DevOps with Automation Training

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Course Content

Duration: 80hrs

1. Introduction to DevOps
2. Basics of AWS
3. Lab Server setup from AWS Cloud
4. Basics of RHEL Server Administration
5. SCM with git
6. Local and Remote repositories
7. Build Automation Tools (Ant and Maven)
8. CI/CD tool-Jenkins
9. Application Server (Tomcat)
10. Artifact Repository-Nexus
11. Configuration Management Tool - Ansible
12. Ansible Automation with Playbooks (yaml scripting)
13. Containerization with docker
14. Creation of images with Dockerfile
15. Cluster Management with Kubernetes
16. Monitoring with Nagious
17. Scripting (Shell and Python)

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Introduction TO DevOps:

- What is DevOps and Why DevOps?
- What is SDLC?
- DevOps Goals

Basics of AWS:

- What is Cloud ?
- Differences between IaaS, PaaS and SaaS
- How to setup amazon account
- What is IAM User?
- How to create IAM user?
- Amazon EC2
- Elastic IP's
- Amazon S3 storage

Lab Server Setup from AWS Cloud:

- Creation of EC2
- Connecting with EC2

RHEL SERVER ADMINISTRATION:

- Basic RHEL commands
- How to create users and groups
- Package installation using RPM and YUM
- How to manage the system services using the systemctl

SCM with GIT:

- What is SCM?
- Local, Centralized and Distributed version control system
- What is git?
- Installation of Git on RHEL and Windows
- Automating the Installation of Git through Shell Script
- Creation of Repository in GitHub
- Working with GitHub Repository with Git (with all git commands)

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Build Automation Tools:

Introduction to Ant

Building the .class, .jar, .war and .ear files with Ant

Introduction to Maven

Difference between Ant and Maven

Maven Life cycle

Building the .class, .jar, .war and .ear files with Maven

Storing the Artifacts in Remote Repository

CI/CD Tool with Jenkins:

Introduction:

a. Understanding continuous integration

b. Introduction about Jenkins

c. Build Cycle

d. Jenkins Architecture

Installation:

a. Obtaining and installing Jenkins Server

b. Installing and configuring GIT

c. Java installation and configuration

d. Maven Installation & configuration

e. Exploring Jenkins Dashboard.

Jobs:

a. Creating Simple Jobs

b. Running the Jobs

c. Understanding the JOBS and WORKSPACE Directory

d. Understanding what is BUILD

Build Deployments:

a. Understanding Deployment.

b. Tomcat installation and configuration

c. Deployment Plugins

Jenkins Lifecycle:

Creation of Complete application lifecycle from the Git -> Maven -> Junit ->Tomcat -> Documentation creation in a single Job

Securing Jenkins:

- a. Authentication & Authorization
- b. Matrix based Authentication
- c. Creating users
- d. Plugin Management

Jenkins Build Pipeline:

- a. What is Jenkins build Pipeline?
- b. Creation of Jenkins Pipeline using the Pipeline Plugin
- c. Creation of Jenkins Pipeline using the upstream and downstream

Configuration Management Tool - Ansible:

Introduction to Ansible

- a. Very brief history and reason for development of Ansible
- b. Benefits and limitations of using Ansible

Setting Up Ansible

- a. Configuration
- b. Inventory
- c. Usage of Different modules as Ad-hoc commands

Quick Examples

- a. Deploying configuration of Apache server
- b. Managing changes in the configuration

Ansible Automation with Playbooks (yaml scripting):

Introduction to yaml
Writing simple playbooks with yaml
Tasks
Variables
Input and output modules
Conditional Statements
Loops
Handlers
Roles
Ansible-galaxy

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Containerization with Docker and Management with Kubernetes:

- Introduction
  - a. What is a Docker?
  - b. Use case of Docker
  - c. Platforms for Docker
  - d. Dockers vs. Virtualization
- Architecture
  - a. Docker Architecture.
  - b. Important Docker components
  - c. Understanding the Docker components
- Installation
  - a. Installing Docker on Linux.
  - b. Understanding Installation of Docker on Windows.
  - c. Basic Docker commands.
- Provisioning
  - a. Docker Hub.
  - b. Downloading Docker images.
  - c. Running Docker images & Docker containers
  - d. Running docker applications in container.
- Dockerfile
  - a. How to create a docker image
  - b. Instructions of Dockerfile
  - c. Creation of multiple docker images from scratch using Dockerfile
- Docker Cluster Container Management with Kubernetes

Monitoring with Nagious:

- Introduction and Installation
  - a. Obtaining Nagios
  - b. Compiling and installing Nagios
- Basic configuration
  - a. Configuring a linux server to monitor the complete statistics
  - b. How can Nagios be extended in the Infrastructure

Scripting:

- Shell Scripting
- Python Scripting