

Overview of DevOps Practices

Learning Objective

- Get introduced to successful DevOps practices and understand how to navigate the DevOps environment.

Topics

- Introduction of DevOps practices
- What is DevOps?
- Vision and phase-wise implementation
- Continuous code inspection
- Continuous integration
- Continuous delivery and continuous deployment
- Infrastructure as code
- Pipeline example

Overview of Jenkins

Learning Objective

- Understand how Jenkins works and where it is useful.

Topics

- Introduction of Jenkins
- What is Jenkins?
- Why Jenkins?
- Jenkins projects
- Jenkins tour

Install and Configure Jenkins

Learning Objective

- Learn how to install and configure Jenkins

Topics

- Introduction to installation and configuration of Jenkins
- Install and configure Jenkins
- Introduction to Docker Desktop
 - Download Docker desktop
 - Install Docker desktop
 - Execute Docker commands
 - Jenkins network and volume configuration for docker
- Run Jenkins in Docker container
- Install WAR file in any operating system
- Jenkins configuration
 - System configuration for Jenkins
- Jenkins plugins
 - Introduction to plugins
 - Manage plugins
- Global Tools Configuration
 - Create a simple Maven project
- Credential management
- Jenkins home directory

Overview of SonarQube

Learning Objective

- Gain an understanding of SonarQube and its benefits

Topics

- Introduction of SonarQube
- Why SonarQube?
 - What is SonarQube?

- Install and configure SonarQube
- SonarQube plans
- How does SonarQube work?
- Install and configure SonarQube
- SonarQube –Rules
- SonarQube –Sonar tokens
- SonarQube –Users
- SonarQube –Groups
- SonarQube using Docker
- SonarQube in different OS
- Quality gate
- Quality gate introduction
- Quality gate
- Quality profiles
- Quality profile introduction
- Quality profile
- SonarQube scanner
- SonarQube scanner introduction
- SonarQube scanner

Pipeline as a Code

Learning Objective

- Get an understanding of how Pipeline as a code works

Topics

- Introduction of pipeline as a code
- What is pipeline as a code
- Jenkins 2.0

Jenkins Pipelines

Learning Objective

- Understand Jenkins pipeline and how to build them

Topics

- Build pipeline plugin
 - Build pipeline in Jenkins
- Jenkinsfile introduction
- Scripted Pipeline
- Declarative Pipeline
 - Declarative Pipeline introduction
 - Declarative Pipeline
- Scripted Pipeline vs Declarative Pipeline
- Blue Ocean
- YAML pipeline
 - Create YAML pipeline
- Pipeline syntax: Snippet Generator

Multi-branch Pipeline

Learning Objective

- Learn about multi-branch pipelines and branching models

Topics

- Introduction of multi-branch pipeline
- Branching models and multibranch pipeline
- Multi-branch pipeline in Jenkins

Distributed Architecture

Learning Objective

- Understand how to work with Jenkins in a distributed architecture.

Topics

- Introduction of distributed architecture
- Jenkins distributed architecture
- Controller and agent in Jenkins
- Agent labels
- Tools location in Jenkins agent
- Different agents for different stages
- Execute pipeline on Docker agent
- Agent pool

Authentication and Authorization in Jenkins

Learning Objective

- Get an understanding of the security measures you can implement with Jenkins

Topics

- Introduction of authentication and authorization
- Enabling security in Jenkins
- Authentication in Jenkins
- Authorization in Jenkins
 - Project-based authorization
- Security advisories in Jenkins

CI/CD Implementation for SpringBoot Application using Pipeline as Code

Learning Objective

- Explore how to use Springboot for CI/CD implementation.

Topics

- Introduction of CI/CD implementation for SpringBoot application using pipeline as code
- Configure pipeline to access GitHub based SpringBoot project
- Static code analysis application using SonarQube
- Continuous integration –Unit tests

- Continuous integration –Code coverage
- Continuous integration –Build
- Continuous integration –Build Docker image
- Continuous integration –Scan Docker image
- Continuous integration –Deploy application
- Verifying the pipeline stages
- Slack notifications
- Post build actions

Capstone

Learning Objective

- For the final capstone project, you will create pipeline as code to implement continuous integration and continuous delivery for a SpringBoot project.