Devops



Introduction to Devops:

What is DevOps?
Why DevOps?
Principles of DevOps
History of DevOps
SDLC models
Understand Agile Methodology
Prerequisites for DevOps
DevOps with Agile using Scrum
Overview of DevOps Tools
How to achieve DevOps?
What is CICD?

Prerequisite for DevOps

Topic 1: – Networking Concepts (Duration: 02:00:00 Hrs)
Network Fundamental
Communication Models and Protocols
IP Addressing and Subnetting

Topic 2: - Introduction to Virtualization (Duration: 00:30 Mins) What is Virtualization? What is Hypervisor? Types of Server Virtualization Benefits of Virtualization Important Virtualization products Create VM's using Hypervisors



Topic 3: - Linux Administration (Duration: 04:00 Hrs)

Linux Introduction

Linux Installation

Basic Linux concepts

Vim Editor

Process Management

Controlling Services & Daemons

SSH with key-based Authentication

Linux Networking

System logs management

Archiving and Copying Files Between Systems

Package Management

Cron Jobs Scheduling

Configure Apache server

Limiting Network Communication with firewall

Topic 4: - Database Concepts and Shell Scripting (Duration: 02:00 Hrs)

Installing MariaDB

Working with MariaDB Databases

Managing Databases Users and Access Rights

Creating and Restoring MariaDB Backups

Shell scripting examples

How real-time shell scripts work

How to call scripts with different tools

Different conditions while using scripts

Database Backup using Scripts

Development ide setup

Installation of java and configuration Eclipse ide software installation and configuration

Backup / Artifactory Tool:



Jira Bug Tracking Tool

Introduction to Jira
Scrum introduction with Scrum Roles
Jira login and creating projects
User creation and deletion
Account creation and bug issues checking
Standalone Jira vs cloud Jira
The workflow of the Scrum process with project

Version Control System

What is Version Control System?
What Is Git?
Git Installation with Different environments
Commands And Operations In Git with GitHub
(Initialize, Status, Add, Commit,
Clone, Pull, Push, Difference, Reset, Log, Show, Tag, Stash, Remove)
Advanced Git operations (Branching, Merging, Rebasing,
Merge vs Rebase, Conflict resolving, Deleting remote repositories,
Fork Operation)
Git integration with Eclipse

Build Tool

Introduction to maven
Maven compare with ant and other tools
Maven setup in multiple environments
Maven lifecycle
Maven repository structure
Real-time maven settings for the project
Maven structure coding and implementation with Eclipse

Backup / Artifactory Tool:



Application Server Implementation

Need for application and web server Deploy Tomcat server in different environments Setup, configure of Tomcat, Apache, Nginx servers Deploy war file using Tomcat Server

Working with Cloud computing

Cloud Computing + AWS Introduction
Create a free tier AWS account
Basic Overview of services, AWS Billing and account
Virtual Private Cloud:
Set Budget
Instance creation and access using Mobaxterm & DP
using different platforms
Basic Overview of VPC
Subnetting
VPC Creation with multi-tier architecture
Inter VPC peering
VPN - On-premises to Cloud premise connectivity
NAT
AWS Marketplace

EC2:

Purchase, Type & Dricing
Instance Monitoring
SNS
Cloud Watch
IAM
Boot Script
EBS
EFS
Snapshot
AMI Creation
Auto Scaling
ELB
Backup / Artifactory Tool:



Storage:

Basic Storage introduction

Versioning

Replication

S3 Browser

Fast Glacier

Cloud Formation

Container Management:

Why need configuration management?

Introduction to tools like ansible, chef, puppet

What is Ansible?

How Ansible Works?

Ansible setup and configuration

Ansible Inventory Introduction

Ansible ad-hoc commands

Managing Ansible Configuration file

Creating playbooks with structures and conditions

Managing Ansible Roles

Real-time servers management

Ansible vault to protect ansible playbooks

AWS Provisioning using Ansible

Container Management

What is Containerization?

What is Docker?

Docker setup in multiple environments

Docker Images

Docker file creation and deployment

Working with Docker hub

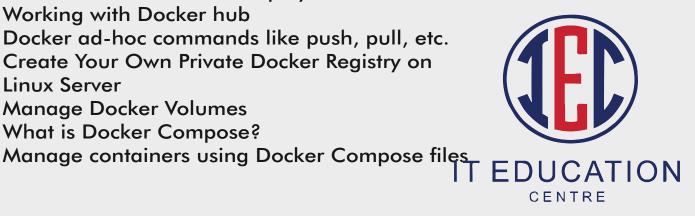
Docker ad-hoc commands like push, pull, etc.

Create Your Own Private Docker Registry on

Linux Server

Manage Docker Volumes

What is Docker Compose?



Container Orchestration

What is Container Orchestration?
What is Docker Swarm?
Working with Docker Swarm Using EC2 Instance
Introduction of Kubernetes
Installing Kubernetes Cluster
Manage Kubernetes Master and Nodes
What is Pod?
Managing pod network with Example
Replication Controller
ReplicaSet
Deployment
Volume management

Jenkins – Continuous Integration

Introduction to CICD
Introduction to Jenkins, TeamCity
Installation and configuration of Jenkins
Jenkins users and Roles Management
Jobs in Jenkins
Jenkin node setup and configuration
Jenkins integration with GIT (SCM)
AutoDeployment with Jenkins using git, mayen and Tomcat server

Backup / Artifactory Tool

What is Artifactory tools and purposes
Jfrog vs nexus
Install and setup Jfrog
Maven dependencies backup with Jfrog
Jenkin Jfrog automation job



Monitoring Tools

Introduction to Nagios XI and Zabbix Installation and setup of Nagios Adding nodes to Nagios master Monitor Windows Servers Monitor Linux Servers Monitor EC2 Instances Monitoring different metrics in Nagios

DevOps Projects:

Project 1: Simple DevOps project for CI/CD through Jenkins Project 2: CI/CD pipeline using GIT, Jenkins, and Ansible

Project 3: Automatic deployment using Docker

