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دوره Cloud-Base DevOps Engineering(AWS-Azure-GCP)

سرفصل ها

۱. **Introduction to Cloud-Based DevOps (۱۰ hours)**

- Understanding DevOps Principles in the Cloud
  - Culture, Collaboration, and Automation in Cloud Environments
  - Key Benefits of Cloud-Based DevOps: Scalability, Flexibility, and Cost-Efficiency
- Overview of Cloud Infrastructure (AWS, Azure, GCP)
  - Key Concepts: Regions, Availability Zones, Virtual Networks, Security Groups
  - Introduction to IaaS, PaaS, and SaaS Models
- Lab Session: Setting Up Basic Cloud Infrastructure on AWS, Azure, and GCP
  - Creating Virtual Machines and Configuring Virtual Networks
  - Introduction to AWS Management Console, Azure Portal, and Google Cloud Console

۲. **Linux Essentials for Cloud DevOps (۱۰ hours)**

- Introduction to Linux Operating System
  - Linux Distributions: Amazon Linux, Ubuntu, CentOS
  - File System Hierarchy and Basic Commands (ls, cd, pwd, etc.)
- Basic Linux Commands and Shell Scripting
  - File Operations: cp, mv, rm, cat, nano, vim
  - Process Management: ps, top, kill

- User and Group Management: useradd, groupadd, chmod, chown
- Lab Session: Hands-on with Linux Commands in Cloud Environments
  - Working with AWS EC۲ Instances, Azure Virtual Machines, and GCP Compute Engine
  - Writing Basic Shell Scripts for Automation

۳. **Version Control Systems and Git Integration (۱۰ hours)**

- Introduction to Version Control Systems (VCS)
  - Git Basics: Branching, Merging, and Collaboration
  - Importance of Version Control in DevOps
- Deep Dive into Git and GitHub/GitLab Integration
  - Overview of GitHub, GitLab as DevOps Platforms
  - Setting Up Repositories, Managing Access, Using Pull Requests
- Lab Session: Working with Git in Cloud Environments
  - Using Git for Version Control on AWS CodeCommit, Azure Repos, and Google Cloud Source Repositories
  - Setting Up CI/CD Pipelines with GitHub Actions

۴. **AWS DevOps Tools and Services (۱۰ hours)**

- Overview of AWS DevOps Services
  - AWS CodePipeline, CodeBuild, CodeDeploy, and CodeCommit
  - AWS CloudFormation and AWS Elastic Beanstalk
- Hands-On with AWS DevOps Tools
  - Building CI/CD Pipelines with AWS CodePipeline
  - Deploying Applications with AWS CodeDeploy and Elastic Beanstalk
- Lab Session: Implementing AWS DevOps Solutions
  - Creating a CI/CD Pipeline Using AWS DevOps Services
  - Automating Infrastructure Deployment with AWS CloudFormation

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۵. **Azure DevOps Tools and Services (۱۰ hours)**

- Overview of Azure DevOps Services
  - Azure Pipelines, Azure Repos, Azure Artifacts, Azure Boards
  - Azure Resource Manager (ARM) Templates and Azure Functions
- Hands-On with Azure DevOps Tools
  - Building CI/CD Pipelines with Azure Pipelines
  - Deploying Applications with Azure Functions and Azure Kubernetes Service (AKS)
- Lab Session: Implementing Azure DevOps Solutions
  - Creating a CI/CD Pipeline Using Azure DevOps
  - Automating Infrastructure Deployment with Azure Resource Manager Templates

۶. **Google Cloud DevOps Tools and Services (۱۰ hours)**

- Overview of GCP DevOps Services
  - Google Cloud Build, Google Cloud Deployment Manager, Google Kubernetes Engine (GKE)
  - Google Cloud Source Repositories, Artifact Registry
- Hands-On with GCP DevOps Tools
  - Building CI/CD Pipelines with Google Cloud Build
  - Deploying Applications with Google Kubernetes Engine (GKE) and Google App Engine
- Lab Session: Implementing GCP DevOps Solutions
  - Creating a CI/CD Pipeline Using GCP DevOps Tools
  - Automating Infrastructure Deployment with Google Cloud Deployment Manager

۷. **Infrastructure as Code (IaC) on AWS, Azure, and GCP (۱۰ hours)**

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- Introduction to Infrastructure as Code (IaC)
  - Benefits and Tools (AWS CloudFormation, Azure Resource Manager, Google Cloud Deployment Manager, Terraform)
  - Best Practices for IaC in Multi-Cloud Environments
- Hands-On with Terraform for Multi-Cloud Deployments
  - Writing and Managing Terraform Scripts for AWS, Azure, and GCP
- Lab Session: Implementing IaC with Terraform
  - Automating Infrastructure Setup on AWS, Azure, and GCP Using Terraform

۸. **Containerization and Orchestration with AWS, Azure, and GCP (۱۰ hours)**

- Introduction to Docker and Kubernetes
  - Benefits of Containerization in Cloud Environments
- Deep Dive: Container Services on AWS, Azure, and GCP
  - AWS Elastic Kubernetes Service (EKS), Azure Kubernetes Service (AKS), Google Kubernetes Engine (GKE)
- Lab Session: Deploying Containerized Applications
  - Setting Up and Managing Kubernetes Clusters on AWS EKS, Azure AKS, and GCP GKE
  - Deploying and Managing Docker Containers

۹. **Continuous Integration and Continuous Deployment (CI/CD) in the Cloud (۱۰ hours)**

- Overview of CI/CD Pipelines
  - CI/CD Strategies for Cloud Environments
  - Tools and Techniques for Automated Testing and Deployment
- Implementing CI/CD with AWS, Azure, and GCP
  - Using AWS CodePipeline, Azure Pipelines, and Google Cloud Build for

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CI/CD

- Integrating with Third-Party Tools like Jenkins and GitLab

- Lab Session: Creating End-to-End CI/CD Pipelines
  - Building and Deploying Applications with AWS, Azure, and GCP Pipelines

۱۰. **Monitoring, Logging, and Observability in Cloud (۱۰ hours)**

- Introduction to Monitoring and Logging
  - Importance of Observability in Cloud-Based DevOps
  - Overview of Tools: AWS CloudWatch, Azure Monitor, Google Cloud Operations Suite (Stackdriver), ELK Stack
- Deep Dive: Setting Up Monitoring and Alerts
  - Configuring AWS CloudWatch, Azure Monitor, and Google Cloud Operations Suite for Application and Infrastructure Monitoring
- Lab Session: Implementing Monitoring Solutions
  - Setting Up Dashboards and Alerts on AWS CloudWatch, Azure Monitor, and Google Cloud Operations Suite

۱۱. **Security and Compliance in Cloud DevOps (۱۰ hours)**

- Introduction to Cloud Security Principles
  - Shared Responsibility Model in AWS, Azure, and GCP
  - Cloud Security Best Practices and Compliance (e.g., IAM, VPC Security, Data Encryption)
- Hands-On Security Tools
  - Using AWS IAM, AWS WAF, Azure Active Directory, Azure Security Center, Google Cloud IAM, and Google Cloud Security Command Center
- Lab Session: Implementing Security Best Practices
  - Configuring Security Groups, IAM Roles, and Access Controls in AWS, Azure, and GCP

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۱۲. **Advanced Automation and Scripting for Cloud DevOps (۱۰ hours)**

- Advanced Scripting Techniques for Cloud Automation
  - Bash, Python, and PowerShell for AWS, Azure, and GCP Automation
  - Use Cases and Best Practices
- Lab Session: Writing Advanced Scripts
  - Automating Cloud Operations (e.g., Scaling, Backup, Maintenance) with AWS CLI, Azure CLI, and Google Cloud SDK

۱۳. **Multiple CI/CD Projects with AWS, Azure, GCP, and Jenkins (۱۰ hours)**

- Project ۱: CI/CD Pipeline with AWS DevOps Services
  - Design and Implement a Complete CI/CD Pipeline Using AWS CodePipeline, CodeBuild, and CodeDeploy
  - Automate the Build, Test, and Deployment Processes in AWS
- Project ۲: CI/CD Pipeline with Azure DevOps Services
  - Set Up Azure Pipelines for Continuous Integration and Deployment
  - Deploy Applications to Azure Kubernetes Service (AKS) and Azure App Services
- Project ۳: CI/CD Pipeline with Google Cloud DevOps Services
  - Create a Pipeline Using Google Cloud Build for CI/CD
  - Deploy Applications to Google Kubernetes Engine (GKE) and Google App Engine
- Project ۴: Hybrid CI/CD Pipeline Using Jenkins, AWS, Azure, and GCP
  - Design a Multi-Cloud CI/CD Pipeline Using Jenkins for CI, AWS CodeDeploy, Azure Pipelines, and Google Cloud Build for Deployment
  - Implement Advanced Deployment Strategies (Blue-Green, Canary Releases)
  - Monitor and Log Deployments Using AWS CloudWatch, Azure Monitor,

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Google Cloud Operations Suite, and ELK Stack

- Lab Session: Implementing and Managing Multiple CI/CD Projects
  - Setting Up and Configuring Environments for Each Project
  - Deploying Applications Across Different Cloud Platforms

۱۴. **Case Studies, Best Practices, and Final Project (۱۰ hours)**

- Case Studies on Successful Cloud DevOps Implementations
  - Real-World Examples, Best Practices, and Lessons Learned
- Final Project Presentation and Evaluation
  - Develop and Demonstrate a Comprehensive DevOps Pipeline

مخاطبان دوره

کارشناسان شبکه

متخصصین برنامه نویسی

پیش نیاز ها

دوره نتورک پلاس