

# ZERO TO HERO

## DevSecOps & Cloud DevOps

Ultimate RoadMap

2025

# Module 1: Introduction to DevOps & DevSecOps

- **Introduction to DevOps**

- What is DevOps & DevSecOps ?
- Benefits and challenges
- DevOps Workflow



- **Real-Time Corporate DevOps Workflow**

- Understanding Real End-to-End CI/CD workflows
- Jira Ticketing
- DevOps Tools
- Roles & Responsibilities
- Deployment Strategies
  - Blue-Green, Canary, Rolling & Other deployments



- **Detailed Documentation**

- DevOps Notes
- 200 Interview Questions
- 100 Errors, Cause, Solutions & RCA



# Module 2: Linux & Shell Scripting



- **Linux Basics**
  - What is Linux? Overview and key features
  - Linux file system hierarchy and key directories
- **Virtual Machines**
  - Introduction to VMs: structure, components, and ports
  - Creating and connecting to a VM via SSH
  - Managing ports and access
- **Essential Linux Commands**
  - Basic and advanced Linux commands
  - File and directory manipulation
- **Package Management**
  - Installing, updating, and removing packages
- **File and Folder Permissions**
  - Understanding and managing permissions
- **User & Group Management**
  - Adding, modifying, and deleting users/groups
- **Linux Networking**
  - IP Addresses, Subnetting
  - Common networking commands
  - Managing network interfaces
- **Linux Troubleshooting**
  - Practical examples and error handling
- **Shell Scripting**
  - Writing and executing scripts for automation
  - Corporate-level shell scripting examples
- **Detailed Documentation**
  - Linux Notes
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA



## Module 3: Git

- **Introduction to Git**
  - Version control basics
  - Setting up Git repositories
- **Essential Git Concepts**
  - Git commands: add, commit, push, pull
  - Git Branch Management
  - Merge vs Rebase With Demo
  - Cherry-Pick With Demo
  - Stash & Pop With Demo
  - Git Squash, Git Revert & Reset
  - Git bisect, Git Blame
  - Handling Merge Conflicts With Demo
  - GitOps Workflows
- **Corporate Branching Strategies**
  - Real Company Branching Strategies
  - Feature, release, and hotfix branches
  - Git workflows in corporate projects
- **Errors & Troubleshooting**
  - Git Errors & Troubleshooting Scenarios
- **Detailed Documentation**
  - Git Notes
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 4: Build Tools



- **Maven**
  - Introduction to Maven
  - Building Java projects
  - Understanding Project Files (dependencies )
- **Npm**
  - Introduction to NPM
  - Building NodeJS Projects
  - Understanding Dependencies in NodeJS
- **Multi-Tier Projects [Local Building]**
  - NodeJS + MySQL
  - DotNET + MongoDB
  - Python + Postgres
  - Java Full Stack Project
- **App Deployment To Tomcat Server Manual**
  - Setup Tomcat Server
  - Deploy a Java Application on Tomcat
- **Detailed Documentation**
  - Build Tools Notes
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 5: CI/CD Tools



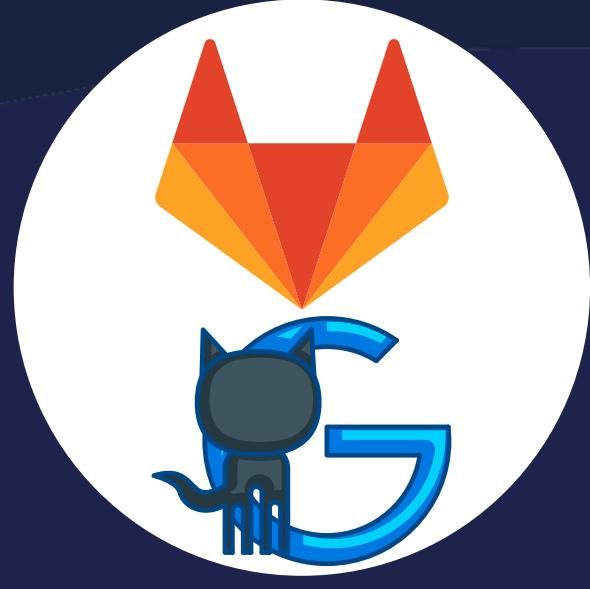
- Jenkins, GitHub Actions, GitLab CI/CD
  - Jenkins setup, configurations, and plugins
  - Creating Jenkins jobs
    - Freestyle,
    - Pipeline,
    - Multibranch
- Jenkins Shared libraries
- Jenkins Parameters
  - Creating Pipelines With Different Types Of Parameters
- Access Management Using Matrix
- Generic Webhook Trigger Setup For Jenkins Pipelines
  - Configuring Webhooks in GitHub & Jenkins For automatic trigger of Jenkins Job on Git Push
- Multibranch Pipeline Webhook Setup
  - Configuring Webhooks in GitHub & Jenkins For automatic trigger of Multibranch Jenkins Job on Git Push
- Jenkins Integration With SonarQube
  - Perform Sonar analysis on Java, NodeJS & Python projects

# Module 5: CI/CD Tools



- **Jenkins Integration With Nexus**
  - Building & Deploying Application Artifacts to Nexus
- **Jenkins Integration With Security Tools**
  - Integrating Security Tools Like Trivy, OWasp Dependency Check for FS & Docker Image Scanning
- **Jenkins Scenario Based Implementations**
  - Implementing Different scenarios using Jenkins Pipelines
- **Jenkins Upstream & Downstream Job in Jenkins**
  - Creating Jenkins Jobs Dependent on Other JObs & Getting triggered by one.
- **Jenkinsfile**
  - Creating & Working WIth Jenkinsfile
- **Jenkins Backups**
  - Taking Jenkins Jobs & Jenkins Backup
- **Jenkins Troubleshooting**
  - Understanding Jenkins Errors & how To resolve those.
- **Jenkins Mail Notifications**
  - Configure Pipelines to send mail notifications over OutLook or Gmail
- **Web Application Build & Deploy To Tomcat Web Server**

# Module 5: CI/CD Tools



- **Full-stack CI/CD Jenkins pipelines [In K8 Modules]**
  - 11 Microservice Project Pipeline
  - Multi-Tier Projects
  - FULL Stack Projects
- **GitHub Actions**
  - Configuration & Agent Setup
  - End-To-End CICD Pipeline From Scratch
- **GitLab CI/CD**
  - Configuration + Runner Setup
  - End-To-End CICD Pipeline From Scratch
- **Detailed Documentation**
  - Jenkins Notes & Code
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 6: SonarQube



- **What is SonarQube & How It Works?**
  - Sonar Server VS Sonar Scanner
  - Code Quality Check & Code Coverage
  - What Issues Sonar Finds
- **SonarQube Local Setup With SSL Certificate & HTTPS**
  - Setting Up SonarQube Locally
  - Understanding Quality Profiles & Rules
  - Understanding Quality Gate
- Jenkins Integration With SonarQube
  - Connect to Jenkins Using Server URL & Token
  - Code Quality and Coverage With Quality Gate Check
- [Hands On Projects]
  - Integrating SonarQube with CI/CD tools
  - SonarQube Analysis on Java Project
  - SonarQube Analysis on NodeJS Project
  - SonarQube Analysis on Python Project
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- Multibranch Analysis in SonarQube
  - Analysis On Multiple Branches using Community Branch Plugin
- Detailed Documentation
  - SonarQube Notes With Steps
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 7: Security Tools



- **Trivy**
  - File System Scan & Docker Image Scanning
  - Filter Results & Export Report in Tabular Format
- **OWASP Dependency Check**
  - Scan For Vulnerabilities In Project Dependencies
- **Prowler**
  - Scans AWS Account for security assessments, compliance checks, and audits
- **OWASP ZAP**
  - Penetration Testing for Deployed Applications
- **HashiCorp Vault**
  - HashiCorp Vault: secrets management
- **Detailed Documentation**
  - Notes
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 8: Nexus Artifact Management

- **Artifact Management in DevOps**
- **Setup Nexus & Configuration**
  - Setting up Nexus in Local
  - Setting up Nexus Using Docker
- **Configuring repositories and artifacts**
  - Create Repos & Configure Nexus
  - Understand Different Kind Of Repos
- **CICD Integration With Jenkins [Project]**
  - Build & Deploy Java Project Artifact To Nexus
  - Build & Deploy NodeJS Project Artifact To Nexus
- **Downloading Nexus Artifacts in Local & Pipelines**
  - Local Download & in Pipeline download
- **Private Docker Registry Setup In Nexus [Corproate Task]**
  - Private Docker Registry setup in Nexus & Pushing Docker Images To It
- **Detailed Documentation**
  - Notes
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA



# Module 9: Docker



- **Docker Basics**
  - What is Docker & What Problem Does it Solve?
- **Docker Architecture**
  - Docker Daemon(Dockered) , Docker CLI
  - Docker Image, Docker Container, Dockerfile
- **Writing optimized Dockerfiles**
  - Learn How To Write Dockerfiles
  - Keywords In Docker
- **Docker Commands**
  - Learn the most important Docker Commands
- **ADD VS COPY & CMD VS ENTRYPOINT**
- **Building images and running containers**
- **Pushing Docker Images To DockerHub Repo**
- **Pushing Images to ECR [Elastic Container Registry]**
- **Multi-Stage Dockerfile**
  - Understanding & Writing Multi-Stage Dockerfiles
  - MultiStage Dockerfile for Java Project
  - MultiStage Dockerfile for NodeJS Project

# Module 9: Docker



- **Docker Compose**
  - Writing Docker Compose Files
  - MongoDB + MongoExpress Project
  - Multi-container deployments
- **Docker Networking and Volumes**
  - Understanding Docker Networks & Volumes Hands-On
- **Hands-On Projects**
  - Docker Integration With CICD
  - Multi-tier Node.js + MySQL
  - Multi-tier .NET + MongoDB
  - Multi-tier Python + PostgreSQL
  - Multi-Tier Java + MySql
  - Full-Stack Java Application
  - Virtual Browser Project
  - Ekart [Java Project]
  - TaskMaster [Java Project]
- **Detailed Documentation**
  - SonarQube Notes With Steps
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 10:Kubernetes



- **What Problem Does K8 Solves?**
- **K8 Architecture**
  - Kubernetes Detailed architecture & Workflow with Diagram
  - Kubernetes Resources Deployment, Pods, Namespaces, Services, Secrets, ConfigMaps , PVC, PV, Storage Class
  - Service Types
  - Kubernetes Networking
- **Kubernetes Setups**
  - Local K8 Setup Using Kubeadm [Hands-On Demo]
  - EKS [Elastic Kubernetes Service] [Hands-On Demo]
  - AKS Setup [Shown in Azure Module] [Hands-On Demo]
  - Highly Available K8 Cluster [Hands-On Demo]
  - Role Based Access Control [Hands-On Demo]
- **Kubernetes Important Tasks**
  - Rollbacks [Hand-On Demo]
  - Horizontal Pod Autoscaling [Hands-On Demo]
  - Vertical Pod Autoscaling [Hands-On Demo]
  - Taints & Tolerations [Hands-On Demo]
  - Dynamic Volumes for Persistent Storage With EBS [Hands-On Demo]

# Module 10:Kubernetes



- **Kubernetes Projects**
  - Full-Stack Mega Project With Persistent Volume [Hands-On Demo]
- **Helm Chart Project**
  - Full-Stack Mega Project With Helm Charts [Hands-On Demo]
- **SSL Cert Project**
  - Multi-Tier CICD Project With SSL Certificate [Hands-On Demo]
- **GITOPS Project**
  - Multi-Tier Production Level GitOps Project [Hands-On Demo]
- **Blue-Green Deployment**
  - Blue-Green Deployment Project-1 [Hands-On Demo]
  - Blue-Green Deployment Project-2 [Hands-On Demo]
- **MicroServices Project**
  - 11- Microservice Project [Hands-On Demo]
- **Ingress + SSL Certificate Project**
  - Ingress SSL Integration [Hands-On Demo]
- **Detailed Documentation**
  - Notes & Documentation
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 11: Azure DevOps



- **Azure DevOps Setup**
  - Azure organization setup
  - Exploring Core services (Repos, Pipelines, Artifacts, AKS, ACR)
- **Azure DevOps Hands-on Projects**
  - **Classic Pipeline**
    - Full Stack CICD with AKS [Classic Pipeline]
    - Full Stack CICD with AKS & ACR [Classic Pipeline]
    - 10-Microservice Deploy To AKS
    - NodeJS + MongoDB Project Deploy To Azure App Service [Classic Pipeline]
  - **YAML Pipeline**
    - Secret Santa CICD With AKS [YAML Pipeline]
    - Multi-Tier Project CICD With AKS [YAML Pipeline]
    - NodeJS + MongoDB Project Deploy To Azure App Service [YAML Pipeline]
  - **Multi Cluster Deployment**
- **Detailed Documentation**
  - Steps Document
  - 200 Interview Questions
  - 100 Errors, Cause, Solutions & RCA

# Module 12: Infrastructure as Code (IaC)



- **Terraform**
  - Infrastructure as Code (IaC)
  - Benefits of using Terraform
  - Setting up Terraform
  - Writing & Understanding the Terraform files from Scratch
  - State Management, State locking, Terraform Backends
  - Terraform Modules
  - Conditional Expressions & Loops
  - Managing Secrets
  - Terraform Workspaces
  - Terraform With Jenkins
- **Terraform Hand-On Projects**
  - Infrastructure Deployment
  - EC2 Creation With Infra
  - Multi-Environment Infra Setup

# Module 12: Infrastructure as Code (IaC)



- **Ansible**

- Ansible Introduction & Basics [Hands-On Demo]
- Ansible Playbooks Hands-On
- Ansible Collections [Hands-On Demo]
- Ansible Roles [Hands-On Demo]
- Ansible With Jenkins [Hands-On Demo]
- Ansible CI/CD Project [Hands-On Demo]
- Ansible Vault
- Ansible + Terraform Corporate Project

- **Detailed Documentation**

- Documentation
- 200 Interview Questions
- 100 Errors, Cause, Solutions & RCA

# Module 13: Monitoring



- **Monitoring Tools**

- Prometheus, Grafana, Node Exporter, Black Box Exporter
- Understanding Monitoring Tools

- **Projects**

- Local Monitoring With Alert Manager [Receiving Mail Notifications]
- Monitoring Setup Using Docker
- Kubernetes node monitoring
- Application Deployed in K8 monitoring

- **Detailed Documentation**

- Steps Documentation
- 200 Interview Questions
- 100 Errors, Cause, Solutions & RCA

# Projects in DevOps BootCamp

- **Ultimate Hands-On Projects**

- Multi-tier Node.js + MySQL
- Multi-tier .NET + MongoDB
- Multi-tier Python + PostgreSQL
- Multi-tier Java + MySQL
- Mega Project for EKS
- Mega Project With Helm Chart
- GitOps Project
- Virtual Browser Project
- 11 Microservice Based Project
- Terraform + Ansible Project
- Kubernetes Worker Node Monitoring
- Monitoring Application Deployed in Kubernetes