

CERTIFICATE COURSE ON Cloud and DevOps

3. Infrastructure provisioning with Docker, Kubernetes and Terraform

UNIT-I

- b. Understanding Docker
- c. Difference between Physical Servers, Virtual Machines and Docker
- d. Docker Installation
- e. Docker CLI Overview
- f. Docker and container

Building Container Images

- a. Docker file

Shell Scripting: Shell scripting intro, Input and output of scripting, variables and arguments, if then scripts, for loop scripts, do while scripts, case statement scripts, functions, exit functions.

Docker:

- a. Docker Overview

- b. Docker file instructions
- c. Multi stage Docker build

UNIT-II

Storing and Distributing Images

- a. Docker Hub
- b. Docker Store
- c. Docker Registry
- d. Docker Trusted Registry
- e. Azure Container Registry
- f. Amazon ECR

Managing Containers

- a. Docker container Commands
- b. Docker Network and Volumes

Docker Networking, Docker Volumes (Storage), Docker Compose (Installation& Docker Compose Yaml, Docker Compose Commands, Docker App)

UNIT-III

Kubernetes:

Overview

- Introduction to Microservices
- Clustering and Orchestration
- Kubernetes Architecture
- Kubernetes Core Concepts
- o Pods

- o Namespaces
- o API primitives

Kubernetes runtime

- Health checks
- Application Scheduling
- Kubernetes Networking
- Service Discovery
- DNS
- Multitenancy

Native Kubernetes on Amazon Cloud using Elastic Kubernetes Services (EKS)

Terraform

UNIT-IV

Packer: What is Packer, Why Use Packer, Installing Packer, Packer Constructs (Artifacts, Builds, Builders, Commands, Post-Processor, Provisioners, Templates), Packer CLI

Terraform:

Infrastructure Provisioning

- a. What is Infrastructure as Code
- b. Infrastructure as Code in the Cloud
- c. How Terraform Does Infra Provisioning

Installation

Terraform Constructs

- a. Terraform DSL
- b. Providers
- c. Resource
- d. Arguments
- e. Attributes
- f. Variables
- g. Maps and Lookups
- h. Modules
- i. Local State
- j. Remote State

UNIT-V

Terraform DSL

- a. Declaring Variables
- b. Working with Resources
- c. Nested Blocks
- d. Dynamic Nested Blocks
- e. Expressions and functions

Resources and Providers

a. Null Resource

b. Local Exec

Using Terraform to create a AWS/Azure Cloud Deploymen