DevOps Introduction and why DevOps Cloud is in so much Demand and highly Paid Job in Market

DevOps is that **generic technology** which implements a practice of operations and development engineers participating together in the entire SDLC lifecycle, from design through the development process to production support.

As it is Generic Concept, **every team in IT is adopting this Culture by learning it and that is the reason it is in so much Demand** as IT professional are less in Market. There are companies who are providing **100% hike** on your current salary if you have good hold of Concepts plus Tools with respect to **Projects and not just only Tools.**

This is Project Based Training mainly for clearing your JOB Interview and here we will understand every Tools **with respect to Real Life Project,** so that you can get **showcase 4 years of Level 3 experience** in Interview**.**

Project Based Course Modules

Major CICD Project 1 – Deploying Developed Changes to Production server using Jenkins Plugin by Manual Configuration of the Servers.

Module 1: DevOps Essentials Learning Objectives

- Introduction to DevOps
- DevOps Delivery Pipelines DevOps EcoSystem
- DevOps and SDLC
- Continuous Integration & Continuous Deployment
- Containerisation
- Configuration Management Tools

Module 2: AWS for DevOps (Covered in the entire course Term wrt Projects)

Project A – Migration of a web Application from On-premise to Cloud - AWS

- Creating AWS account
- Free tier Eligible services
- Understanding AWS Regions and availability zones
- Understanding Network IP ranges like Public & Private and calculation of CIDR
- VPC (Virtual Private Cloud)
- EC2 (Elastic Computing Cloud)
- ACM (Amazon Certificate Manager)
- S3 (Simple Storage Service)
- EIP (Elastic IP address),
- EBS (Elastic Block Storage)
- Load Balancer

- IAM (Identity Access Management)
- AMI (Amazon Machine Image)

Module 3: Overview of Systems Administration - Linux (Covered in the entire course Term wrt Projects)

Project B – Writing a Shell Script using Linux Commands and shell scripting basics to install softwares and tools in Linux.

- What is **Operating** System with Architecture
- Linux Role in DevOps
- Introduction to Linux Basics and Flavours of Linux
- Overview of Linux commands necessary for DevOps (Total 8 Chapters covering most of the commands)
- What is Shell and Shell Scripting
- Understanding Shell Script with Variables, Loops and Conditions and Covering Project 2
- Unix and Linux difference
- Changing file permissions and ownership
- Types of links soft and hard link
- Filter commands
- Simple filter and advance filter commands
- Start and stop services
- Find and kill the process with id and name
- Package installation using RPM and YUM
- Connecting windows and Linux instances from windows desktop and Linux machines (Covered while studying Chef)

Module 4: Discussing Techstacks Apache, Tomcat

Project C.1 – Run a Web Application on Single node Architecture
Project C.2 – Run a Web Application on Multi Node Architecture with HA and Failover
Project C.3 – Run multiple web Application in one Single Node
Project C.4 – Secure a Web Application from Hackers and increase SEO

- Installing Apache, Tomcat and Maven
- Configuring Apache & Tomcat
- Troubleshooting Apache & Tomcat
- Performance tuning Tips for Apache & Tomcat
- Using Virtual Host Concepts
- Securing Apache using SSL and ACM
- Deploying web application in Tomcat Manually

Module 5: Build Tool – Maven

Project D.1 – Creating a Project and build a jar file
Project D.2 – Creating a Web Application Java Project and Deploy it to Tomcat Server using Maven

- Installation and Configuration

- Build Pre-requisites & Creating Builds
- Understanding Maven Life Cycles and its components
- Maven Repository and POM Examples
- Maven Dependencies & Plugins
- Maven Project Creation & Structure
- Maven Deployment

Module 6: Source Control Tool – Git

Project E.1 – Merging code from develop to master branch
Project E.2 – Restore deleted commits
Project E.2 – Pushing code to Remote code repo

- SVN (CVCS) vs GIT (DVCS)
- Introduction of Version Control Systems. GIT Workflow
- Important GIT Commands Setup and Configuration
- Setup and Configuration Creating Repositories
- Gitignore
- Understanding Git Branch & Git Remote
- Create and Configure Users
- Git Remote commands

Module 7: Jenkins

Project F.1 – Configure Jenkin job to auto deploy if git repo is committed with new code
Project F.2 – How to Change Home Directory and Port
Project F.3 – Disable Multiple Jenkins jobs from backend

- Download and Install Jenkins
- Configuring and Managing Jenkins
- Create Jobs
- Download the Jenkins plugin
- Build a Job
- How to change the Home Directory, Port and thread
- Jenkins CLI
- Unlock Super accounts

Major CICD Project 2 – Deploying Developed Changes to Production servers using Chef.

Module 8: Chef

- What is Configuration management
- What is Chef and Chef Architecture
- Ruby and Chef Basics
- Recipes and Cookbooks
- Create Workstation
- Registration of Chef Nodes with the Chef Server - Bootstrapping

- Create a cookbook and create a recipe for the cookbook and test in your workstation – local nodes
- Upload Cookbook and add the RUN list of the node
- Run the chef-client in webserver1 and then put it in CRON
- Create a template folder in the Workstation server
- RUN the Recipe locally
- Run remotely from workstation directly
- Project

Major CICD Project 3 – Deploying Developed Changes to Production servers using Ansible.

Module 9: Ansible

- What is Ansible?
- Ansible Architecture
- Advantages of Ansible
- Install Ansible
- Validate
- Inventory File
- Configuration of Linux Server
- Ansible Ad-hoc commands
- YAML – Yet Another Markup Lang
- Ansible Playbook
- Ansible Roles
- Project

Major CICD Project 4 – Deploying Developed Changes to Production servers using on Docker.

Major CICD Project 5 – Docker Project - Auto Deploy without restart of Tomcat

Module 10: Docker

- Problems Before Docker
- After Docker
- Docker Architecture
- Install Docker
- Docker Images and Pull
- Run Docker Images and check docker process
- Docker start/stop/attach/exec/inspect/detach
- Docker Port and Volume Mapping
- Dockerfile
- Docker Compose
- Project 4 & 5

Major CICD Project 6 – Deploying Developed Changes to Production servers using on Docker Swarm.

Major CICD Project 7 – Deploying Developed Changes to Production servers using on Docker Swarm using Ansible.

Module 11: Docker Swarm

- Problems Before Docker Swarm
- What is Docker Swarm
- Docker Swarm Advantages
- Configure Docker Swarm
- Node Management
- How to Convert Worker Node as Manager Node
- Docker service creation & Management
- Service Scale Up and Down
- Deploy a stack to a swarm
- Set up a Docker registry
- Create the example application
- Test the app with Compose
- Push the generated image to the registry
- Deploy the stack to the swarm
- Project 6 & 7

Major CICD Project 8 – Creating Kubernetes Cluster using Kubeadm

Major CICD Project 9 – Creating Kubernetes Cluster using Kops in AWS

Module 12: KUBERNETES

- Introduction
- Why and what is Kubernetes
- Kubernetes Objects
- Kubernetes Architecture
- Pods
- Service
- Volume
- Create a Cluster using Kubeadm, Minikube
- Using kubectl to Create a Deployment
- Using a Service to Expose Your App
- Scale Your App
- Kops ON AWS
- Using kubeadm to Create a Cluster