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Course Name

Continuous Integration and Continuous Deployment with Jenkins

Sector Name

Information Technology

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Continuous Integration and Continuous Deployment with Jenkins

Course Introduction

Welcome to "Continuous Integration and Continuous Deployment with Jenkins," a comprehensive five-day course designed to equip professionals in DevOps with the skills needed to implement robust CI/CD pipelines using Jenkins. In today’s fast-paced software development landscape, organizations demand efficient, automated workflows to deliver high-quality applications at scale. This course dives deep into Jenkins' architecture, pipeline syntax, and integration capabilities, enabling you to design and optimize CI/CD pipelines that meet organizational needs while adhering to industry standards.

Through hands-on labs and real-world case studies, you will explore advanced topics such as declarative vs. scripted pipeline syntax, automated testing frameworks, static code analysis, and infrastructure-as-code integration. By leveraging tools like SonarQube, Terraform, and Docker, you will learn how to build secure, scalable, and maintainable pipelines that align with modern DevOps practices. Additionally, you will gain insights into monitoring, auditing, and securing Jenkins installations to ensure operational reliability.

By the end of this course, you will be equipped with the expertise to lead CI/CD initiatives within your organization, fostering a culture of

automation, collaboration, and continuous improvement. Whether you are a seasoned DevOps engineer or new to the field, this course provides the knowledge and skills necessary to excel in CI/CD implementation and optimization. With Jenkins as your foundation, you will be prepared to tackle complex challenges in software delivery and deployment.

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Target Audience

This course is ideal for DevOps engineers, software developers, and IT professionals involved in CI/CD processes. It is particularly beneficial for managers, team leaders, and decision-makers who want to enhance their CI/CD skills. Additionally, anyone looking to gain a comprehensive understanding of CI/CD and its practical applications should consider attending this course.

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Learning Objectives

- ✓ Understand the principles of CI/CD and their role in modern software delivery.
- ✓ Master Jenkins pipeline creation, optimization, and troubleshooting.
- ✓ Integrate automated testing, static code analysis, and security scanning into pipelines.
- ✓ Deploy applications across multiple environments (development, staging, production).
- ✓ Secure Jenkins installations and manage distributed build agents.

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Course Outline

✓ Day 01

Introduction to CI/CD

- ✓ Definition and importance of CI/CD in modern software development.
- ✓ Benefits of implementing CI/CD pipelines.
- ✓ Overview of popular CI/CD tools (Jenkins, GitLab, CircleCI).

Introduction to Jenkins

- ✓ Jenkins architecture and key components.
- ✓ Installing Jenkins on Linux and Windows systems.
- ✓ Configuring plugins and basic settings.
- ✓ Interactive Session
- ✓ Hands-on exercise: Set up Jenkins on a virtual machine.
- ✓ Configure user authentication and install essential plugins.

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Course Outline

✓ Day 02

Building CI Pipelines with Jenkins

- ✓ Understanding Jenkins Pipeline Syntax
- ✓ Declarative vs. Scripted pipeline syntax.
- ✓ Key elements of a Jenkinsfile (stages, steps, post-actions).
- ✓ Writing and debugging your first Jenkins pipeline.
- ✓ Creating Build Jobs
- ✓ Setting up build triggers (webhooks, scheduled builds).
- ✓ Configuring source code management (GitHub, Bitbucket).
- ✓ Adding build steps (Maven, Gradle, npm).

Practical Exercise

- ✓ Create a CI pipeline for a Java Spring Boot application.
- ✓ Trigger builds manually and automatically.

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Course Outline

✓ Day 03

Automating Testing and Quality Assurance

- ✓ Integrating Automated Tests
- ✓ Setting up unit tests (JUnit, pytest) and integration tests.
- ✓ Publishing test results in Jenkins dashboards.
- ✓ Configuring notifications for test failures (Slack, email).
- ✓ Static Code Analysis
- ✓ Integrating tools like SonarQube and ESLint.
- ✓ Analyzing code quality metrics (code coverage, vulnerabilities).
- ✓ Enforcing quality gates in pipelines.

Role Play

- ✓ Implement a test suite in your pipeline.
- ✓ Review and interpret static code analysis reports.

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Course Outline

✓ Day 04

Implementing CD with Jenkins

Deploying Applications

- ✓ Configuring deployment stages (development, staging, production).
- ✓ Using environment variables for configuration management.
- ✓ Rolling back deployments in case of failures.

Automating Infrastructure Provisioning

- ✓ Integrating infrastructure-as-code tools (Terraform, AWS CloudFormation).
- ✓ Automating resource creation and destruction.
- ✓ Managing infrastructure configurations in version control.

Group Activity

- ✓ Set up a CD pipeline for deploying a microservices-based application.
- ✓ Automate infrastructure provisioning using Terraform.

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Course Outline

✓ Day 05

Advanced Topics and Best Practices

- ✓ Securing Jenkins
- ✓ Configuring role-based access control (RBAC).
- ✓ Protecting sensitive data with credentials and secrets management.
- ✓ Auditing Jenkins activities and logs.
- ✓ Scaling Jenkins
- ✓ Setting up Jenkins agents for distributed builds.
- ✓ Optimizing performance with parallel jobs and caching.
- ✓ Handling large-scale CI/CD pipelines.

Best Practices and Real-World Examples

- ✓ Reviewing best practices for CI/CD with Jenkins.
- ✓ Discussing real-world case studies and success stories.
- ✓ Final Project Presentation: Comprehensive CI/CD Pipeline
- ✓ Closing Remarks

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Oct. 18, 2027	Oct. 22, 2027	5 days	4250.00 $	UAE , Dubai
Aug. 2, 2027	Aug. 6, 2027	5 days	4250.00 $	UAE , Dubai
March 29, 2027	April 2, 2027	5 days	5950.00 $	switzerland , Geneva
June 13, 2027	June 17, 2027	5 days	4250.00 $	Egypt , Cairo

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