

Mastering DevOps: From Basics to Enterprise-Grade Automation

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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

Module 1: Introduction to DevOps & DevSecOps

- Introduction to DevOps
- What is DevOps & DevSecOps?
- Why DevOps? Benefits and challenges
- Real-Time Corporate DevOps Workflow
- Understanding end-to-end CI/CD workflows
- Deployment Strategies
 - Blue-Green, Canary, Rolling & Other deployments

Detailed Documentation

- Key commands, troubleshooting steps, and best practices
- 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
- 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
- Handling Merge Conflicts With Demo
- Corporate Branching Strategies
- Real Company Branching Strategies
- Feature, release, and hotfix branches
- Git workflows in corporate projects
- Errors & Trouble Shooting
- Git Errors & Troubleshooting Scenarios

Detailed Documentation

- Git Notes
- 200 Interview Questions
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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
- 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
- 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
- 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

- CI/CD Notes
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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
- 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

- Security Tools 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 a 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

- Nexus 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 Dockemle
- Understanding & Writing Multi-Stage Dockerfiles
- MultiStage Dockerfile for Java Project
- MultiStage Dockerfile for NodeJS Project

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 CI/CD
- 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

- Notes & Code
- 200 Interview Questions
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Module-10: Kubernetes

- What Problem Does K8 Solve?
- 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]
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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]
- 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 CI/CD 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 & Code
- 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
 - 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
- Terraform
- Infrastruc
- EC2 Crea
- Multi-Em
- 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

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 CICD Project [Hands-On Demo]
- Ansible Vault
- Ansible + Terraform Corporate Project
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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

- Documentation
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