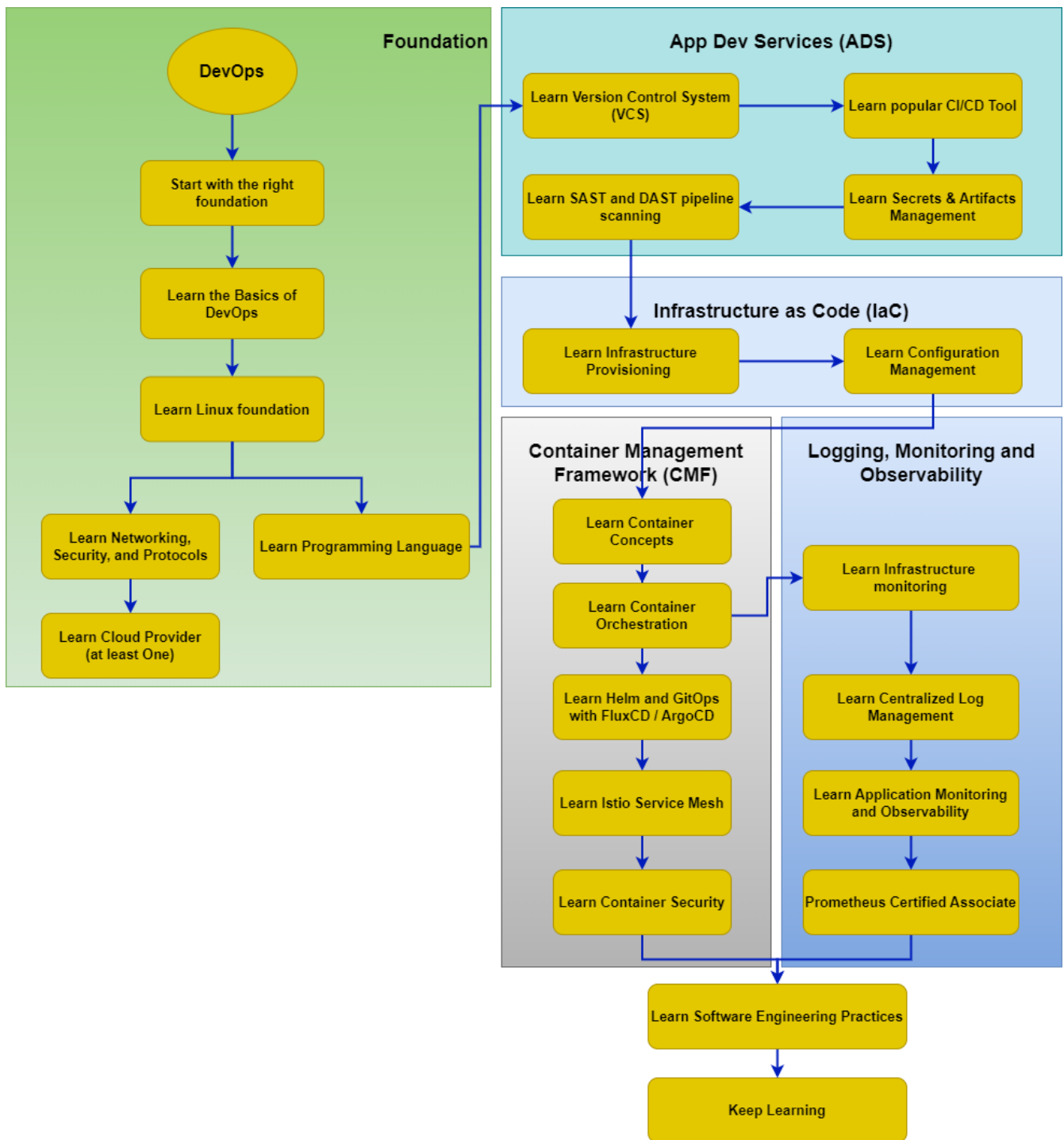
Start with the right foundation

12 Factor App

Master the art of building scalable, maintainable, and cloud-native applications using the 12-Factor App methodology, and stay ahead in the ever-evolving world of software development

- 👁 12 Factor App | KodeKloud
- The Twelve-Factor App
- ☁ Twelve-factor app development on Google Cloud | Cloud Architecture Center

- 📖 The Twelve-Factor App: Best Practices for Cloud-Native Applications
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Learn the Basics of DevOps

DevOps Pre-Requisites

- 👁 DevOps Pre-Requisite Course | KodeKloud
- 🔗 DevOps Beginner Prerequisites | Cloud Computing Pre-reqs

DevOps Fundamentals

- 👁 Fundamentals of DevOps | KodeKloud

Learn Linux Foundation

Linux for Beginners

- 👁 Learning Linux Basics Course & Labs | KodeKloud
- Introduction to Linux - Full Course for Beginners
- Linux Fundamentals

Learn to Live in Terminal

- </> Online Linux Terminal
- ⛩ 60 Essential Linux Commands + Free Cheat Sheet
- The Linux Command Line by William Shotts

Linux 101

- Linux 101
- Linux Operating System - Crash Course for Beginners

Other OS - Alma Linux, RHEL, Ubuntu, SUSE Linux

- Debian Website
- Ubuntu Website
- Learn the ways of Linux-fu, for free
- r/linuxupskillchallenge
- Red Hat Enterprise Linux Website
- RHEL Documentation
- RHEL Getting Started Guides
- What is Red Hat Enterprise Linux (RHEL) - Red Hat
- openSUSE Linux Website
- openSUSE Documentation
- Unofficial openSUSE Getting Started Guide
- 🐉 AlmaLinux OS - Forever-Free Enterprise-Grade Operating System

Learn Programming Language

Python Basics

- ☁ Python Basics | KodeKloud
- Visit Dedicated Python Roadmap
- Python Website
- Python Getting Started
- Automate the Boring Stuff
- W3Schools - Python Tutorial
- Python Crash Course
- Codecademy - Learn Python 3

Shell Scripts for Beginners

- ☁ Shell Scripts for Beginners | KodeKloud

Golang

- ☁ Golang | KodeKloud

Learn Networking, Security, and Protocols

Networking Protocols

As a DevOps engineer, you will need to understand the basics of networking protocols, how they work, and how they are used in the real world. To get you started, you should learn about, TCP/IP, HTTP, HTTPS, FTP, SSH, SMTP, DNS, DHCP, NTP.

Here are some of the resources to learn about SSH:

- SSH Intro
- What is SSH?
- SFTP using SSH
- OpenSSH Full Guide

Visit the following to learn about SSL/TLS:

- Cloudflare - What is SSL?
- Cloudflare - What is TLS?
- Wikipedia - SSL/TLS
- SSH vs SSL vs TLS

Learn about HTTP and HTTPS:

- Everything you need to know about HTTP
- What is HTTP?
- An overview of HTTP
- HTTP/3 From A To Z: Core Concepts
- HTTP Crash Course & Exploration
- What is HTTPS?
- Why HTTPS Matters

- [Enabling HTTPS on Your Servers](#)
- [How HTTPS works (comic)](#)

Here are some resources to learn about DNS:

- [What is DNS?](#)
- [HOw DNS works (comic)](#)
- [DNS and How does it Work?](#)
- [DNS Records](#)

As a DevOps Engineer, one should know how to setup x:

Firewalls

- [What is Firewall?](#)
- [Types of Firewall](#)
- [Introduction of Firewall in Computer Network](#)
- [What is Firewall in Computer Network?](#)
- [Why do we need Firewalls?](#)
- [Firewalls and Network Security - SimpliLearn](#)

LoadBalancers

- [What is Load Balancing?](#)
- [Load Balancing concepts and algorithms](#)

Forward and Reverse Proxy

- [What is Forward Proxy?](#)
- [What is Reverse Proxy?](#)
- [Forward vs Reverse Proxy](#)
- [NGINX documentation](#)

Caching Server

- [What is Caching?](#)
- [What is Cache Server?](#)
- [Site Cache vs Browser Cache vs Server Cache](#)

Learn Cloud Provider (at least One)

- [https://docs.google.com/document/d/1sBN7E0augsxctry6R2uM-x0nESq3rhpB-U9T1haKxbg/edit?usp=drive_link](#) Connect your Google account
- [https://drive.google.com/drive/folders/1ggf4b2wVFUT8LEs-2iHYhAZQhA9usrET?usp=drive_link](#) Connect your Google account

Learn Version Control System (VCS)

Git for Beginners

- 👁 GIT for Beginners | KodeKloud

Learn VCS Hosting

- GitLab
  - GitLab Website
  - GitLab Documentation
- BitBucket
  - Bitbucket Website
  - A brief overview of Bitbucket
  - Getting started with Bitbucket
  - Using Git with Bitbucket Cloud
  - Bitbucket tutorial | How to use Bitbucket Cloud
  - Bitbucket Tutorial | Bitbucket for Beginners
- GitHub
  - GitHub Website
  - GitHub Documentation
  - How to Use Git in a Professional Dev Team
  - What is GitHub?
  - Git vs. GitHub: Whats the difference?
  - Git and GitHub for Beginners
  - Git and GitHub - CS50 Beyond 2019

Learn the most popular CI/CD tools

- 👁 Jenkins | KodeKloud
- Jenkins Website
- Official Jenkins Handbook
- Jenkins Getting Started Guide
- Getting started with Pipelines (cloudbees.com)
- Common Pipeline terms (cloudbees.com)
- Using Declarative Pipeline syntax (cloudbees.com)
- CloudBeesTV - YouTube
- Supercharge your Java program with Groovy (linkedin.com)
- Groovy Tutorial - Javatpoint
- A Quick Introduction to JTE
- Jenkins Templating Engine Documentation

Learn SAST and DAST pipeline scanning

- 🔗 Continuous Code Inspection with SonarQube
- 🔗 DevSecOps for the Absolute Beginners - Hands On Demos

- 🔗 DevSecOps Fundamentals - Including Hands-On Demos

Learn Secrets & Artifacts Management

- How to Manage Secrets in Web Applications?
- Secrets management guide — approaches, open source tools, commercial products, challenges and questions
- Secret Management Architectures: Finding the balance between security and complexity
- AWS Secrets Manager - Amazon Web Services
- Google Cloud Secret Manager - Google Cloud
- Azure Key Vault - Microsoft Azure

Learn Infrastructure Provisioning

- 🔗 HashiCorp Certified: Terraform Associate 2024
- Terraform Website
- Terraform Documentation
- Terraform Tutorials
- Intro to Terraform Video
- Terraform CDK Website
- What is the CDKTF?
- CDKTF Getting Started Guide
- CDKTF Examples
- How to Scale Your Terraform Infrastructure

Learn Configuration Management

- Ansible Website
- Official Documentation
- Ansible Getting Started Guide
- Ansible Full Course for Beginners

Learn Infrastructure Monitoring

- Prometheus Website
- Official Documentation
- Getting Started with Prometheus

Learn Centralized Log Management

- Elastic Stack Website
- Official Docs
- Elastic Stack features
- Logstash vs Fluentd

Learn Application Monitoring and Observability

- OpenTelemetry Website

- [Official Documentation](#)
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Prometheus Certified Associate

- [👁 Prometheus Certified Associate (PCA) | KodeKloud](#)

Learn Container Concepts

- [👁 Docker Training Course for the Absolute Beginner | KodeKloud](#)

Learn Container Orchestration

- [👁 Kubernetes for the Absolute Beginners – Hands-on Tutorial | KodeKloud](#)

Learn Helm and GitOps with FluxCD and ArgoCD

- [👁 Helm for Beginners | KodeKloud](#)
- [👁 GitOps with ArgoCD | KodeKloud](#)

Learn Istio Service Mesh

- [👁 Istio Service Mesh | KodeKloud](#)
- [Whats a service mesh?](#)
- [The latest news about service mesh (TNS)](#)

Learn Container Security

- [𝘞 Assessing the Current State of Container Security](#)
- [✦ Container Security: Definition, Tools, and Best Practices | Wiz](#)

Learn Software Engineering Practices

As a DevOps engineer, you will probably work in a team with other developers in an Agile world, such as **Scrum**. So, it is very important to know the different parts of **SDLC**, as well as the tools which are used there.

In addition, it would be good to know how **automation testing is working, as you will need to set it up in a** CI/CD way.

Here, you need to know what Scrum is, all phases of SDLC, how automation testing works, etc.

- [What is Scrum?](#)
- [Ways To Learn About Scrum](#)
- [Software Development Life Cycle (SDLC) Phases & Models](#)
- [The Beginner's Guide to Agile in Jira: Course description](#)
- [Learn SAFe](#)
- [Learn Automation Testing](#)