

Sela.

DevOps_OSS

DevOps using Open Source Tools

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DevOps using Open Source Tools

DevOps_OSS - Version: 1

 6 days Course

Description:

DevOps methodologies allow organizations to improve their software development lifecycle by applying techniques to improve software delivery and operations. In this course, we will learn how to design and implement DevOps practices by theoretical sessions and many hands-on exercises.

Intended audience:

Infrastructure Professionals and system administrators

Prerequisites:

Practical experience in software development (IT or Dev)
prerequisites as brought within the specific 1-day syllabuses

Objectives:

Understanding the DevOps importance in our days
Learn how to implement DevOps methodologies and it's best practices
Use the most used tools to implement DevOps practices and compare the different options in the market
Specific objectives as brought within the 1-day syllabuses

Topics:



GIT

- Module 01: Introduction
- Module 02: Git Structure
- Module 03: Working Locally (Basics)
- Module 04: Working with Branches
- Module 05: Merge and Rebase
- Module 06: Undoing Changes
- Module 07: Working with Remotes
- Module 08: Git Workflows
- Module 09: Advanced Git Overview
- Module 10: What Next?

Docker Workshop

- Module 01: Introduction
- Module 02: Understanding Docker
- Module 03: Installing Docker
- Module 04: Docker Architecture
- Module 05: Docker Basics
- Module 06: Building Containers
- Module 07: Managing Containers
- Module 08: Volumes & Networks
- Module 09: Working with Registries
- Module 10: Advanced Docker Overview

Modern CI/CD

- Introduction & Setup
 - Course introduction



- Overview of the course objectives and structure
- Setup instructions for required software and tools
- CI/CD introduction
 - Understanding the principles and benefits of Continuous Integration and Continuous Deployment (CI/CD)
 - Overview of the CI/CD pipeline and its components
 - Introduction to common CI/CD practices and workflows
- Jenkins overview
 - Jenkins Pipeline as code
 - Jenkins Shared Library
- GitLab overview
 - GitLab CI/CD pipeline
- GitHub overview
 - GitHub Actions overview
 - CI/CD with GitHub Actions
- Artifacts repositories overview
 - Artifacts management with Sonatype Nexus
 - Artifacts management with JFrog Artifactory
- GitOps overview
 - GitOps with ArgoCD

Kubernetes

- Module 01 - Introduction
 - Workshop Objectives
 - Workshop Agenda
 - Kubernetes Introduction
- Module 02 - Kubernetes Architecture
 - Core Concepts
 - High-Level components Architecture
 - Master Components



- Worker Node Components
- Putting All Together
- Additional Services
- Module 03 - YAML and Kubctl
 - YAML
 - Kubectl
 - Lab 01: Setting Up Your Workstation
- Module 04 - Kubernetes Basics
 - Kubernetes Building Blocks
 - Namespaces
 - Pods
 - Replication Sets
 - Lab 02: Creating Our First Pod
- Module 05 - Deployments and Upgrades
 - Deployments
 - Rolling Upgrades
 - Lab 03: Deploy and Upgrade a Single Service
- Module 06 - Labels and Annotations
 - Labels
 - Annotations
 - Selectors
- Module 07 - Kubernetes Networking
 - Kubernetes Networking Introduction
 - Container Network Interface (CNI)
 - CNI Plugins
 - Fundamental Networking Rules
 - Networking patterns
- Module 08 - Services
 - Services Introduction
 - Service Types – ClusterIP
 - Service Types – NodePort



- Service Types – LoadBalancer
- Service Types – ExternalName
- Lab 04: Creating a Load Balancer Service
- Module 09 - Ingress
 - Introduction to Ingress
 - Ingress Controllers
 - Lab 05: Deploying applications using Ingress
- Module 10 - ConfigMaps and Secrets
 - ConfigMaps
 - ConfigMaps – As Environment Variables
 - ConfigMaps – As Volumes
 - Secrets
 - Lab 06: Using ConfigMaps and Secrets
- Module 11 - Jobs and CronJobs
 - Jobs
 - CronJobs
 - Lab 07: Running Jobs and CronJobs
- Module 12 - Daemonsets
 - DaemonSets
 - Lab 08: Running Pods as DaemonSets
- Module 13 - Helm Package Manager
 - What is Helm?
 - Helm Concepts
 - Helm Architecture
 - Tiller
 - Helm CLI
 - Using Helm Charts
 - Lab 09: Deploying Applications using Helm
- Module 14 - Managed Kubernetes
 - Local Development Kubernetes
 - Kubernetes on Google Cloud Platform (GKE)



- Kubernetes on Amazon Web Services (EKS)
- Kubernetes on Microsoft Azure (AKS)
- Kubernetes On-Premise using Kubeadm and Kubespray
- Other Kubernetes Distributions
- Module 15 - Advanced Scheduling
 - Requests & Limits
 - Taints & Tolerations
 - Affinity & Anti-Affinity
- Module 16 - Autoscaling
 - Scaling pods horizontally
 - Scaling pods vertically
 - Scaling cluster horizontally
 - Lab 10: Configuring Autoscaling
- Module 17 - Kubernetes Storage
 - Introduction
 - Volumes
 - PersistentVolumes
 - PersistentVolumeClaims
 - StorageClasses
- Module 18 - StatefulSets
 - StatefulSets
 - Lab 11: Working with StatefulSets
- Module 19 - Summary
 - Course Summary
 - What Next?