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

- o GIT Basics
- o GIT Command Line
- Installing Git
  - o Installing on Linux
  - o Installing on Windows
  - o Initial setup
- Git Essentials
  - o Creating repository
  - o Cloning, check-in and committing
  - o Fetch pull and remote
  - o Branching
  - o Creating the Branches, switching the branches, merging the branches.

Chef : configuration management

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

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

AWS:

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

- o Deployment
- o StatefulSet
- o DaemonSet
- o Job
- 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
  - o Introduction to Nagios
  - o How the Nagios XI works
  - o Terminology in Nagios
  - o Explanation of Nagios Dash Board
  - o Add windows and Linux Hosts to Nagios Monitoring
  - o Monitoring different services and resource

ELK:
- Introduction
- What is ELK?
- ELK Installation
- ElasticSearch
- Logstash
- Kibana
- Filebeat
- Configuring Logstashand Kibana
- Shipping logs from clients servsr

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