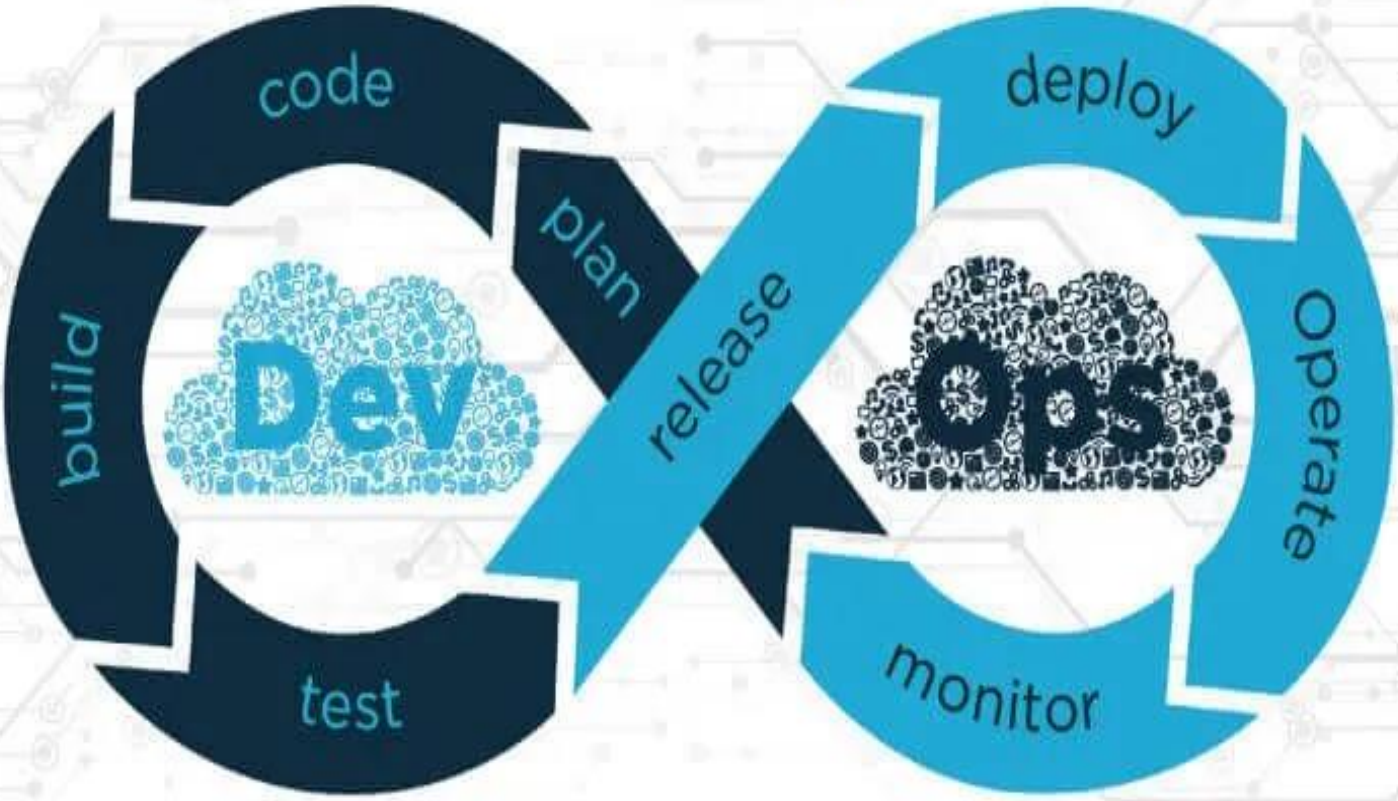
DevOps and Cloud

aws Azure

The Match that Drives Today's Businesses



Don't Just Learn " Hello-World " Examples;

Learn Real-Time Stuff In Your Training By Real-Time Faculty.

Faculty Name: Vinodh Machireddy
Exp: Having 15Yrs Of IT Exp
Teaching Exp: 9 Years

Linux™

DEV OPS

aws

VmTutes

Course Content

Operating System → Linux

Version Control System → git

Repository Mgmt Tool → GitHub

Build Tool → Maven

Ci/Cd → Jenkins

Configuration Management → ANSIBLE

Application/Web Server → Apache Tomcat

Artifactory → JFrog

Code Quality Test → sonarqube

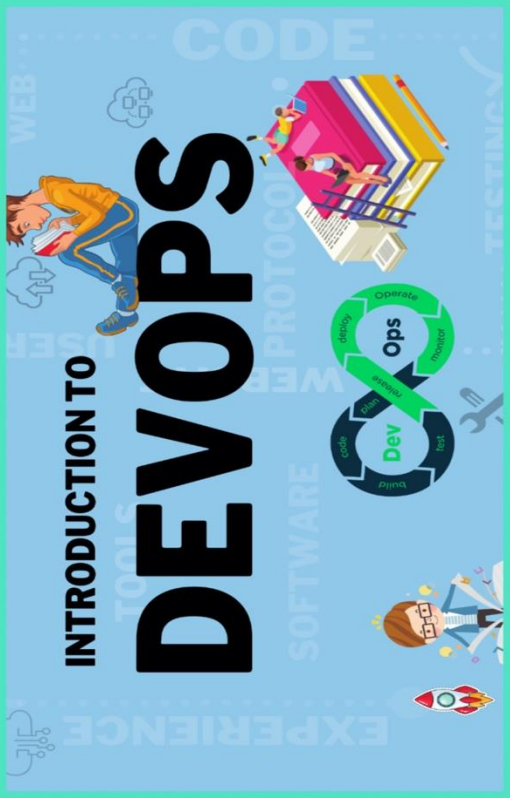
Containerization → docker

Container Orchestration → kubernetes

Cloud Computing → aws

Infrastructure Aa a Code → HashiCorp Terraform

Module-1

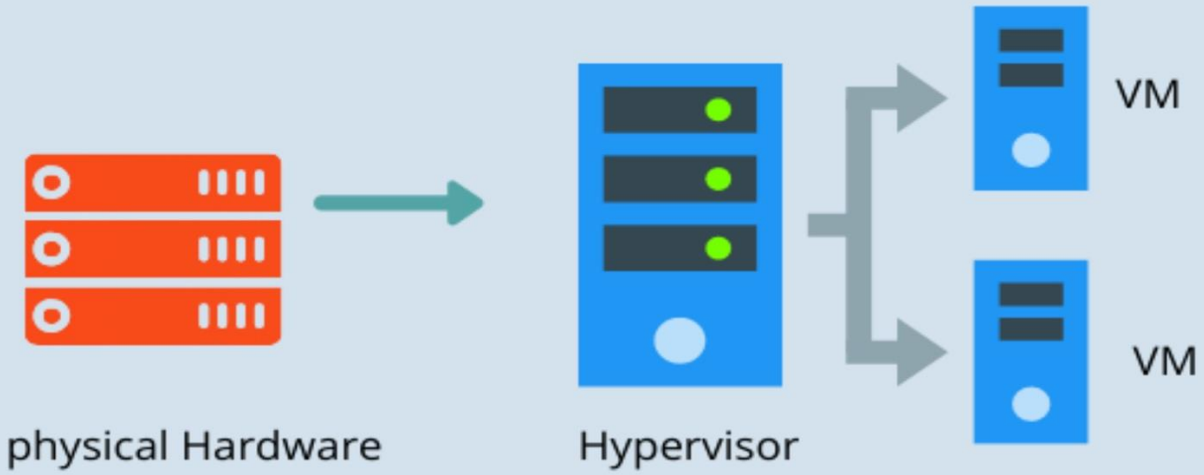


INTRODUCTION TO DEVOPS (2Hrs At Best)

1. What is DevOps?
2. History of DevOps
3. Why DevOps?
4. What is Dev and Ops?
5. DevOps Definition
6. What is Build & Release?
7. Software Development Life Cycle (SDLC)
8. Pre-Requisites to Get into DevOps
9. Future of DevOps
10. Tools in DevOps
11. DevOps Main Objectives

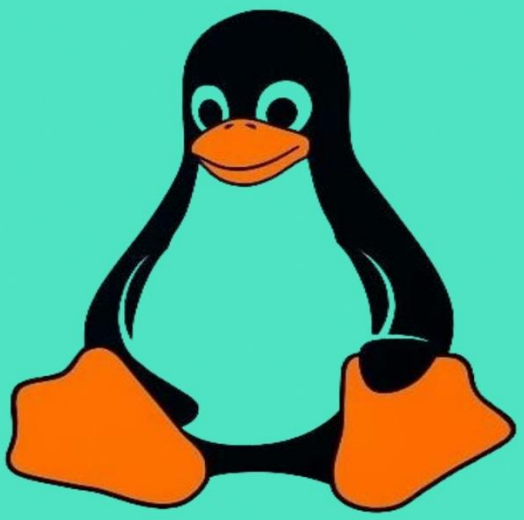
MODULE - 2

Virtualization (2Hrs At Best)



1. Introduction to Virtualization
2. Types of Virtualization
3. Hypervisors
4. Cloud Computing and Virtualization
5. Guest and host operating systems
6. Diff b/w containers and virtual machines
7. Hands-on Labs and Exercises

Module-3



Linux™

OPERATING SYSTEM (10Hrs At Best)

1. What is an Operating System?
2. Types of Operating Systems
3. Introduction to Linux/Unix
4. Why Linux?
5. Installation of Red Hat Enterprise Linu
6. Filesystem Hierarchy
7. Terminal Overview
8. Basic Commands
9. VIM Editor
10. Hard & Soft Links
11. File and Directory Permissions
12. Package Manager
13. User and Group Administration

Module-4

Source Code Management

OR

Version Control System

(7Hrs At Best)

1. What is SCM/VCS
2. Introduction to Git
3. Installing Git in Windows
4. Installing Git in Linux
5. Differences Between Git and Other Version Control Tools
6. What is a Distributed Version Control System
7. Architecture of Git
8. Stages in Git
9. Frequently Used Terminologies in Git
10. Git Global Configurations
11. Repositories (Repos)
12. Log Management in Git
13. Git Ignore Concept
14. Branching in Git
15. Merging vs. Rebase
16. Merge Conflicts in Git
17. Cherry-Pick in Git
18. Snapshot in Git
19. Stash in Git
20. Git Diff
21. Undo Operations in Working, Staging, and Committing A
22. HEAD in Git
23. Tags in Git
24. Rewriting Commit Messages in Git

Module-5

Repository Mgmt (2Hrs At Best)

GitHub

1. What is GitHub
2. Overview of GitHub
3. GitHub Account Creation
4. Difference Between Git & GitHub
5. Difference with Other Tools
6. Create a Repository in a Local Machine and Push to GitHub
7. Clone Existing Repositories from GitHub
8. Managing Tags Remotely
9. Fetch and Pull in GitHub
10. GitHub Workflow
11. Forking Repositories in GitHub
12. Pull Requests in GitHub
13. Deleting and Renaming GitHub

Module-6

Build Tool (5Hrs At Best)

Apache Maven™

1. Overview of Maven
2. Differences Between Maven and Ant
3. Differences Between Maven and Other Build Tools
4. How to Install Maven in Windows
5. How to Install Maven in Linux
6. Maven Architecture
7. Maven Phases/Goals
8. Default Lifecycle in Maven
9. Standard Directory Layout in Maven
10. GAV (Group, Artifact, Version)
11. Maven Local and Remote Repositories
12. Packages and Their Types in Maven
13. Sample Maven Project
14. One-by-One Goals Executions
15. Built-in and Custom Plugins in Maven
16. POM (Project Object Model) File
17. Maven Snapshot
18. Maven Profiles
19. Maven Dependency Management
20. How to Deploy Executable Files in Application Serve

Module-7

Continuous Integration & Continuous Deployment (CI/CD) (7Hrs At Best)

Jenkins

1. What is CI/CD (Continuous Integration/Continuous Deplo
2. Introduction to Jenkins
3. History of Jenkins/Hudson
4. How to Install Jenkins in Windows and Linux
5. How to Create Jobs in Jenkins
6. Different Types of Jobs in Jenkins
7. Integrating Jenkins with GitHub
8. Integrating Jenkins with Build Tools
9. Building Projects from GitHub
10. Managing Remote Systems with Jenkins
11. Parameterized Builds in Jenkins
12. Securing Jenkins
13. How to Install Plugins in Jenkins
14. Scheduling Builds in Jenkins
15. Setting Up Different Types of Automated Builds
16. Configuring One Job to Trigger Another Job
17. Configuring Global Security in Jenkins Administration
18. Creating Maven Type Jobs in Jenkins
19. Creating Ant Type Jobs in Jenkins
20. Jenkins Pipeline
21. Jenkins Backup
22. Deploying Code to Servers with Jenkins
23. Authentication and Authorization in Jenkins
24. Creating Nodes on Different Servers in Jenkins
25. Build Pipeline View in Jenkins
26. Most Useful 20 Jenkins Plugins

Module-8

Code Quality Testing (1Hr At Best)

sonarqube

1. What is SonarQube
2. How to Install SonarQube
3. Analyzing with SonarQube Scanner for Maven
4. Integrating SonarQube with Maven
5. Integrating SonarQube with Jenkins
6. Generating Final Reports in SonarQube Dashboard

Module-9 Application Server (2Hr At Best)

1. Introduction to Apache Tomcat Server
2. How to Install Tomcat in Windows
3. How to Install Tomcat in Linux
4. Manual Deployment with Tomcat
5. Continuous Deployment Using Jenkins Jobs
6. Deploying a Sample Web Application (sample.war)
7. Setting Up Tomcat
8. Tomcat Integration with Jenkins

Module-10 Artifactory (2Hr At Best)

1. Why Choose JFrog Artifactory
2. Introduction to JFrog Artifactory
3. What is an Artifact
4. Source vs. Binary Artifacts
5. What is an Artifact Repository
6. Why Use an Artifact Repository
7. Types of Packages Supported by JFrog Artifactory
8. How to Set up Artifactory Server on AWS
9. Artifact Deployment from Maven to JFrog Artifactory
10. Artifactory Integration with Jenkins

Module-11

Configuration Management) (7Hrs At Best)

ANSIBLE

1. Introduction to Configuration Management (CM)
2. How to Set Up Ansible
3. Understanding Ansible Architecture and Execution
4. Ansible Documentation
5. Installing Packages Using Ansible
6. Writing Ansible Playbooks
7. Workflow of Ansible
8. Difference Between Ansible and Chef
9. How to Install Ansible in Linux and Windows
10. Understanding Workstations, Chef Servers, and Nodes
11. Servers and Nodes Concept in Chef
12. Chef Configuration Concepts
13. Workstation Setup in Chef
14. Creating Cookbooks and Uploading Them to the Server in Chef
15. How to Use Ruby in Chef
16. About Bootstrap in Chef
17. Package/Service Actions in Chef
18. Installing Multiple Packages at Once in Chef
19. Managing Chef Servers
20. Creating Roles in Chef
21. Adding Roles to an Organization in Chef
22. Adding a Run List to a Node in Chef
23. Checking Node Details in Chef
24. How to Create Data Bags in Chef
25. Adding Databases to an Organization in Chef
26. Creating a Server and Adding It to an Organization in Chef
27. Checking Node Details Using Knife in Chef
28. Creating Organizations in Chef
29. Environments in Chef
30. Adding Yourself and a Node to an Organization in Chef
31. Adding Nodes to Chef Server
32. Most Useful Playbooks in Ansible
33. What is Ansible and Its Features

Module-12

docker

Containerization (7 Hrs At Best)

1. Learning the Basics of Docker
2. Introduction to Docker
3. Containers vs. Virtual Machines
4. Docker Architecture
5. Docker Hub
6. Docker Installation
7. Creating Our First Image
8. Working with Multiple Images
9. Packaging a Customized Container
10. Running Container Commands with Docker
11. Managing and Removing Base Images
12. Pushing to Docker Hub
13. Creating Shared Volume Groups
14. Creating Custom Docker Images
15. Docker Networking
16. Dockerfile for User
17. Volume Management in Docker
18. Docker Linking
19. Docker Compose

Module-13

kubernetes

Container Orchestration (10 Hrs at Best)

1. Introduction
2. Why and What is Kubernetes
3. Installation of Kubernetes
4. Kubernetes Objects
5. Kubernetes Architecture
6. Pods in Kubernetes
7. Services in Kubernetes
8. Volumes in Kubernetes
9. Namespaces in Kubernetes
10. Replica Set in Kubernetes
11. Deployment in Kubernetes
12. Stateful Set in Kubernetes
13. Daemon Set in Kubernetes
14. Job in Kubernetes
15. Creating a Cluster Using KOPS
16. Using kubectl to Create a Deployment
17. Using a Service to Expose Your App
18. Scaling Your App in Kubernetes
19. KUBEADM on AWS
20. Using kubeadm to Create a Cluster
21. Handling Pod Deletions in Kubernetes

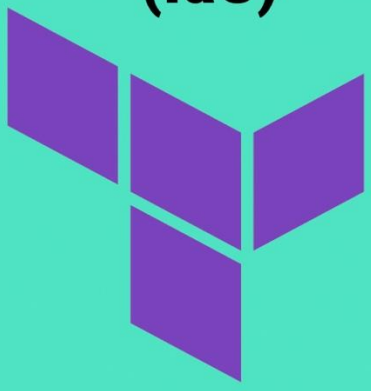
Module-14

Cloud

1. Traditional Infrastructure Scaling
2. Cloud Computing
3. Cloud Computing Providers (Vendors)
4. Cloud Service Models
5. Introduction to AWS
6. Why AWS
7. AWS Global Infrastructure
8. Free Tier Account Creation in AWS
9. Using Putty for SSH Access
10. Using MobaXterm for SSH Access
11. Multi-factor Authentication (MFA) in AWS
12. Amazon EC2 (Elastic Compute Cloud)
13. Amazon EBS (Elastic Block Store)
14. Amazon VPC (Virtual Private Cloud)
15. Elastic Load Balancer (ELB)
16. Auto Scaling Group in AWS
17. AWS Identity and Access Management (IAM)
18. Amazon Machine Image (AMI)
19. EBS Snapshots
20. Elastic IP in AWS
21. Amazon S3 (Simple Storage Service)

Module-15

Infrastracture As a Code (IaC)



HashiCorp

Terraform

1. Introduction to Terraform
2. What is Infrastructure as Code (IAC)?
3. Why use Terraform?
4. Terraform architecture and components.
5. Terraform Installation and Setup
6. Basic Terraform Configuration
   - Creating and configuring resources.
   - Terraform variables and data types.
   - Terraform outputs.
   - Working with different cloud providers (AWS, Azur
   - Authenticating with providers.
7. Terraform Commands
   - Defining and managing infrastructure resources.
   - Resource lifecycle (create, read, update, delete).
   - Importing existing infrastructure.
8. Terraform State and Data Sources
   - Working with remote data sources.
   - Importing data into your configuration.
9. Terraform Providers and Versioning
   - Managing provider versions.
   - Handling breaking changes.
10. Terraform Best Practices
    - Coding and organizational best practices.
    - Security considerations.