

DEVOPS TRAINING

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Learn

DEVOPS

“ from

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Davala

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DevOps Course syllabus

Module 1



INTRODUCTION TO DEVOPS

What is Devops?

Why Devops?

Devops Tools

Differences between traditional methodologies and DEVOPS approach

Big Picture of CI/CD Devops Delivery Pipeline

Module 2



LINUX

OPERATING SYSTEM & LINUX BASICS

Introduction to Operating Systems

Introduction to Virtual Machines

Linux File Systems

Introduction to Command Line Interface

Basic Linux Commands

Package Manager - Installing Software in Linux

Vim Text Editor

Users and Permissions

Shell Scripting

Environment Variables

SSH -Secure Shell

Module 3

VERSION CONTROL SYSTEM GIT

Introduction to VCS

Types of VCS

Difference between CVCS and DVCS

What is GIT

GIT Architecture

GIT installation on Windows and Linux

GIT commands

Working with GIT

Creating repository

Cloning repository

Committing the changes

Fetch, pull and remote

Branching Strategy in GIT

Creating the Branches

switching the branches

merging the branches

git reset

git rebase

git stash

Working with GitHub



Module 4



INTRODUCTION TO AWS CLOUD COMPUTING

What is Cloud?

Introduction to AWS

Creating an AWS account

IAM - Manage Users, Roles and Permissions

Regions and Availability zones

VPC - Manage Private Network on Cloud

EC2 service on AWS

s3 storage service

Load Balancers and Auto scaling groups on AWS

Elastic Bean Stalk on AWS

Elastic Container Registry in AWS (ECR)

Elastic Container Service in AWS (ECS)

Elastic Kubernetes Service in AWS (EKS)

CI/CD Devops Services on AWS

Module 5

BUILD AUTOMATION TOOL MAVEN

Introduction to Maven

Installing maven

Working with maven goals and plugins

Hands on maven



CONTINUOUS INTEGRATION JENKINS

Module 6



What is Jenkins?

Continuous Integration with Jenkins

Java installation and configuration

Exploring Jenkins Dashboard

Creating jobs in Jenkins

Running the Jobs

Setting up the global environment variables for Jobs

Adding and updating Plugins

Disabling and deleting jobs

Different authorization strategies in Jenkins

RBAC strategy in Jenkins

Best Practices for Jenkins

Plugin Management in Jenkins

Triggering email notifications in Jenkins

Scheduling jobs automatically in Jenkins

Poll SCM and web hooks in Jenkins

Compile, test and deploy jobs in Jenkins

Building Delivery Pipeline in Jenkins with java Maven Project

Create complete pipeline in Jenkins

Master Slave Architecture in Jenkins

Credentials in Jenkins

Adding Windows slave and run test job on windows

Adding Linux slave and configuring the job on Linux ec2 instance

Pipeline and Multi branch jobs in Jenkins

Pipeline as code in Jenkins (Jenkins file) using groovy script

Deploy to ec2-instance on AWS using Jenkins Pipeline

Module 7



CONTAINERIZATION USING DOCKER

What is Docker?

What is container?

Containerization vs Virtualization

Docker Container Vs Vms

Docker Images

Docker Architecture

Docker Installation on Linux

Understanding the Docker components

Working with Images

Docker Containers

Docker Networking

Docker Files for building our own images

Docker Volumes for data persistency

Development and Deployment with Docker containers

Building Docker image from Jenkins job

Pushing own images to Docker hub

Pushing own images to ECR on AWS

Automating Docker image push to Docker hub/ECR on AWS from Jenkinsfile through groovy script

What is Docker Compose?

Writing Docker Compose File

Deploying Micro service app with Docker compose

Configuring volumes with compose file

Automate deploying from Jenkins Pipeline to EC2 Instance Using Docker run

Automate deploying from Jenkins Pipeline to EC2 Instance Using Docker-Compose

Container Orchestrator tool – Docker swarm

High availability of app , Scaling and Load balancing on Docker Swarm Cluster

Networking in Docker swarm

Creating custom overlay networks in Docker swarm cluster

Deploying multiple containers on swarm cluster via Docker compose

Module 8



CONTAINER ORCHESTRATOR KUBERNETES

Introduction to Kubernetes

Kubernetes Architecture

Spinning up a Kubernetes Cluster on AWS

Exploring your Cluster

Understanding YAML configuration in kubernetes

Creating a pod object in kubernetes

Creating a Deployment in Kubernetes using YAML Preview

Creating a Service Object in Kubernetes

Creating Headless service, Node Port, Load balancer Services

Creating secrets and configmaps

Working with daemon sets

Deploying database application using statefulsets

Working with Persistent Volumes, Persistent volume claims

Using Rolling Updates in Kubernetes

Blue Green Deployments in Kubernetes

Canary Deployment in Kubernetes

Helm Package manager for Kubernetes

Deploying Kubernetes Dashboard with Helm

Installing Prometheus and grafana on kubernetes cluster with Helm

Monitoring Kubernetes cluster with Prometheus

Deploying micro service application using statefulsets and Persistent volumes

Module 9

KUBERNETES ON AWS - EKS

Create Kubernetes cluster on AWS with EKS

Eksctl command line tool

Configuring Auto Scaling EKS cluster on AWS

Deploy application on EKS cluster from Jenkins

Complete CI/CD pipeline on EKS cluster on AWS from Docker hub

Complete CI/CD pipeline on EKS cluster on AWS from ECR



Module 10

INFRASTRUCTURE AS CODE WITH TERRAFORM

Introduction to Terraform

Install Terraform

Terraform Providers

Resources and Data Sources

Change and destroy terraform resources

Terraform state commands

Output values in Terraform

Variables in terraform

Environment variables in Terraform

Version controlling Terraform files with git

Automate Provisioning Ec2 instance on AWS with Terraform

Modules in Terraform

Complete CI/CD on Jenkins with Terraform

Automate Provisioning of EKS cluster on AWS with Terraform



Module 11



CONFIGURATION MANAGEMENT ANSIBLE

Introduction to Ansible

Ansible Architecture

Push configuration in Ansible

Installation of Ansible

Adhoc commands in Ansible

Playbooks in Ansible

Modules in Ansible

Roles in Ansible

Using Roles from Ansible Galaxy

Creating our own Roles

Deploying Docker container with Ansible

Deploying Docker compose with Ansible

Complete CI/CD on Jenkins with Ansible

Module 12

CONTINUOUS MONITORING PROMETHEUS AND GRAFANA

What is Prometheus?

Prometheus Architecture

Prometheus Installation

Monitoring container metrics with Prometheus

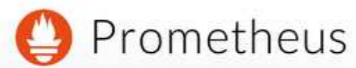
Prometheus UI

Alerting rules in Prometheus

Monitoring Kubernetes cluster with Prometheus

Grafana dashboard for Prometheus metrics

Grafana dashboard for kubernetes clusters



Module 13



AWS CODEPIPELINE

AWS CODEPIPELINE

What is AWS Code Pipeline?

Creating First Pipeline with s3 buckets

S3 simple storage service on AWS

Creating an AWS s3 bucket

Hosting a static website using Amazon s3

Triggering the pipeline by updating the source

Understanding Pipeline details and execution history

Editing, Triggering and deleting our pipeline

Module 14



AWS CODECOMMIT

AWS CODECOMMIT

What is AWS Code Commit?

Creating First Code Commit Repository

Connecting to our code Commit Repository using HTTPS

Creating Code Pipeline with Code commit repository as source

Triggering the pipeline with code commit

Module 15



AWS CODEBUILD

AWS CODEBUILD

What is AWS Code Build?

Creating First Code Build Project

Creating Pipeline with Build Stage

Creating Build Spec file for your builds

Triggering the pipeline with code commit changes

Module 16

AWS CODEDEPLOY

What is AWS Code Deploy?

Deployments on EC2 instances using Code Deploy

Creating an AppSpec file for deployments on EC2 instances

Creating Deployment group with autoscaling and Load Balancer



**AWS
CODEDEPLOY**

Module 17

AWS CLOUDFORMATION

What is AWS CloudFormation?

Adding a CloudFormation Deploy Action to your Pipeline

Adding a Deploy Action to the pipeline

Adding a manual approval action in the pipeline



**AWS
CLOUDFORMATION**



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