Network Automation with Ansible Fast Track

Course CICD 3 Days Instructor-led, Hands on

Introduction

This course covers what attendees need to design successful CI / CD pipelines using a variety of popular platforms including GitHub Actions, GitLab CI/CD, and Jenkins. Students will write a variety of code including Python and Ansible scripting, that will trigger a variety of automated behaviors upon git commits and pull (or merge) requests. Some of the triggered DevOps automations include testing, running scripts, building and releasing containerized services. DevSecOps paradigms include running security apps such as password and token detection, as well as other popular DAST and SAST tools.

Who Should Attend?

- Network Engineer/Administrator
- IT/Network Manager or Team Lead
- Systems Administrator or DevOps Engineer
- Security and Compliance Analyst
- Aspiring Network Architect/Consultant

Course Objectives

- Custom CI/CD workflows for seamless automation
- Manage project flows with Python, Ansible, and Go
- Enhance team collaboration and code advancement
- Use Git & GitHub Actions for builds, tests, and deployment
- DAST and SAST tools relating to DevSecOps practices
- AI LLM prompt engineering for relevant configuration snippets and solutions

Course Outline

Module 1: Course Introduction

- CI/CD: The Big Picture

Module 2: Core Git Concepts

- Introduction to Git
- Git Branching

Module 3: Core CI/CD Concepts

- Running Flask in a Docker Container

Module 4: GitLab

- Up and Running with GitLab
- Generating and Using SSH Keys
- Git and GitLab Interaction
- Fixing Merge Conflicts
- Writing Markdown in GitLab
- GitLab Project Wikis
- GitLab Collaboration

Module 5: GitLab CI CD

- Introduction to CI CD
  - GitLab Webhooks
  - GitLab API Calls
  - Docker Scratch and GitLab Registry
  - Creating gitlab-ci.yml
  - workflow and rules
  - Failures within gitlab-ci.yml
  - Lifecycling a GoLang App with GitLab
  - GitLab Container Repository
- GitLab Integration with Kubernetes Clusters

Module 6: Intro to GitHub Actions

- Comparing GitHub Actions to GitLab CI/CD
- Overview of GitHub Actions
  - Create a Simple GitHub Action

Module 7: Core CI/CD Pipeline Setup

- Keywords for GitHub Action Workflows
- Troubleshooting Workflow Failures

Module 8: GitHub WorkFlows

- GitHub Actions and Conditional if
- Workflows that Fail, Recover, and use Contexts
- GitHub Action Runner Images
  - GitHub Actions, Java, and Artifacts
  - CHALLENGE - Conditionals

Module 9: DevSecOps

- Intro to DevOps

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- Intro to DevSecOps

Module 10: Kubernetes Basics

- YAML
- Manifests for Pods
    - Deploy Kubernetes using Ansible

Module 11: Cluster Basics

- Namespaces and Fundamental Kubectl Commands
    - Isolating Resources with Kubernetes Namespaces
- Contexts
    - Cluster Access with Kubernetes Context

Module 12: Jenkins Basics

- Deploying Jenkins with Docker
- Jenkins Dashboard
- Freestyle Projects and Workspaces
- Triggering Jenkins Builds with WebHooks
- Installing Jenkins Plugins

Module 13: Jenkins Scripting

- Docker Build Agents
- Python Builds
- Ansible Builds

Module 14: Jenkins CI / CD

- Continuous Integration
- Creating Jenkins Scripted Pipelines
- Declarative vs Scripted Pipelines
- Jenkins REST API

Module 15: CI/CD in Kubernetes

- Deploy to Kubernetes via Jenkins Pipelines
- Integrate CI Pipelines with Container Registries

Module 16: Capstone

- CAPSTONE - CI/CD Pipelines across GitHub and GitLab