DevOps Course Content

Master DevOps on Cloud with 9 Projects

DevOps is a culture which is adopted by all IT teams like Developer/Testing and any operations team like DBA/System Admin/Unix Team so that they all can participate together in the entire SDLC lifecycle, from design through the development process to production support. Real Experience DevOps professionals are less in Market **& there is high Demand for Experienced and well-Trained Professional with Project Knowledge**.

Even **Fresher can join this** and showcase that they have DevOps Knowledge in their CV which will attract Recruiter because DevOps is in all Phases of SDLC-Development/Building/Releasing/Support/Monitoring.

This Project Based Training is mainly for clearing your JOB Interviews and here we will understand every Tools **with respect to Real Life Projects described below,** so that you can **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 Static 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 (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 building a jar file
Project D.2 – Creating & Deploying Web Application to 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
- Cookbook and recipe 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. (Home Work)

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 Project 8 – Creating Kubernetes Cluster using Kubeadm

Major 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