DEVOPS SYLLABUS

1. DevOps Introduction

- DevOps Evolution DevOps Vs Agile Vs Waterfall Model DevOps Reasonal
- DevOps Goals DevOps Values
- DevOps Stakeholders
- DevOps Principles- The Three Ways
- Continuous Testing, Integration, Delivery & Deployment
- DevOps Lifecycle DevOps Tools
- DevOps Toolchain
- DevOps Three Stage Conversion

2. Linux Basics

- Software & Operating Systems
- Working with Linux
- Linux Basic Commands
- Linux Editors vi, nano
- Linux Shell Scripting

3. Lab Setup

- Cloud Basics
- Create Windows & Linux VM
- Install Tomcat/Apache/HTTPD on AWS EC2 Instances (Windows & Linux) Deploying sample Application on Tomcat

4. SCM / VCS (Git)

- Introduction to SCM/VCS
- Use of SCM/VCS
- SCM Goals
- Why Version Control?
- Example Scenarios
- VCS Types (Centralized & Distributed)
- About Git
- Why Git
- Git Snapshots
- Repositories
- Git Lifecycle
- Local Git areas

- Git workflow
- Download & Install Git
- Creating Repository
- Initial Git configurations
- Git Commit Checksums
- Viewing & Undoing Changes
- Add & Commit a file
- Git Tag
- Git Branching & Merging
- Merge Conflicts
- Types of Merge
- GitHub Introduction, Creating Account and Working with GitHub
- Adding GitHub publickey
- GitHub Pages
- Git Stash
- Git Rebase
- Git Format Patch
- Git Squash
- Git Workflows
- Git Revert & Reset

5. Build Management with Maven

- Build Management
- Introduction to Maven
- Characteristics of Maven
- Build Tool Retrospective
- Ant, Maven & Gradle differences
- Maven Architecture
- Artifact Repository
- Build Lifecycle
- Maven Directory Organization
- GAV
- Download and Install Maven
- Maven Repositories
- What is ROM?
- Maven Plugin Management
- Working with multi-module project
- Dependency Management
- Deployment Automation
- Maven Site
- Software Quality
- Code Coverage with Jacoco
- Source Code Analysis with SonarQube
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6. Continuous Integration, Continuous Delivery & Continuous Deployment with Jenkins

- Continuous Integration
- Jenkins for CI
- Why Jenkins
- Jenkins Plugins
- Jenkins Benefit
- CI workflow
- Jenkins Architecture
- Jenkins Master-Slave
- Jenkins User management
- Download & Install Jenkins
- Jenkins Setup
- Create Jenkins Project/ Job
- Jenkins Maven Integration
- Jenkins Jacoco Integration
- Jenkins SonarQube Integration
- Artifact Management
- Jenkins with JFrog Artifactory
- Jenkins with Nexus Repository Manager
- Continuous Delivery
- Jenkins Pipeline
- Jenkins Plugins to try
- Jenkins CI
- Jenkins Configuring Email Notification
- Jenkins Server Maintenance
- Jenkins Best Practices
- Continuous Deployment

7. Cloud & AWS

- Cloud Computing
- Cloud Computing Models
- Service Model & Deployment Model
- Service Model: SAAS, PAAS & IAAS
- Deployment Model: Private, Public, Hybrid, Community
- Advantages of Cloud
- AWS
- What is Amazon?
- What is Amazon Web Services?
- Communicate with AWS
- Create AWS Account
- Amazon EC2 Features & Hands-on
- Amazon S3 Features & Hands-on
- Amazon CLI

8. Containers & Dockers

- What are Containers & Vm's
- Virtual Machines
- Containers
- VM vs. Containers
- Docker Use
- Co-existence (VM & Docker)
- Docker Concept
- Docker Architecture
- Docker Lifecycle
- Docker Engine, Docker Client, Docker Daemon, Containers
- Download & Install Docker on Linux and Windows
- Launch Linux & Windows Containers
- Dockerfile
- Docker Volumes
- Docker Compose
- Microservices
- Docker Swarm-Container Orchestration

9. Container Orchestration with Kubernetes

- Basic of Kubernetes
- Creating minqube to understand the concepts of Kubernetes

10. Configuration Management with Ansible

- Configuration Management
- Use of Configuration Management
- Configuration Management Tools
- Chef, Pupet, Ansible, SaltStack Differences
- What is Ansible?
- Ansible History
- Ansible Basics & Architecture- Modules, Playbooks, Variables, Inventories
- Download and Install Ansible
- Ansible Commands
- CICD Pipeline
- Integrate Ansible with Jenkins

11. Continuous Monitoring with Nagios

- What is Continuous Monitoring?
- Why Continuous Monitoring?
- What is Nagios?
- Alternatives to nagios
- Nagios Architecture
- Install Nagios and Configure Client

MINI Projects – Executed throughout the course

- GIT, Maven and Jenkins Integration
- Jenkins, Docker and Nexus repository
- Jenkins with SonarQube Integration
- Automated Deployment for real-time project
- Sample project automation by using all DevOps tools (GIT, Maven, Jenkins, Docker, Ansible)

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