**DEVOPS COURSE**

**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

o What is Git

o About Version Control System and Types

o Difference between CVCS and DVCS

o 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 for 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 Comput)

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 glecier

 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

**Puppet for configuration management**

 What is Puppet?

o How puppet works

o Puppet Architecture

o Master and Agents

o Puppet terminology and about Manifests

 Installation and Configuration

o Installing Puppet

o Configuring Puppet Master and Agent

o Connecting Agents

 Puppet Master

o Puppet configuration files

 Puppet Language Basics

o The declarative language

o Resources

o Using Basic resources like file,exec,package service

o Resource Collectors

o Virtual Resources

o Exported Resources

o Manifests

o Modules and Classes

o Class Parameters

o Defined Type

 Templates

o Static Contents Explosion

o Using Dynamic Content with Templates

o Templates Overview

o ERB

 Example Code Manifests/Modules

o NTP Module

o Users Module

o SSH

o Sudo

 Puppet Forge

o Understanding the Puppet Forge

o Module structure

o Install LAMP with preexisting modules

o Installing Apache Tomcat with Puppet Modules

**Jenkins – Continuous Integration**

 Introduction.

o Understanding continuous integration

o Introduction about Jenkins

o Build Cycle

o Jenkins Architecture

 Installation

o Obtaining and installing Jenkins

o Installing and configuring Jenkins using WAR and RPM

o Java installation and configuration

o Maven Installation

o Exploring Jenkins Dashboard.

 Jobs

o Creating Jobs

o Running the Jobs

o Setting up the global environments for Jobs

o Adding and updating Plugins

o Disabling and deleting jobs

 Build Deployments

o Understanding Deployment.

o Tomcat installation and configuration

 Securing Jenkins

o Authentication

o Jenkins Plugin

o Authorization

o Confidentiality

o Creating users

o Best Practices for Jenkins

**Docker– Containers.**

 Introduction

o What is a Docker

o Use case of Docker

o Platforms for Docker

o Dockers vs. Virtualization

 Architecture

o Docker Architecture.

o Understanding the Docker components

 Installation

o Installing Docker on Linux.

o Understanding Installation of Docker on windows.

o Some Docker commands.

o Provisioning

 Docker Hub.

o Downloading Docker images.

o Uploading the images in Docker Registry and AWS ECS

o Understanding the containers

o Running commands in container.

o Running multiple containers.

 Custom images

o Creating a custom image.

o Running a container from the custom image.

o Publishing the custom image.

 Docker Networking

o Accessing containers

o Linking containers

o Exposing container ports

o Container Routing

 Docker Compose

o Installing The Docker compose

o Terminology in Docker compose

o Build word press site using Docker compose

**VAGRANT**

 Introduction

o Why and what is Vagrant

o Uses of Vagrant in an environment

o Alternatives of Vagrant

o Vagrant versions

 Installation and Configuration

o Installing Virtual box

o How to install Vagrant on Windows and Linux

o Configuring Vagrant

 Provisioning with Vagrant

o Creating first VM with Vagrant

o Operations on the VM

o Connecting to the VM

o Add required Images to Vagrant

o Creating network and port forwarding using Vagrant

**NEW RELIC**

 Introduction

o About Monitoring tools

o About New Relic

o Installing and Configuring New Relic

o Application Monitoring using New Relic

o Server Monitoring using New Relic

o Alerts policies

**ELK**

 Introduction

 What is ELK?

 ELK Installation

 ElasticSearch

 Logstash

 Configuring Logstashand Kibana