DevOps Automation Training

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IT Academy
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Duration: **3 Day**

DevOps Automation is a comprehensive training program designed for IT professionals who want to automate and optimize software development, infrastructure management, and deployment workflows. In modern software environments, manual processes often create bottlenecks, increase operational risks, and slow down delivery cycles. This course provides the knowledge and practical skills needed to implement automation across the entire DevOps lifecycle.

Participants will gain hands-on experience with industry-leading tools such as**Jenkins**, **GitHub Actions**, **Terraform**, **Ansible**, **Docker**, **Kubernetes**, **Prometheus**, **Grafana**, and major cloud platforms. Through practical labs and real-world scenarios, learners will develop the ability to build scalable, secure, and highly automated DevOps environments.

By the end of the course, attendees will be able to design and implement end-to-end automation strategies that integrate CI/CD, Infrastructure as Code, monitoring, security, and cloud-native operations.

Prerequisites

To get the most value from this course, participants should ideally have:

- Basic understanding of cloud infrastructure and services
- Familiarity with command-line tools
- Basic scripting knowledge
- Understanding of DevOps concepts
- Experience with version control systems such as Git

Who Should Attend

This course is ideal for:

- **Cloud Engineers**
- **DevOps Engineers**
- **Site Reliability Engineers (SREs)**
- **System Administrators**
- **Infrastructure Engineers**
- Software Developers
- Platform Engineers
- Cloud Architects
- IT professionals focused on automation and operational efficiency

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What You Will Learn

By the end of this course, learners will be able to:

- Explain core **DevOps** principles and automation concepts.
- Build and manage **CI/CD Pipelines**.
- Implement **Infrastructure as Code (IaC)** solutions.
- Containerize applications using Docker.
- Deploy and orchestrate workloads using Kubernetes.
- Configure monitoring and logging platforms.
- Integrate **DevSecOps** practices into development workflows.
- Optimize automation strategies across AWS, Azure, and GCP.
- Design fully automated DevOps ecosystems.

Training Outline

Introduction to DevOps and Automation

- DevOps culture and principles
- Software development lifecycle
- The role of automation in DevOps
- Continuous delivery methodologies
- Modern operational practices

CI/CD Pipeline Management

Continuous Integration (CI)

- Automated build processes
- Source code integration
- Automated testing strategies
- Quality assurance automation

Continuous Delivery & Deployment (CD)

- Automated deployment pipelines
- Release management
- Deployment strategies
- Rollback and recovery mechanisms

CI/CD Tools

- **Jenkins**
- **GitHub Actions**
- **GitLab CI/CD**
- Pipeline design and optimization

Version Control Systems

- **Git Fundamentals**

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- Branching strategies
- Merge workflows
- Collaborative development practices
- Repository management

Infrastructure as Code (IaC)

IaC Fundamentals

- Understanding Infrastructure as Code
- Automated infrastructure management
- Repeatable deployments
- Infrastructure standardization

Terraform

- **Terraform**
- Resource provisioning
- State management
- Module development
- Multi-environment deployments

Configuration Management with Ansible

- **Ansible**
- Playbook creation
- Automated configuration
- Server management

Containerization and Kubernetes

Docker

- **Docker Architecture**
- Container creation and deployment
- Image management
- Container security practices
- Registry management

Kubernetes

- **Kubernetes Fundamentals**
- Pods, Deployments, and Services
- Cluster administration
- Scaling strategies
- Automated orchestration

Monitoring and Logging

Monitoring Platforms

- Monitoring concepts

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- Infrastructure monitoring
- Application performance tracking

Prometheus

- **Prometheus**
- Metrics collection
- Alerting systems
- Monitoring best practices

Grafana

- **Grafana Dashboards**
- Visualization and reporting
- Performance analytics
- Operational insights

Log Management

- Centralized logging
- ELK Stack fundamentals
- Log analysis techniques
- Troubleshooting workflows

Automation Scripting and Tools

- Bash scripting
- PowerShell automation
- Python automation
- Task scheduling
- Workflow automation

Configuration Management and Provisioning

- Infrastructure configuration management
- Resource provisioning
- Automated deployment processes
- Infrastructure lifecycle management

DevSecOps and Security Automation

Secure DevOps Practices

- **DevSecOps Fundamentals**
- Shift-left security principles
- Security automation workflows
- Continuous security testing

Security Controls and Compliance

- Automated security scanning
- Policy enforcement mechanisms

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- Compliance validation
- Security reporting

Cloud Automation

AWS, Azure, and Google Cloud

- Cloud resource automation
- Auto-scaling solutions
- Cloud infrastructure optimization
- Cost management strategies

DevOps Best Practices

- Scalable architectures
- High availability design
- Performance optimization
- Operational excellence
- Continuous improvement methodologies

Designing End-to-End DevOps Automation

- CI/CD integration
- IaC and container orchestration
- Monitoring and security integration
- Building fully automated DevOps platforms