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**Introduction about DevOps:**

DevOps is a culture, movement or practice that emphasizes the collaboration and Communication of both **Software Developers** and other **Information-Technology (IT)** professionals while automating the process of software delivery and infrastructure changes. It aims at establishing a culture and environment where building, testing, and releasing software can happen rapidly, frequently, and more reliably.

DevOps promotes a set of processes and methods for thinking about communication and collaboration between **Development**, **QA**, and **IT operations.**

Because DevOps is a cultural shift and collaboration between **development, operations and testing**, there is no single DevOpstool, rather a set or “DevOpstool chain “consisting of multiple tools. Generally, DevOps tools fit into one or more of these categories, which is reflective of the software development and delivery process:

**Offered Tools in DevOps:**

1. **Terraform** # 1 Infrastructure automation tool
2. **Git** – BitBucket**/GitHub**/Azure Git - # 1 - SCM tool
3. **Jenkins**, Maven, Master/Slave, Pipelines - scripted, declarative - # 1 CI tool
4. **Docker**- # 1 Container platform
5. **Kubernetes** # 1 container orchestration tool
6. **Ansible**- # 1 Configuration Management tool
7. **Linux** – Linux Commands and troubleshooting Skills
8. **SonarQube** – # 1 Code quality tool
9. **vault** – # secret Key Management
10. **Nexus** – # 2 Binary repo manager
11. **AWS** – #AWS Services from DevOps Perspective
12. **Migrations** - # On Prime to Cloud, Cloud to Cloud and Re- platforming or Re-architecture

**DevOps with AWS**

**DevOps**

* Business Perspective • Continuous Integration
* IT Perspective • Continuous Testing
* Developer Perspective • Continuous Deployment
* Tester Perspective
* Operations Perspective

# What is DevOps

* Definition
* Stakeholders of DevOps
* What is SDLC
* Phases of SDLC
* Role Of Dev in SDLC
* Role of Ops in SDLC

# What is Agile and Scrum

* Agile Development Process
* Agile Manifesto
* Agile Scrum Work Flow
* Agile Analysis Estimation Techniques
* Types of Roles and Responsibilities
* Problem That DevOps Solves
* Making a DevOps Transition
* Introduction to DevOps Automation

# DevOps Life Cycle

* Introduction
* Tools
* DevOps Technology Categories
* Collaboration
* Planning
* Issue Tracking
* Monitoring
* Configuration Management
* Source Control
* Dev Environments

# Linux

* Linux Overview
* What is Operating system
* What is Unix, Linux
* Unix vs Linux
* Linux vs Windows
* Linux market trends
* Linux flavors
* Linux Architecture
* What is shell kernel command line utilities
* Linux Boot process
* Linux commands
* Linux admin level commands
* Reading files
* Redirection operators
* User management
* Group management
* File system management
* Linux volume manager hands on
* Linux installation using iso
* Directory structure
* Editors
* VMware overview

# Shell Scripting

* Shell history and introduction
* Types of shells
* Shebang line in shell
* Command line arguments
* Variables

**GIT**

* Introduction
* What is a Version Control System (VCS)? Distributed Vs Non-distributed VCS
* What is Git and where did it come from?`
* Alternatives to Git
* Installation and Configuration
* Obtaining Git Installing Git
* Common configuration options GUI tools
* Key Terminology
* Clone Working Tree Checkout Staging area Add
* Commit Push Pull Stash
* Git - Local Repository Actions Creating a repository (git init) Checking status (git status)
* Adding files to a repository (git add) Committing files (git commit) Removing staged files (git reset) Removing committed files (git rm) Checking logs (git log)
* Git - Remote Repository Actions Creating a remote repository (git init) Cloning repositories (git clone)
* Updating the remote repository from the local (git push) Updating the local repository from the remote (git pull)
* Tagging in Git What are Git Tags? Listing tags Lightweight tags
* Displaying tag details (tag show)

Annotated tags

* Checking out tags Pushing tags Pulling tags
* Branching in Git
* What is a branch
* A note about <HEAD> Listing branches Create new branch Checkout branch

Pushing branches Pulling branches

Merging in Git

* Fetching Changes (git fetch) Rebasing (git rebase)
* Git Pull
* Git Workflows Different ways of using Git Centralized
* Feature Branch Gitflow Workflow Forking Workflow
* Creating a branch from a Stash Advanced Repository Actions Removing untracked files (git clean) Remove staged changes (git reset) Revert a commit (git revert)
* Checkout a previous commit (git checkout)
* Advanced Branching & Merging
* Deleting a Branch Fast forward merge Three way merge

# MAVEN (Build Tool)

* Issues before in manual process of build process
* Automated build process
* Introduction
* Maven Structure and Installation
* Maven Dependencies
* Maven Repositories
* Maven Plug-ins
* Maven Configuration
* Integration with SCM tools
* Maven Project

# Continuous Integration Tool CI/CD

## Jenkins

* Introduction
* How to install and configure Jenkins
* How to achieve Continuous Integration with Jenkins
* Jenkins Jobs
* How to schedule jobs in Jenkins
* How to integrate Jenkins with Ant
* How to integrate Jenkins with Maven
* How to integrate Jenkins with Slack
* How to integrate Jenkins with Shell scripts
* How to integrate Jenkins with Python scripts
* Jenkins dashboard
* Jenkins authentication
* Jenkins plugins – how to download and use
* Parameterizing the build
* One click regression
* Overview of Continuous Integration (CI)
* What it means Continuous Integration? Fundamental of CI
* How CI helps to Agile Development History of Jenkins
* Where Jenkins Fit in Organization Overview of Jenkins community
* Setup and Running Jenkins
* Prerequisites
* Preparing Environment Installing Git
* Setup Account
* Install Jenkins on Ubuntu / Windows Configuring a Node
* Running Jenkins as Stand-Alone/ Apache Server Backup Jenkins data
* Configuring Jenkins server
* Configure Dashboard Configure System Environment Global Properties
* Configure Build Tools Configure Proxy
* Working with Jenkins Build Job
* Create and Configure a job Run a job manually Triggering a Build Scheduled Build job Manual Build job
* Polling SCM
* Maven and ANT Build Step Execute a Shell
* Post-Build Actions Archiving Build Results Notifications
* Working with Automate Testing
* Advanced Jenkins
* Working with Maven Build Monitoring External jobs Distributed builds
* File fingerprint tracking Parameterized Build Job Parameterized Trigger
* Automated Deployment and Continuous Delivery
* Jenkins Plugins
* Change reporting Code coverage Static Analysis
* Performance reporting Style checking
* Secure and Notification in Jenkins
* Overview of Notification Email

Notification

* Other Notification
* Best Practices on Jenkins

# Configuration Management Tools Ansible

* What is Configuration Management and how does it help an organization?
* How does Ansible Work
* How is Ansible different from Puppet & Chef
* Ansible architecture & Different components of ansible
* What are the variables in Ansible
* Ansible Playbooks, Modules and Roles
* Ansible Tower

## Migrations

* Migrations Strategy
* Migrate Onprem to cloud
* Migrate cloud to cloud
* Migrate VMs to Cloud
* Restructure or Re-Platforming the applications keeping them into Devops

**DOCKER (Containerization Tool)**

Introduction

* Installing Docker on Windows
* Installing Docker on Linux

## Working with Containers

* What is container
* Docker run command
* Theory of pulling and Running Containers
* Building Docker images with Dockerfile
* Docker Architecture
* Container Life cycle
* Manage Container with Docker Compose
* Adding Source Code to Docker

**Docker Swarm Mode**

* Swarm Mode Theory
* Configuring Swarm Mode
* Services
* Scaling Services
* Rolling Updates
* Process of Execution &flow • Conclusion

## Terraform

* Introduction to Terraform
* Terraform Fundamentals
* Terraform Configuration Basics

## Terraform Modules

* Introduction
* Terraform Scripting
* Terraform stacks
* Terraform State Files
* Setup Module
* Terraform resource
* Terraform Data sources
* Terraform Workspace
* Terraform import

# KUBERNETES

* What is Kubernetes
* Purpose of Kubernetes for micro services
* How kubernetes works
* Master components, how works
* Node Components, how works
* How pods works
* Installations and configuration kubernetes cluster
* Pod lifecycle
* Work with pods
* Work Services
* Work Deployment

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| **AWS (Amazon Web Services)** |

## Introduction to Cloud Computing

* What is Cloud
* Why Cloud?
* Types of Cloud Deployment Models
* Types of Cloud Services
* Future of Cloud Technologies
* Advantages and Disadvantages of Cloud

## Introduction to Amazon Web Services (AWS)

* What is AWS?
* How to Subscribe for AWS account
* What is the AWS Free Usage Tier
* AWS Certification
* Introduction to the AWS management Console
* List of services given by AWS

## Elastic Compute Cloud (EC2)

* What is Amazon EC2?
* Features of Amazon EC2
* Managing the EC2 infrastructure
* EC2 Dashboard
* Pricing for Amazon EC2

## Regions and Availability Zone Concepts

* Describing Regions
* Availability Zones, and Endpoints
* Managing instances in an Availability Zone

## Amazon Machine Images (AMI)

* Managing AMIs
* Working with Windows, Linux AMIs
* Shared and Paid AMI
* Making an AMI Public

## EC2 Instances

* Instance Type
* Instance life cycle
* Differences between reboot, stop, and terminate
* Building an EC2 windows and linux instances
* To install instance in public and private subnet
* Security via Key Pairs
* EC2 Class and VPC Security Groups
* Managing Elastic IP's
* Pricing model in EC2 instances
* EC2 with Amazon command line interface

## Amazon Elastic Block Store (EBS)

* Features of Amazon EBS
* Amazon EBS volumes
* Managing EBS volumes
* Increasing the volume size
* AmazonEBS snapshots

## Load Balancing (ELB)

* Creating a load balancer
* Internal and external load balancer
* Load balancing protocols
* Security groups for the load balancer
* Health check for the load balancer
* Cross-zone load balancing
* Connection Draining

## Auto Scaling

* What is auto scaling?
* Auto scaling components

## Advantages of auto scaling

* Creation of launch configuration
* Configuration of auto scaling policies
* Advantages of using auto scaling with ELB

## Network & Security

* Security Groups
* Elastic IPs
* Placement Groups
* Key Pairs
* Network Interfaces

**Networking Services**

## Amazon Virtual Private Cloud (VPC)

* What is Amazon VPC?
* VPC Essentials
* Default and Nondefault VPC
* VPC Networking and ACL
* Security Groups
* DNS and DHCP Options Sets
* VPC Peering and Endpoints
* Subnet Routing
* VPC Internet Gateway
* Elastic IP addresses and network interfaces
* VPC integration with many other AWS services
* Creating a NAT instance in a VPC
* Configuring a Web application in VPC
* Pricing for Amazon VPC

## Amazon Route 53

* Route 53 as your DNS service
* Using Traffic Flow
* Route 53 Health Checks
* Configuring DNS Failover
* Latency Based Routing
* Weighted Routing Policies
* Hosting web portal using Route53
* Bucket Policies

## Security & Identity Services Identity Access Management (IAM)

* IAM Features
* Getting Started With IAM
* Creation of user, groups, roles
* Managing & Writing policies
* Credential Report
* IAM Console and the Sign-in Page

## Storage & Content Delivery Services Amazon S3

* What is object Storage?
* Data as objects
* Lifecycles of S3
* Managing Buckets
* Accessing S3 storage via tools
* Creation of a static website using S3 storage **Database Services**

## Relational Database Service (RDS)

* RDS Essentials
* Launching RDS instance
* Selecting the Engine
* Configuring the Database Engine
* Managing RDS Database
* Setting up automatic backups
* Authorizing access to the DB

## Amazon CloudWatch

* Amazon CloudWatch Architecture
* List of services monitored by CloudWatch
* Collect and track metrics
* Monitoring memory and disk Metrics
* Monitoring logs, Graphs
* Set Alarms

## Cloud Formation

* Building AWS infrastructure as a code
* Design a template
* Create a Stack
* Create a Template from your Existing Resources

## • Introduction to JSON Application Services Amazon Simple Email Service (SES)

* Simple email service overview
* Configuring Amazon email service
* Amazon SES and Deliverability
* Amazon SES Email-Sending Process
* Email format and Limits of SES

## Elastic Cache

* Redis Cache Introduction
* Redis Cache Configuration • MEM Cache Introduction
* MEM Cache Configuration

## Amazon Simple Notification Service (SNS)

* Simple Notification Service overview
* SNS architecture
* Publishers and subscribers
* Creation of a topic
* Subscribing to topic via Email
* Setting notification for EC2 instance changes

**WHAT WE OFFER**

* **Mock Interviews will be conducted on a one-to-one basis after the course duration.**
* **FAQ’s**
* **Soft copy classroom notes & assist in Resume Preparation.**
* **Real-Time Interview Questions.**
* **Execution of all the services in the classroom with hands on.**