



# DEVOPS

## LINUX Basics:

- Unix and linux difference
- Linux File system structure
- Basic linux/unix commands
- Changing file permissions and ownership
- Types of links soft and hard link
- Filter commands
- Simple filter and advance filter commands
- Start and stop services
- Find and kill the process with id and name
- Package installation using RPM and YUM

## Introduction to Devops

- Define Devops
- What is Devops
- SDLC models,Lean,ITIL,Agile
- Why Devops?
- History of Devops
- Devops Stakeholders
- Devops Goals
- Important terminology
- Devops perspective
- Devops and Agile
- Devops Tools
- Configuration management
- Continuous Integration and Deployment

## Introduction to Cloud computing

- What is cloud computing
- Characteristics of cloud computing
- Cloud implementation models
- Cloud service models
- Advantages of cloud computing
- Concerns of cloud computing

## GIT: Version Control

- Introduction
  - What is Git

- About Version Control System and Types
- Difference between CVCS and DVCS
- ☒ A short history of GIT
- GIT Basics
- GIT Command Line
- Installing Git
  - Installing on Linux
  - Installing on Windows
  - Initial setup
- Git Essentials
  - Creating repository
  - Cloning, check-in and committing
  - Fetch pull and remote
  - Branching
  - Creating the Branches, switching the branches, merging the branches.

## **Chef: configuration management**

- Overview of Chef
  - Common Chef Terminology (Server, Workstation, Client, Repository etc.)
  - Servers and Nodes
  - Chef Configuration Concepts
- Workstation Setup
  - How to configure knife
  - Execute some commands to test connection between knife and workstation
- Organization Setup
  - Create organization
  - Add yourself and node to organization
- Test Node Setup
  - Create a server and add to organization
  - Check node details using knife
- Node Objects and Search
  - How to Add Run list to Node
  - Check node Details
- Environments
  - How to create Environments
  - Add servers to environments
- Roles
  - Create roles
  - Add Roles to organization
- Attributes
  - Understanding of Attributes
  - Creating Custom Attributes
  - Defining in Cookbooks

- **Data bags**
  - Understanding the data bags
  - Creating and managing the data bags
  - Creating the data bags using CLI and Chef Console
  - Sample data bags for Creating Users.

## AWS:

- Creating AWS account
- Free tier Eligible services
- Understanding AWS Regions and availability zones
- **EC2 ( Elastic Cloud Compute)**
  - About EC2 and types , Pricing
  - EIP ( Elastic IP address), Allocating, associating , releasing
  - Launch windows and Linux Instances in AWS
  - Connecting windows and Linux instances from windows desktop and Linux machines
- **S3 ( Simple Storage Service)**
  - About AWS Storage services, EBS and S3
  - Creating S3 Buckets and putting objects in bucket
  - Discussion about Bucket Properties
  - S3 Pricing
  - About S3 glacier
- **EBS ( Elastic Block Storage)**
  - Types of EBS Volumes
  - Creation, attaching and Detaching volumes
- **ELB ( Elastic Load Balancer)**
  - Understanding the load balancing
  - Configuring ELB and adding the webservers under ELB
- **Auto Scaling**
  - Types of Scaling ( Horizontal and Vertical)
  - Configuring Launch Configuration
  - Creating and defining the auto scaling group policy
- **IAM ( Identity Access Management)**
  - Understanding of AWS Security using IAM
  - Definition of Roles, policies and Groups
  - Creating IAM Users and managing password policies
- **RDS ( Relational Database server)**
  - About RDS and available RDS Engines in AWS
  - Configuring MYSQL RDS service
  - Connecting EC2 Instance to RDS Instance

## LAMBDA

- About Lambda
- Understanding Lambda function and terminology
- Sample Lambda function creation

- Deploy microservices using lambda
- **VPC (Virtual Private cloud)**
  - Understanding basic network concepts like ip, subnet, NAT,
  - VPC terminology Private Subnet, Public Subnet, Internet Gateway, NACL
  - Configuring public and private subnet VPC with NAT Gateway

## **Ansible : configuration management**

- What is Ansible?
  - How Ansible works?
  - Ansible Architecture?
  - Ansible terminology and about Playbooks
- **Installation and Configuration**
  - Installing Ansible on Linux(Redhat family and Debian family(ubuntu))
  - Ansible client and server configuration
  - Writing playbooks using YAML
  - Deploy webapplications using Ansible
  - Ansible roles and its structure& Ansible galaxy
    - Tasks
    - Files
    - Templates
    - Meta
    - Vars
    - Defaults
    - Tests
    - Handlers

What is host inventory files What is static inventory file What is dynamic inventory file

- Ansible variables(Global and local variables)
- Ansible templates using jinja2
- Ansible modules
- Debug module
- Ansible conditional statements
- Ansible loops
- Ansible tasks
- Ansible adhoc commands
- Ansible vault
- Ansible log configuration
- Provisioning ec2 instance using Ansible playbook
- Ansible with docker
- What is Ansible play

## **Jenkins : Continuous Integration**

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

- **Installation**
  - Obtaining and installing Jenkins
  - Installing and configuring Jenkins using WAR and RPM
  - Java installation and configuration
  - Maven Installation
  - Exploring Jenkins Dashboard.
- **Jobs**
  - Creating Jobs
  - Running the Jobs
  - Setting up the global environments for Jobs
  - Adding and updating Plugins
  - Disabling and deleting jobs
- **Build Deployments**
  - Understanding Deployment.
  - Tomcat installation and configuration
- **Securing Jenkins**
  - Authentication
  - JenkinsPlugin
  - Authorization
  - Confidentiality
  - Creating users
  - Best Practices for Jenkins

## **Docker : Containers**

- **Introduction**
  - What is a Docker
  - Use case of Docker
  - Platforms for Docker
  - Dockers vs. Virtualization
- **Architecture**
  - Docker Architecture.
  - Understanding the Docker components

### **Installation**

- Installing Docker on Linux.
- Understanding Installation of Docker on windows.
- Some Docker commands.
- Provisioning
- **Docker Hub.**
  - Downloading Docker images.
  - Uploading the images in Docker Registry and AWS ECS
  - Understanding the containers
  - Running commands in container.
  - Running multiple containers.
- **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 word press site using Docker compose
- **Docker SSH**
  - Connecting docker containers using ssh
- **Docker with wordpress press Project**
  - Deploy wordpress application on docker containers
- **Docker with web application**
  - Deploy webapplication application on docker containers

## **Kubernetes :**

- **Introduction**
  - Why and what is kubernetes
  - Kubernetes Objects
  - Kubernetes Architecture
  - Pods
  - Service
  - Volume
  - Namespace
  - ReplicaSet
  - Deployment
  - StatefulSet
    - DaemonSet
- Create a Cluster using Kubeadm ,Minikube
- Using kubectl to Create a Deployment
- Using a Service to Expose Your App
- Scale Your App
- KUBEADM ON AWS
- Using kubeadm to Create a Cluster
- Pod delete

## **Nagios:**

- **Introduction**
  - Introduction to Nagios
  - How the Nagios XI works
  - Terminology in Nagios
  - Explanation of Nagios Dash Board
  - Add windows and Linux Hosts to Nagios Monitoring
  - Monitoring different services and resource

- Introduction
- What is ELK?
- ELK Installation
- ElasticSearch
- Logstash
- Kibana
- Filebeat
- Configuring Logstash and Kibana
- Shipping logs from clients servers

## **Python:**

- Why python?
- Python – Basic Syntax
- Identifiers, Indentation, Comments, Quotation, Reserved Words
- Variables, Assigning
- Operators, Important Operators, Python Input
- Decision Making, if, If-else
- Python – Loops, For, Break, while, nested loop
- Functions, Pass by Reference or Value, Anonymous Functions
- Python Data Types, simple types, container types
- Data Type – Tuple, LIST, nested list, set, Dictionary
- PYTHON – FILE MANAGEMENT

## **Maven for DevOps**

- Install Apache Maven successfully
- Understand Maven dependencies and control Maven classpaths
- Install plugins, manage plugins with a parent POM, and find available plugins
- Comprehend Maven build properties
- Create a project website
- Release Maven artifacts
- Build a website for multi-module project
- Build a simple installer and run functional tests
- Take advantage of popular Maven tricks and patterns