



## DevOps Course Curriculum

### Introduction To DevOps And Its Necessities

- What is DevOps?
- History of DevOps
- Advantages of DevOps
- DevOps and Software Development Life Cycle
- DevOps main objectives
- DevOps on the Cloud
- Prerequisites for DevOps
- Frameworks for Devops

### AWS DevOps

- ECS
- EKK Stack
- EKS (Kubernetes)
- Cloud Formation
- Developer Tools – CodeDeploy/CodeCommit/CodeDeploy

### Introduction to Linux

- Basics of UNIX and Linux Operating Systems
- Linux System administration introduction
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### Version Control – Git

- What is a Version Control System?
- Localized, Central and Distributed Version
- Control System



## What is Git and GitHub?

- Git and GitHub configuration
- Core Git terminology
- Basic Git Commands
- Creating new local repository
- Commit
- Push to remote repository
- Pull & clone from remote
- Using Branches & tags
- Merging Branches
- Comparing Changes
- Revert Commits
- Recover lost commit

**Assignment: Git – Bit Bucket Installation and using it**

## Build tools – Maven

- Introduction to Build tools
- Commonly used Build tools
- Apache Ant
- Apache Maven
- Gradle
- Introduction to Maven

## POM

- Project dependencies
- Plugins
- Goals
- Build profiles
- Project version
- Developers



- Mailing list
- Basic Maven commands
- Creating new project ( jar, war )

## Basic project tasks

- clean
- validate
- compile
- test
- package
- verify
- install
- deploy
- Project Templates
- Snapshots
- Tomcat integration

***Assignment: Maven Install and Create project***

## Continuous Integration – Jenkins

- Introduction
- Understanding continuous integration
- Introduction about Jenkins
- Build Cycle
- Jenkins Architecture

## Installation & Configuration

- Installing and configuring Jenkins using WAR and RPM
- Java configuration
- Maven configuration
- Exploring Jenkins Dashboard



## Jobs

- Creating Jobs
- Running the Jobs
- Setting up the global environments for Jobs
- Adding and updating Plugins
- Disabling and deleting jobs

## Notification & Reports

- Build Deployments
- Distributed Builds
- Understanding Deployment.
- Tomcat installation and configuration
- Automated Deployment
- Continuous Deployment

## Securing Jenkins

- Securing Jenkins
- Authentication
- Jenkins Plugin
- Authorization
- Confidentiality
- Creating users
- Best Practices for Jenkins
- Pipeline Jobs (using Groovy, Shell and Batch)
- Blue Gree Deployment

***Assignment: Jenkins Install, Integrate with Git and Maven***

## Containerization using Dockers/ Kubernetes



- Introduction
- Container Management tools
- What is Docker?
- Use of Docker.

## Docker vs Virtualization

- Docker Architecture
- Understanding the Docker components

## Custom images

- Creating a custom image.
- Running a container from the custom image.
- Publishing the custom image.

## Docker Networking

- Accessing containers
- Linking containers
- Exposing container ports
- Container Routing

## Docker Compose

- Installing The Docker compose
- Terminology in Docker compose
- Build static site using Docker compose

***Assignment: Docker administration integrate with Jenkins***



## **Configuration Management - Ansible**

- Introduction
- What is Ansible / Puppet? How it works
- Architecture
- Master and Agents

## **Installation and Configuration**

- Install and troubleshoot Ansible on central nodes and managed hosts
- Use Ansible to run ad-hoc commands and playbooks to automate tasks
- Write effective Ansible playbooks
- Work with Ansible in conjunction with Vagrant in a DevOps environment
- Describe the terminology and architecture of Ansible.
- Deploy Ansible
- Install Ansible and run ad hoc commands.
- Implement playbooks
- Write Ansible plays and execute a playbook.
- Manage variables and inclusions
- Describe variable scope and precedence, manage variables and facts in a play, and manage