

DVS DEVOPS Content

1.Introduction DevOps:

- ❖ What is DevOps
- ❖ Why is DevOps Needed
- ❖ DevOps Lifecycle
- ❖ DevOps Workflow
- ❖ How is DevOps different from Agile? DevOps vs Agile
- ❖ Who is a DevOps engineer
- ❖ Roles, Responsibilities and skill of a DevOps Engineer
- ❖ How much does DevOps Engineer Make

2.GIT:

- ❖ Introduction into version control systems
- ❖ Introduction into Git
- ❖ The details of the commit objects
- ❖ Commit references
- ❖ Git tooling
- ❖ Installation of the Git command line tooling
- ❖ Git configuration
- ❖ Configure files and directories to ignore
- ❖ Remote repositories
- ❖ Using Branches
- ❖ Using Tags
- ❖ Comparing changes
- ❖ Analyzing the commit history with git log
- ❖ Viewing changes with git diff and git show
- ❖ Using the Git blame command

- ❖ Commit history of a repository or certain files
- ❖ git shortlog for release announcements
- ❖ Stashing changes in Git
- ❖ Remove untracked files with git clean
- ❖ Revert uncommitted changes in tracked files
- ❖ Using Git reset
- ❖ Resetting changes with git reset
- ❖ Deleting changes in the working tree & staging area for tracked files
- ❖ Retrieving files from the history
- ❖ See which commit deleted a file
- ❖ Revert commits
- ❖ Resetting the working tree based on a commit
- ❖ Recovering lost commits
- ❖ Remote and local tracking branches
- ❖ Updating your remote-tracking branches with git fetch
- ❖ Merging
- ❖ Rebasing branches
- ❖ Editing history with the interactive rebase
- ❖ Using the Git cherry-pick command
- ❖ Solving merge conflicts
- ❖ Keep a version of a file during a merge conflict
- ❖ Example: Solving a conflict during a merge operation
- ❖ Solving rebase conflicts
- ❖ Handling a conflict during a rebase operation
- ❖ Aborting a rebase operation
- ❖ Picking theirs or ours for conflicting file

- ❖ Define alias
- ❖ Error search with git bisect
- ❖ Rewriting commit history with git filter-branch
- ❖ Working with patch files
- ❖ Git commit and other hooks
- ❖ Handling line endings on different platforms
- ❖ Migrating from SVN

2.MAVEN:

- ❖ Maven Overview
- ❖ Maven-Environment setup
- ❖ Maven-POM
- ❖ Maven-Build Life Cycle
- ❖ Maven-Plugins
- ❖ Maven-Creating Project
- ❖ Maven-Build & Test Project
- ❖ Maven-External Dependencies
- ❖ Maven-Snapshots
- ❖ Maven-Build Automation
- ❖ Maven-Manage Dependencies
- ❖ Maven-Deployment Automation
- ❖ Maven-Web Application
- ❖ Maven-Eclipse IDE

3.JENKINS:

- ❖ Jenkins – Overview
- ❖ Jenkins – Installation
- ❖ Jenkins – Tomcat Setup

- ❖ Jenkins – Git Setup
- ❖ Jenkins – Maven Setup
- ❖ Jenkins – Configuration
- ❖ Jenkins – Setup Build Jobs
- ❖ Jenkins – Notification
- ❖ Jenkins – Reporting
- ❖ Jenkins – Code Analysis
- ❖ Jenkins – Distributed Builds
- ❖ Jenkins – Automated Deployment
- ❖ Jenkins – Metrics and Trends
- ❖ Jenkins – Continuous Deployment
- ❖ Jenkins – Managing Plugins
- ❖ Jenkins – Security
- ❖ Jenkins – Backup Plugin
- ❖ Jenkins – Cron Job
- ❖ Jenkins – Poll SCM
- ❖ Jenkins – Pipeline
- ❖ Jenkins – Build Periodically
- ❖ Jenkins – Email Notification
- ❖ Jenkins – Run the Jobs in node and check the job in node directory
- ❖ Jenkins – Show build Configure in Jenkins
- ❖ Jenkins – Show the Bash and shell build configure

4. Apache Tomcat:

- ❖ Installation
- ❖ Managing Apache Tomcat
- ❖ Developing Java Web Applications
- ❖ Tomcat as HTTP Server

5. Ansible:

❖ 1.Introduction

- what is ansible
- Change management
- Provisioning
- Automation
- Orchestration
- why use ansible
- YAML
- Build-in -security
- Extendable

- ❖ Architecture and process flow
- ❖ Architecture introduction
- ❖ System requirements
- ❖ Components overview
- ❖ Process of execution and flow
- ❖ Execution types
- ❖ Creating environment
- ❖ Install ansible
- ❖ Ansible inventory and configuration
- ❖ Introduction
- ❖ Inventory fundamentals
- ❖ Demo: inventory basics
- ❖ Ansible modules
- ❖ Introduction
- ❖ Ansible module fundamentals
- ❖ Demo: using setup modules

- ❖ Pays and playbooks
- ❖ Plays and playbook basics
- ❖ Demo: basic playbook
- ❖ Roles
- ❖ Role basics
- ❖ Demo: creating roles

6. CHEF:

- ❖ Chef Architecture
- ❖ Chef workflow Architecture
- ❖ Chef server Installation
- ❖ Chef Workstation Installation
- ❖ Chef Node Installation
- ❖ Communication between workstation, chef server, (chef node and chefnod1)
- ❖ Chef components Explanation
- ❖ Chef repo Explanation
- ❖ Chef cookbook Structure

Chef Resources Type

- ❖ (i) file\dir
- ❖ (ii) Package (Apache, Nginx)
- ❖ (iii) Service
- ❖ Ohai
- ❖ Chef Attributes
- ❖ Chef attributes with Dependency Order Working
- ❖ Chef Knife.rb
- ❖ Chef roles
- ❖ Chef environments

- ❖ Chef databags
- ❖ Chef role\Environment\databag with JSON
- ❖ Run-list
- ❖ Chef Supermarket
- ❖ Chef Template
- ❖ Chef bootstrap Command
- ❖ Two ways explain and add note
- ❖ Ruby code with 10 Examples and With Installation
- ❖ What is MEAN
- ❖ Chef-Solo
- ❖ Chef-Spec
- ❖ Test Kitchen

7.Docker:

Introduction to Docker

- ❖ Containers vs. Virtual Machines
- ❖ Docker Architecture
- ❖ The Docker Hub
- ❖ Docker Installation
- ❖ Creating our First Image
- ❖ Working with Multiple Images
- ❖ Packaging a Customized Container
- ❖ Running Container Commands with Docker
- ❖ Exposing our Container with Port Redirects
- ❖ Exercise: Installation and Image Setup
- ❖ Exercise: Creating Images from Containers
- ❖ Exercise: Exposing Container Ports to the Host

The Docker file, Builds and Network Configuration

- ❖ Docker file Directives: USER and RUN
- ❖ Docker file Directives: RUN Order of Execution
- ❖ Docker file Directives: ENV
- ❖ Docker file Directives: CMD vs. RUN
- ❖ Docker file Directives: ENTRYPOINT
- ❖ Docker file Directives: EXPOSE
- ❖ Container Volume Management
- ❖ Docker Network: List and Inspect
- ❖ Docker Network: Create and Remove
- ❖ Docker Network: Assign to Containers
- ❖ Exercise: Creating Custom Image from a Docker file
- ❖ Exercise: Managing Containers
- ❖ Exercise: Adding External Content to Containers
- ❖ Docker Commands and Structures
- ❖ Inspect Container Processes
- ❖ Previous Container Management
- ❖ Controlling Port Exposure on Containers
- ❖ Naming Our Containers
- ❖ Docker Events
- ❖ Managing and Removing Base Images
- ❖ Saving and Loading Docker Images
- ❖ Image History
- ❖ Taking Control of Our Tags
- ❖ Pushing to Docker Hub

8.SONARQUBE:

- ❖ Installation
- ❖ Setup

9.Nagios:

- ❖ Why We Need Continuous Monitoring?
- ❖ What Is Continuous Monitoring?
- ❖ What Is Nagios?
- ❖ How To Install Nagios?
- ❖ How To Add A Remote Server Using NRPE (Nagios Remote Plugin Executor).

10.KUBERNETES:

- ❖ Kubernetes- Overview
- ❖ Kubernetes- Architecture
- ❖ Kubernetes- Set up
- ❖ Kubernetes- Images
- ❖ Kubernetes- Jobs
- ❖ Kubernetes- Labels & Selectors
- ❖ Kubernetes- NameSpace
- ❖ Kubernetes- Node
- ❖ Kubernetes- Service
- ❖ Kubernetes- Pods
- ❖ Kubernetes- Replication Controller
- ❖ Kubernetes- Replica sets
- ❖ Kubernetes- Deployments
- ❖ Kubernetes- Volumes

11.SHELL Scripting:

- ❖ Shell- Syntax
- ❖ Shell-Variable
- ❖ Shell- User Interaction
- ❖ Shell- Strings
- ❖ Shell- Case Statement
- ❖ Shell- Arithmetic
- ❖ Shell- For Loop
- ❖ Shell- Command Line argument
- ❖ Shell- While Loop
- ❖ Shell- If Statement
- ❖ Shell- Input/output Redirection
- ❖ Shell- Pipe & Filter
- ❖ Shell- Process Management
- ❖ Shell Script Theory

12.YAML:

- ❖ What is Yaml
- ❖ Yaml—Syntax
- ❖ Yaml—Key Value Pair
- ❖ Yaml—Array List
- ❖ Yaml—Dictionary

13.Gerrit Integrating with Jenkins

14.Jira integrating with Jenkins

PROJECTS:

- | | |
|------|---|
| I. | Build and Release practical demo. |
| II. | Git, Maven, Jenkins and Tomcat integrating. |
| III. | Realtime demo Java code integrating with Jenkins build war/jar files. |
| IV. | Practical demo Git, Docker, Ansible, SonarQube, Shell Scripting, Terraform and Kubernetes integrating with Jenkins. |
| V. | Real time demo Git, Docker, Ansible, SonarQube, terraform integrating with Jenkins pipeline Job |