

KOENIG SOLUTIONS · COURSE OUTLINE

DevOps Engineer – GitHub, Docker, Ansible and Terraform

Learn to manage source code, containers and infrastructure using Git, GitHub, Docker, Ansible and Terraform.

60 Hours

DURATION

104

TOPICS

3

HANDS-ON ACTIVITIES

COURSE OVERVIEW

This course opens with Git and GitHub fundamentals, covering repositories, commits, remotes, tagging and branching. It then introduces containers with Docker, from installation and image building to networking and data persistence with volumes. The focus shifts to Ansible for configuration management, covering playbooks, variables, facts, conditionals, loops, roles, Galaxy, vault and Jinja2 templates, alongside core Linux administration tasks. The course closes with Terraform, covering providers, resources, variables, modules, and troubleshooting and testing of infrastructure code on Azure.

WHO THIS COURSE IS FOR

DevOps Engineers

System Administrators

Infrastructure Engineers

Automation Engineers

Cloud Engineers

LEARNING OBJECTIVES

- Explain Git basics including states, repositories and branching
- Apply Git commands to manage remotes and tags
- Build and run containers using Docker images and Dockerfiles
- Configure Docker networking and data persistence with volumes
- Implement configuration management using Ansible playbooks and roles
- Apply variables, facts, conditionals and loops in Ansible
- Encrypt sensitive data using Ansible Vault and Jinja2 templates
- Deploy and test infrastructure as code using Terraform modules

104 Topics

Git and GitHub

4 hours

01

Git

TOPICS

- Introduction to Version Control System
- History of Git
- Git Basics
- States in Git
- Installing Git
- Configuration of Git
- Working with Repositories
- Basic Git Commands
- Working with Remotes
- Tagging
- Git Branching

Docker

8 hours

TOPICS

- Introduction to Containers
- Introduction to Docker
- Downloading and Installing Docker
- Docker Essential Commands
- Docker Engine
- Running your First Container
- Docker Image
- Build Image with Dockerfile
- Private Registry
- Storing and Retrieving Docker Images from Docker Hub
- Networking Docker Containers
- Data Persistence with Volumes

Ansible

32 hours

01

Introduce Ansible

TOPICS

Introduction to Ansible · Current IT Automation State · Configuration Management · Ansible History · How Ansible Works?

02

Understanding of Ansible Framework

TOPICS

Case Study · Ansible way of Configuration Management · Infrastructure as a Code (IaC) · Idempotency · Ansible Terminologies

03

Ansible Deployment

TOPICS

Pre-requisites for Controller Node · Installation and Configuration · Ansible Configuration File · Pre-requisites for Managed Node · Ansible Inventory · Ansible Communication · Ansible Architecture

04

Ad-hoc Commands

TOPICS

Introduction to Ansible Module · Ad-hoc Remote Executions · Ansible Commands · Privilege Escalation

05

Managing Playbooks

TOPICS

YAML Structure · Ansible Playbooks · Structure of Playbook · Syntax Check of Playbook · Run Playbook

06

Variables in Ansible

TOPICS

Introduction to Ansible Variables · Defining Ansible Variable in Ansible Code · Use Variable File · Host Vars and Group Vars · Ansible Facts · Facts in Playbooks · Use Cases of Facts · Disabling Facts

07

Conditionals, Loops, Handlers and Error Handling

TOPICS

Conditionals in Ansible · Loops in Ansible · Loops with Variables · Notify and Handlers in Ansible · Register and Debug · Ignore Errors · Block and Rescue

08

Ansible Roles and Galaxy

TOPICS

Introduction to Role · Understanding Role Structure · Managing Roles · Introduction to Ansible Galaxy · Download and Use Roles from Ansible Galaxy

09

Ansible Vault

TOPICS

Introduction to Ansible Vault · Encrypt and Decrypt Playbooks · Use File as Password for Ansible Playbooks · Ansible Vault Commands

10

Jinja 2 Templates

TOPICS

Introduction to Jinja2 Template · Create Jinja2 Template · Template with Looping · Template with Conditions

11

Linux Administration

TOPICS

Managing Packages · Managing Users and Groups · Managing Partition · Starting and Stopping Services · Managing SSH Keys

01

Exercise

Introduction to Terraform

TOPICS

Introduction to Terraform · Infrastructure Automation · Install Terraform · Providers · Resources · Basic Syntax

02

Lab Exercise

Getting Started with Terraform

TOPICS

Terraform Plan, Show, Apply and Destroy · Exploring Terraform Registry · Interpolation · Tainting and Updating Resources · Terraform Console and Output · Terraform Variables · Breaking Out Our Variable and Outputs

03

Terraform Modules

TOPICS

Introduction to Modules · Module Repositories · First Basic Module · The Module Codes · Main Terraform Code · Using Git Repositories to Save Modules

04

Lab

Terraform Troubleshooting and Testing

TOPICS

Terraform Plan Revisited · Debugging the Script · Terraform Testing

HANDS-ON ACTIVITIES

Practise What You Learn

#	MODULE	ACTIVITY
01	Introduction to Terraform	Exercise: Your First Script main.tf
02	Getting Started with Terraform	Lab Exercise: Breaking Down main.tf into variables.tf, output.tf
04	Terraform Troubleshooting and Testing	Lab: Writing Test Scripts for Terraform

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

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Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

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