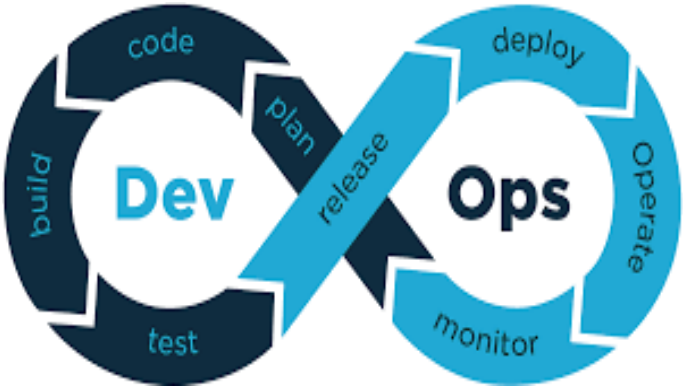
IntelliQ IT



Ai Enabled

DEVOPS WITH AWS COURSE CONTENT

Date: ..... Timings: .....

Duration: ..... Fee: .....

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CONFIGURATION MANAGEMENT TOOLS

→ Ansible

VIRTUALIZATION PLATFORMS

→ Vagrant

→ Docker

→ Kubernetes

→ Swarm

BUILD TOOLS

→ ANT

→ Maven

VERSION CONTROLLING

→ GIT

CONTINUOUS INTEGRATION

→ Jenkins

→ Bamboo

MONITORING

→ Nagios

CLOUD

→ AWS

→ Terraform

SCRIPTING LANGUAGE

→ Python

→ LINUX(Basics)

Introduction of Devops

- Devops for Entire Business
- Devops for Entire IT
- Devops for Developer
- Devops for Testing
- Devops for Operations Team
- Role of Devops in Agile Scrum

ANSIBLE

1. Ansible Introduction & Setup

→ Configuration Management & Orchestration

→ Set up of Ansible

→ Set up of Controller and Managed Nodes

2. Foundation

→ Inventory

→ Host Selection

→ Tasks

→ Plays

→ Playbook Execution

→ Ansible.cfg

3. Modules and Ad-hoc Commands

→ Firewall

→ Uri

→ Get_URL

→ APT / YUM

→ Service

→ User

→ Command

→ Shell

→ Copy

→ Fetch

→ Archive / Unarchive

→ File

→ Setup

→ Debug

→ Include

→ Stat

→ Git

→ Docker_contianer

→ Docker_image

→ Docker_login

→ Etc.,

4. YML Scripting

→ Basics of YML

→ How to write & test YML Scripts

→ YML scripting for writing Play Book

5. Play Book for CM Automation

→ Writing play books

→ Execution of play books

→ Play books for configuring Tomcat, Apache, FTP, Docker etc.,

→ Play book Notification

→ Play book tags & handlers

→ Exception handling

Roles

→ Roles Overview

→ Converting to Roles

→ Using roles for implementing tomcat, apache etc.,

→ External Roles & Galaxy

Advanced Execution

→ When conditions

→ Loops (with items, with sequence)

→ Removing Unnecessary Steps

→ Extracting Repetitive Tasks

→ Limiting Execution by Hosts

DOCKER

Docker Introduction

→ Installing Docker

→ Docker Introduction

→ Virtualization and Containerization

→ Code or Text Editor for Docker and Compose files

→ Terminal Emulator and Shell for Docker

Creating and Using Containers

→ Starting Application Server, Databases and Operating Systems as Containers

→ What happens when we run a Container

→ Container **vs** VM

→ Manage Multiple Containers

→ CLI Process Monitoring

→ Linking of containers

→ Docker Volumes

→ Reusable volumes

→ Getting a Shell inside Containers: no need for SSH

→ Package Management Basics: apt, yum, dnf, pkg

→ Docker Networks: Concepts for Private and Public

→ Docker's --format option for filtering CLI output

Container Images

→ What's in an Image

→ Official Docker Image Specification

→ The Mighty Hub: Using Docker Hub Registry Images

→ List of Official Docker Images

→ Images and Their Layers: Discover the Image Cache

→ Images and Containers From Docker Docs

→ Image Tagging and Pushing to Docker Hub

→ Building Images: The Docker file and Docker commit

→ Building Images: Running Docker Builds

→ Building Images: Extending Official Images

Docker Compose: The Multi-Container Tool

→ Docker Compose and The docker-compose.yml File

→ The YAML Format: Sample Generic YAML File

→ Compose File Version Differences (Docker Docs)

→ Compose file for creating Development and QA environment

→ Setting CI-CD environment for Jenkins using Docker

→ Setting up LAMP architecture using docker compose

Docker Swarm:

→ Container Orchestration

→ Load balancing using Swarm

→ Scaling using Swarm

→ Handling fail over scenarios using Swarm

→ Rolling updates using Swarm

→ Handling failover scenarios using Swarm

→ Docker Stack

KUBERNETES

Kubernetes Overview:

→ Introduction

→ Kubernetes Architecture

Setup Kubernetes

→ Kubernetes Setup – Kubeadm

Managed K8s Setup: EKS,GKE,AKS

Self-Managed K8s Setup: KOPS,KIND

Kubernetes Concepts

→ PODs

→ Replica Set

→ Replication Controllers

→ Deployments

→ Stateful Sets

→ Ingress, Ingress Controller

→ Service Objects

→ Secret Objects

→ Volumes

Kubernetes Concepts - PODs, Replica Sets, Deployments

→ Introduction to YAML

→ PODs with YAML

→ Replication Controllers and ReplicaSets using YAML

→ Container Orchestration in Kubernetes

→ Load Balancing using Kubernetes

→ High availability using Kubernetes

→ Scaling in Kubernetes

→ Performing Rolling updates and roll back

→ Handling Fail over scenarios

→ Deployments

→ Deployments – Update and Rollback

→ Statefulsets

→ Persistent Volumes and Persistent Volume Claims

→ RBAC (Role, Role Bindings, Cluster Role, Cluster Role

→ HELM package management

Networking in Kubernetes

→ Basics of Networking in Kubernetes

→ Services Object (Cluster IP, Node Port, Load Balancer, Headless)

→ Networking using Ingress

Services

→ In-depth definition files on Service Objects

→ Microservices Architecture

Microservices Application

→ Deploying Microservices Application Kubernetes Cluster

→ Voting application deployment

→ Using compose to convert from Docker to Kubernetes

VAGRANT

Introduction to Vagrant

→ Introduction & Installing vagrant

→ The Vagrant file & Boxes

→ Communicating with Vagrant Box

→ Network Access

Deploying your Vagrant Machine

→ Deploying a Complete Environment

→ Setting Environment

→ Finalizing the Environment

→ Vagrant File

JENKINS

Getting started with Jenkins

→ Getting started with Jenkins

→ Introduction to Continuous Integration

→ Install Jenkins on windows and Linux

→ Setup of Dev Environment, QA Environment , Prod Environment for Jenkins

→ Jenkins' Architecture and Terms of Jenkins

→ Jenkins UI : Dashboard and Menus

→ Create Our First Jenkins Job

Understanding stages of CI - CD

→ Continuous download

→ Continuous build

→ Continuous deployment

→ Continuous testing

→ Continuous delivery

Continuous Integration with Jenkins

→ Continuous Integration with Jenkins

→ Install Git and Jenkins GitHub Plug-in

→ Install Maven on Our Local Box

→ Configure Jenkins to Work with Java, Git and Maven

→ Create our Jenkins Project

→ Trouble Shooting: Create our First Jenkins Project

→ Run our First Jenkins Build and Jenkins Workspace

→ Source Control Polling in Jenkins

→ Other Build Triggers of Jenkins

→ Jenkins' Shell Scripts

→ Archive Build Artifacts

→ Install and Configure Tomcat as the Staging Environment

→ Deploy to Staging Environment

→ Jenkins Build Pipeline

→ Parallel Jenkins Build

→ Deploy to Production

→ Trouble Shooting: Deploy to Production

Distributed Builds

→ Introduction to Distributed Jenkins Build

→ Creating Master Slave setup

→ Install Jenkins Master Node in the Cloud

→ Install Jenkins Slave Agents in the Cloud

→ Concurrent Jenkins Build and Label Jenkins Build

→ Continuous Delivery with Jenkins

→ Code as Pipeline

→ CI-CD using Jenkins file

→ Groovy Scripting

Pipeline

→ Scripted Pipeline

→ Declarative Pipeline

→ Multi branch Pipeline

→ Creating Shared Libraries Using Environment Variables

BAMBOO

→ Setup of Bamboo

→ Continuous Integration using Bamboo

VERSION CONTROLLING(GIT)

→ Centralized and Distributed Version Controlling

→ Git local repo and GIT Hub

→ Configuration

→ Basic Commands

→ Branches

→ Push and Pull from GIT Hub

→ Git Squash and Stash

→ Git Ignore

→ Git Tags

→ Git Rebase

→ Git Amend and Revert

→ Git Log and Git reflog

→ Git Merging and Rebasing

→ Cherry picking

→ Git reset and Git Revert

→ Git amend

MAVEN

→ Introduction

→ Understanding build process

→ Creating Maven from command prompt

→ Maven Dependencies

→ Maven Stages

→ Maven Repositories

→ Maven Plugins

→ Integrating maven with Jenkins

ANT

→ Introduction

→ Configuring ANT

→ Using Build.xml

→ ANT Build stages

→ Run the code through Build.xml

→ Integrating ANT with Jenkins

PROMETHEUS AND GRAFANA

→ Installation of Prometheus and Grafana

→ Configuring Prometheus and Grafana Using Helm

→ Monitoring with Prometheus and Grafana

→ Triggering Alerts

NAGIOS

→ Installation of Nagios

→ Configuring Nagios

→ Monitoring with Nagios

→ Triggering Alerts

→ Environment setup in AWS

AWS

→ Cloud Deployment Scenarios in AWS

→ Continuous Delivery in AWS

→ Using Vagrant in AWS

→ Using Docker containers in AWS

→ Amazon Elastic Compute Cloud (EC2)

→ Amazon Simple Storage Service (S3)

→ Auto Scaling

→ VPC

→ Route 53

→ Elastic Kubernetes Service (EKS)

→ Elastic Container Registry (ECR)

TERRAFORM

→ Introduction to Terraform

→ Terraform Local Setup and AWS integrations

→ Automating AWS

→ Terraform Core Concepts

a) AWS providers
b) Resources for VPC, Subnets, ec2 instances
c) Data Sources
d) Terraform State
e) Variables in Terraform

Terraform Project

a) Setup of Git repo for Terraform project
b) Setup AWS vpc's and subnets
c) Route table and Internet gateway setups
d) Associating Subnets with Route table
e) Creating Security Groups
f) Creating ec2 instances
g) Creating ssh key pairs
h) Configuring ec2 server to run entry script and run a Docker container

Provisioners in Terraform

Terraform Modules

a) Introduction to Modules
b) Creating Local Modules
c) Module Outputs
d) Using in-build Modules from Terraform Registry
e) Modularize the entire Terraform Project
f) Remote State in Terraform

LINUX [BASICS]

→ Basic Commands

→ File Operations

→ Redirection

→ Piping

→ Permissions

→ User Controls

PYTHON

→ Basic Scripting

→ Understanding Methods, Classes and Objects

→ Creating Customized Modules

→ Using Python to Automate Docker

→ Using Python Scripts to Automate Jenkins

AI

→ Role of AI in Devops

→ Practical implementation of AI on Devops tools

→ Generating docker and Kubernetes files using AI

→ AI for Ansible playbooks and roles