

Trainer : Mr. Vikram Kumar

Course Duration: 60 Hours

Chapter No.	Chapter Name	Chapter Topics
Chapter -1	SDLC	Definition of SDLC
		Purpose of SDLC
		General Phases of SDLC
		Various Models of SDLC
		About Waterfall SDLC Model
		Waterfall SDLC Model - Advantages
		Waterfall SDLC Model - Disadvantages
		About Agile SDLC Model
		Agile SDLC Model - Advantages
		Agile SDLC Model - Disadvantages
Chapter -2	DEVOPS	Introduction to Devops
		History of Devops
		Why Devops
		What is Devops
		Fundamental Principles of Devops
		Values of Devops
		Definition of Devops
		Devops Features
		Benefits of Devops After Implementation
		Benefits of Devops for Business Organisations
		Devops Phases
		Devops Tools Overview
		Devops Roles and Responsibilities
Chapter -3	VIRTUALIZATION	Introduction to Virtualization
		Virtualization Types
		Hosted
		Bare metal
		Hypervisors
		Virtual Machine Setup
Chapter - 4	VERSION CONTROL SYSTEM	Introduction to VCS
		Purpose of VCS
		VCS Workflow

		Types of VCS
		Local VCS
		Benefits
		Drawbacks
		Centralised VCS
		What is CVCS
		Benefits of CVCS
		Drawbacks of CVCS
		Notable Vendors of CVCS
		DVCS
		What is DVCS
		Benefits of DVCS
		Drawbacks of DVCS
		Notable Vendors of DVCS
		Differences between DVCS and CVCS
Chapter 6	GIT	Introduction to Git
		Git Features
		Git installation on Windows
		Git installation on Linux
		Git Architecture
		Git Configuration
		Working Directory
		Staging Area (Index Area)
		Local Repo
		What is Git Repository
		git config command usage
		Set git environment variables for global level
		Set git environment variables for local level
		Setup git repository using git init
		Stop git tracking files using gitignore
		git add
		git status
		git status color coding system
		git commit
		How to commit single files
		How to commit multiple files commits

		View all commit logs
		View only latest commit logs
		View log changes of each commit
		git show command
		How to delete the files in git before staging
		How to delete the files in git after staging
		How to delete the files that are tracked by git - Local Repository
		Git Parallel Development
		git branch
		git merge
		Comparing git project files from working area with Local Repo using git diff
		Git diff --staged
		Git Backout the Changes
		git reset HEAD
		git checkout
		Real Time Workflow of Git Branching
		Delete Git branch
		Git Revert
		Git Stash
Chapter - 7	GITHUB	Introduction to Github
		Various vendors of Remote Repository
		Features of github
		Create Account in github
		Create Project Repository in github
		Create files in github
		Clone Github Repository
		Pull changes from github Repository
		Push changes to github Repository
		Git & Github Project
Chapter - 8	UNDERSTANDING OF CI/CD	What is CI/CD
		Need of C.I/CD
		Benefits of C.I/CD
		Best practices of C.I/CD
		Generic Architecture of C.I/CD in Projects
		C.I/CD Workflow

		Core Components of C.I/CD
		Case Study - situation if there is no C.I/CD tool used in Projects
		Few notable C.I/CD Tools
		Market Share of C.I/CD Tools
Chapter - 9	CI/CD USING JENKINS	Introduction to Jenkins
		Why Jenkins
		Relation between Jenkins and Hudson
		History of Jenkins
		Why Jenkins is so popular
		Features of Jenkins
		General Features
		Technical Features
		Jenkins Architecture
		Jenkins Prerequisites
		Minimum Hardware Requirements
		Recommended Hardware Requirements
		Software Requirements
		Supported Platforms
		Setup Jenkin Server using war file
		Install Software Pre-Requisite softwares (Java)
		Setup Environment Variables
		Jenkins Terminologies
		Master
		Slave or Node
		Job or Project
		Executor
		Build
		Plugin
		Jenkins Dashboard Overview
		Job Listing Section
		Jenkins Menu Section
		Jenkins Menu- Item
		Jenkins Menu-People
		Jenkins Menu-Build History
		Jenkins Menu-Manage Jenkins
		Jenkins Menu-views

		Build Queue Section
		Build Executor status Section
		Jenkins User administration
		Create Jenkins User Accounts
		Configure Jenkins User Accounts
		Delete Jenkins User Accounts
		Manage Jenkins Users based on Matrix Strategy
		How to change the Jenkins Admin Password
		What is Jenkins Change Home Directory
		Secure Jenkins
		Manage Jenkins Plugins
		Install Plugins
		Upgrade Plugins
		Jenkins - Creating Jobs in Jenkins
		Naming a Project or Job
		Choosing right Project Type
		About Project Descriptions
		Set the storage limits for old discard builds
		How to disable the build systems
		Source Code Management
		Build Triggers
		Configure Poll Source Code management in Jenkins
		Configure Poll SCM Changes using Crontab in Jenkins
		Trigger Builds Remotely using URL
		Trigger Builds using Token ID
		Trigger Builds based on build Pipeline or other Projects
		Build triggers Periodically
		Create a Sample Project to test build process in Jenkins
		Understand Jenkins Job Process
		How to check Build Information
		Jenkins Console Output
		Jenkins Build Color Code system
		Understand Jenkins Weather Report
		Distributed Builds
		What is Distributed Build
		Architecture of Distributed Build
		Configure Jenkins Master Server

		Configure Jenkins Slave Server
		Configure authentication between Master-Slave
		Setup Relationship between Master and Slave
		Configure Project to build on Jenkins slave server
		Email Notifications in Jenkins
		Purpose of Email Notification
		Email Notification plugins
		Configure Email Notification in Jenkins
		Demonstrate usage of email notification on builds
		Understanding of Jenkins Pipeline
Chapter - 10	BUILD TOOL - MAVEN	What is Build
		Purpose of Build Tools
		Build Tools Ideology
		Evolution of Build Tools
		Few Notable Build Tools
		Introduction to Apache Maven
		Various Phases of Maven
		Installation of Maven
		Configuration of Maven on Jenkins Build Server
Chapter - 11	CODE ANALYSIS TOOL - SONARQUBE	About Code Analysis
		Advantages of Code Analysis
		Various Code Analysis tools
		Sonarqube Features
		System Requirements for Sonarqube
		Setup SonarQube Server
		Configure Sonarqube
		Configure Jenkins to do code analysis with Sonarqube
		Jenkins-Maven-Sonarqube Project
Chapter -12	FUNDAMENTALS OF CONFIGURATION MANAGEMENT	Introduction Configuration Management
		Configuration Management terminologies
		Configuration Management Server
		What is IAC
		Configuration Repository
		Configuration Management Methodologies
		Pull Method

		Push Method
		Popular Configuration Management tools
Chapter -13	ANSIBLE	Introduction To Ansible
		Features Of Ansible
		Use Cases Of Ansible
		Ansible Documentation
		How Ansible Is Different From Configuration Management Tools
		Ansible Architecture
		Ansible Workflow
		Ansible Terminologies
		Ansible Lab-setup
		Ansible Control Machine Requirements
		Ansible Control Machine on RHEL
		Verify Ansible installation and version
		Verify Ansible Playbook version
		Locate Ansible configuration file
		Why YML in Ansible
		What is YML
		What is Keypair in YML
		Representation of Lists in YML
		Representation Of Dictionary In YML
		What is Inventory in Ansible
		Default inventory file in Ansible
		Non-Default inventory file in Ansible
		How to Create Group in Inventory File
		Ansible Inventory Parameters
		Use Case Of - Ansible_host
		Use Case Of - Ansible_port
		Use Case Of - Ansible_connection
		Use Case Of - Ansible_user
		Use Case Of - Ansible_ssh_pass
		Use Case Of - Ansible_password
		Ansible Exercise - To Setup Inventory File And Perform Ping Test
		Case Study On Ping Test Error Message :
		Ansible Inventory Exercise 1- Create A Inventory File
		Ansible Inventory Exercise 2 : To Create A Group

		Ansible Inventory Exercise 3 : To Create Nested Groups (Parent_group)
		Approaches of Deployment using Ansible
		About Ansible Adhoc
		When to use Ansible Adhoc
		Use case of Ansible Adhoc using Command Method
		Use case of Ansible Adhoc using Module Method
		About Ansible Playbooks
		When to use Ansible Playbooks
		Sample Ansible Playbook
		Ansible Playbook Format
		Ansible Modules
		Ansible Tasks
		How To Execute Playbooks
		How to check syntax or Dry Run of a Playbook
		How to Run a playbook on multiple hosts
		How to Run a playbook on target hosts
		References On Playbook And Modules
		Use of Modules in Playbook
		Ansible Variables
		How To Define A Variable In Ansible Playbook
		Ansible Variable Exercise
		Ansible Conditions
		Ansible Loops
		Ansible Vaults
		How To Limit The Execute Of Ansible On Single Hosts Or Desired Hosts
		Ansible Roles
		Use Case Of Roles
		Ansible Include Statement
		Ansible Galaxy
		Ansible Project
Chapter - 14	CHEF	
		Introduction to Chef
		Use cases of chef
		Features of chef
		Technical features of chef
		Comparison of chef with other configuration management tools
		Architecture of Chef

		Core Components of Chef
		Software Requirements for Chef infrastructure
		Chef Server setup
		How to create organisation on Chef Server
		How to create chef users on Chef Server
		About Organisation and User Pem files
		What is Pem file in Chef
		Chef Workstation setup
		What is Knife.rb file in chef
		How to create knife.rb file
		How to establish communication between Chef Server and Chef Workstation
		How to configure the firewall for chef infrastructure
		How to perform SSL check for knife.rb
		Chef node setup
		What is Bootstrap in chef
		Chef Client commands
		Chef knife commands
		How to setup a Chef Configuration Repository
		Chef Cookbooks
		Create Cookbooks
		Structure of Cookbook
		About Receipes
		Procedure to be followed when made changes to a Cookbook
		How to apply Semantic versioning on Cookbook
		How to verify the syntax errors in recipe file
		LAB Exercises on Cookbook and Recipe
		Applying semantic versioning with changes on cookbook
		Setup apache web server
		Demonstrate functionality test on recipe files in a cookbook
		Chef Resources
		What is a chef Resource
		Resource Types
		Resources Definition
		What is Desired State in chef
		What is Convergence in chef
		Case Study on Resources
		How to Execute a Resource file (Recipe)

		Exercise on Resources
		Applying chef-client methods
		How to apply single recipes using chef-client in local mode
		What is Local mode
		What is Runlist
		How to apply chef-client using runlist on single cookbook
		How to apply chef-client using runlist on multiple cookbooks
		How to use include_recipe method
		Sample case studies
		Chef knife commands
		Create a cookbook using knife command
		Delete a cookbook using knife command
		How to Upload a cookbook to chef server
		How to attach a recipe or cookbook to chef node
		list nodes using knife command
		See details about node using knife command
		knife command to check all cookbook list
		Download a cookbook from Chef Server to Workstation
		How to generate metadata of a cookbook
		How to test a cookbook syntax using knife commands
		How to check recent change status on chef node
		How to delete a node
		Use of Chef Supermarket
		Chef Project
Chapter - 15	DOCKER	Introduction to Docker
		Why docker
		What is a container
		Relation between container and docker
		Docker features
		Why docker is so popular
		Difference between container and image
		Containers History
		Docker Architecture
		Docker Editions
		Docker system Requirements
		Docker installation and setup

		How to verify docker installation
		About Docker version
		How to see list images in docker
		What is Docker Registries
		How to see all docker images
		How to pull images from docker registries
		What is Pulling in docker
		Difference between Docker Pull, run, Push
		How to run docker image
		How to exit from container without killing it
		How to exit from container by killing it
		How to see all running container on docker host
		How to check history of all containers
		How to stop a container that is running
		How to find latest containers that are created
		How to get inside of already a running container
		How to start a container and remove it once task is completed
		How to delete or remove a container
		How to delete or remove image from docker host
		Relation between Images and Containers
		How to attach a port of docker host to docker container
		How to run a container in background
		Difference between docker container run and docker container start
		How to specify a name to docker container
		How to see container logs
		How to see processes that are currently running in a docker container
		How to see all commands related to a container
		How to remove docker multiple containers
		How to check docker container metadata using docker inspect
		how to see docker container stats
		How to list what ports are being used by docker container
		How to see Docker Image History
		How to see docker image metadata
		How to tags docker images
		How to log into docker registries using docker CLI
		How to logout from docker registries using docker CLI
		How to push docker image to docker registries

		About Docker file
		How to create Dockerfile to build an image
		How to build an image from Dockerfile
		About Dockerfile Instructions
		Docker Project
Chapter - 16	KUBERNETES	What is kubernetes
		Features of kubernetes
		Architecture of kubernetes
		Installation of Kubernetes
		Kubernetes Master
		Kubernetes nodes
		Kubernetes components
		Kube-api server
		etcd (cluster store)
		Kube-scheduler
		Node
		Kube-proxy
		Kubelet
		pods
		Multi container pod
		Pod limitations
		Replica sets
		Deployments
		Kubernetes GUI - Dashboard
		Scale up Pods
		Scale down pods
		Kubernetes Deployment Project
Chapter - 17	SHELL SCRIPTING (BASH)	Introduction to Scripting
		About Shell
		Shell Scripting
		Purpose of Shell Scripting
		Various Types of Shells
		Shell Flavours and their default shells
		Scripting Basics
		How to view available shells in system

		How to switch to different shells
		How to exit from shell
		How to create a script file
		File permissions for Script file
		How to Execute Script file using relative and absolute methods
		Exercise on creating a sample script file
		Use of shebang or hashbang
		Case Study on error message related to bad interpreters
		Commenting in bash scripting
		Variables
		What is variable
		Types of variable
		Difference between System Defined and User Defined variables
		Naming Conventions to declare a Variable
		Syntax for Variable Declaration
		Few Case studies on Valid and invalid variable declarations
		Scalar Variables
		Accessing the Variables
		Reading variables from standard input
		Reading single variables from standard input
		Reading multiple variables from standard input
		Reading Variables in Silent Mode
		Reading Variables into an array
		Reading Variables into inbuilt System Built Variable REPLY
		Passing Arguments
		Passing arguments to shell script
		Passing arguments to arrays
		Difference between passing arguments to shell script and to array
		Print all arguments passed into array
		How to count number of arguments of an array using script
		Operators
		Arithmetic Operators
		Numeric comparison Operators
		Logical Operators
		Assignment Operators
		Control Statements
		If condition

		If else conditions
		While Loop
		For loop
		Continue
		Break
		Case condition
		File Operations using Bash Scripting
		How to find if the file exists or not
		How to know file type
		How to know if the directory exists or not
		How to know file permissions using script
		How to know if the file is empty or not
		Shell Scripting Project
Chapter - 18	NAGIOS	Why monitoring tool
		Ways of monitoring
		Architecture of Nagios
		Setup Nagios Server
		Dashboard overview of various options
Chapter - 19	VAGRANT	Introduction to Vagrant
		Features of Vagrant
		System Requirements for Vagrant
		Installation of Vagrant
		About Boxes
		How to setup Boxes using Vagrant
		Hands on with Vagrant
Chapter - 20	CLOUD COMPUTING FUNDAMENTALS	What is Cloud
		Uses of Cloud Computing
		Core terminologies of cloud
		Advantages of Cloud
		Concerns of Cloud
Chapter - 21	CLOUD COMPUTING TYPES	Cloud Computing types
		Public Cloud
		Private Cloud
		Hybrid Cloud

		Community Cloud
Chapter - 22	CLOUD COMPUTING SERVICES	Cloud Computing Services
		IAAS
		PAAS
		SAAS
		XAAS
Chapter - 23	INTRODUCTION TO AWS	Why AWS
		Brief History of AWS
		AWS Features
		How to Register Account in AWS
Chapter - 24	AWS - EC2	Introduction to EC2
		Features of EC2
		EC2 Dashboard Overview
		About Amazon Machine Images (AMI)
		Different types of AMI's
		About Key Pair
		How to connect EC2 instances
		What is pem file
		How to create EC2 Linux instance
		How to create EC2 Windows instance
		How to reboot the Instance
		How to stop instance
		How to terminate instance
	ASSESSMENTS	SLDC Fundamentals, Waterfall, Agile, Devops
		VCS, Git, Github
		CI Fundamentals, Jenkins, Maven, Sonarqube
		CM Fundamentals, Ansible, Chef
		Containerisation Fundamentals, Docker, Kubernetes
	OTHERS	Fresher Resumes will be shared
		Experienced Resumes will be shared
		Assistance on Resume Preparation
		Discussion on Strategies for Devops Preparation
		Devops Lab Technician Availability

