

# DevOps Developer Course

quickxpert

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**Syllabus mentioned below.**



# Dev Ops

## Introduction

- 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
- Introduction to DevOps
- History of DevOps
- What is DevOps
- Definition of DevOps
- Fundamental Principles of DevOps
- Benefits of DevOps
- After Implementation
- DevOps Roles and Responsibilities
- Continuous Integration in DevOps

## AWS Cloud

- Continuous Integration in DevOp
- Brief History of AWS
- AWS Features
- How to Create Account in AWS
- Introduction to EC2
- Features of EC2



- EC2 Dashboard Overview
- About Amazon Machine Images (AMI)
- Different types of AMI's
- How to create AWS AMI
- How to create a Key Pairs
- What is EBS Volumes
- Download a key pairs
- How to connect EC2 instances
- What is pem file
- What is ppk file
- What are default usernames to connect AMI's
- How to Login into LINUX AMI
- How to reboot the Instance
- How to stop instance
- How to terminate instance
- Note- AWS (as required) covered here. To learn Full AWS you can add, duration will increase by 1.5 to 2 months)

## Unix / Linux

- Introduction to Unix/Linux
- Unix flavors
- Linux Flavors
- Why Linux?
- Advantages of Unix/Linux
- Architecture of Linux
- File system hierarchy
- cat (create & append file)
- touch (create blank file)
- nano (create & edit file)
- vi/vim (create & edit file)



- ls (list) (-a, -la)
- cd (change directory)
- pwd (print working directory)
- mkdir (create directory, multiple)
- cp (copy)
- mv (move)
- mv (rename)
- rm (remove file)
- tree (see in tree structure)
- rm -rf(remove directory & recursive)
- grep (pick & print)
- less (see output)
- head (see top 10 lines)
- tail (see last 10 lines)
- sort(display in Alphabetic/Numeric order)
- User creation
- Group creation
- Soft Link (shortcut)
- Hard Link (backup)
- tar (to pack)
- gz (to compress)
- yum (to install)
- wget (to download)
- File/Directory Permissions:
- chmod (permissions)
- chown (owner)
- chgrp (group)
- hostname (to see hostname)
- ifconfig (to get ip address)
- cat /etc/\*rele\* (to get os version)
- yum commands



- rpm commands
- service commands
- chkconfig commands
- Redirection (redirecting output)
- which (to see package installed or not)
- sudo (to get root privileges)
- whoami (to see user)
- find commands

## Networking Basics

- Introduction to network
- Networking components
- Network topology
- OSI Model (7 Layers)
- TCP/IP model (4 Layers)
- IP Addressing
- HTTP vs HTTPS
- DNS (Domain Name System)
- Ports and Protocols
- CIDR
- Firewalls and Network Security
- VPN (Virtual Private Network)
- Network Troubleshooting Tools (ping, telnet, netstat)

## Git

- Source code management
- Version /Revision control system
- SCM tools
- Repository/Depot
- Server



- Work space/Work dir/Work tree
- Branch/Trunk/Code line
- Commit/Check-in
- Version/Version-ID/Commit-ID
- Tag
- Advantages of Git
- Git Snapshots
- Work space
- Staging area
- Buffer area
- Repository (Local/non-bare)
- Repository (Central/bare)
- Installation & configuration
- Git add
- Git commit
- Git log
- Git push
- Git status
- Git ignore
- Git branch
- Git checkout
- git merge
- Git Snapshots
- Git conflict
- Git stash
- Git reset
- Git revert
- Repository (Central/bare)
- Git remove
- Git clean
- Git tag



- Git fetch
- Git diff
- Git cherry-pick
- Git hub
- Role of Git in Real Time
- Git installation on Windows and Screen shots
- Git installation on Linux
- Git Architecture
- What is Git Repository
- Git with Local Repositories
- Git with Remote Repositories
- git config command usage
- Setup git repository using git init
- Git Making Changes
- gitstatus color coding system
- Exercises on adding single files, multiple files commits
- Committing Changes in one go
- Git History - log and show
- View all commit logs
- View only latest commit logs
- gitshow command
- Comparing git project files from working area with Local Repo using git diff
- Git diff –staged
- Git remote commands
- Introduction to Github
- Various vendors of Remote Repository
- Features of github
- Create Account in github
- Create Project Repository in github
- Public Repository



- Private Repository
- Create files in github
- Clone Github Repository
- Pull changes from github Repository
- Push changes to github Repository

## **Maven**

- What is Build
- Purpose of Build Tools
- Build Tools Ideology
- Evolution of Build Tools
- Few Notable Build Tools
- Java Based Build Tools
- Build management
- Advantages of Build tool
- Architecture of Maven
- Maven build life-cycle
- Maven directory structure
- Maven repositories
- Pom.xml
- Multi module project(over view)

## **Jenkins**

- Introduction to Jenkins
- History of Jenkins
- Why Jenkins is so popular
- Features of Jenkins
- Jenkins Architecture
- Jenkins Perquisites
- Installation of Jenkins



- Introduction to Jenkins GUI
- Introduction to types of Projects in Jenkins
- Introduction to CI/CD (Continues Integration and Continues Delivery)
- Jenkins plugins installation
- Creating free style projects
- Understanding of Jenkins job process
- Source code pulling through Git
- User management in Jenkins
- Creating and Deleting users in Jenkins
- Build triggers in Jenkins
- Build periodically in Jenkins
- Poll SCM in Jenkins
- Webhook in Jenkins
- Introduction to Master and Slave concept
- Creating Master and Slave server in Jenkins
- Configure jobs to build on Jenkins slave server
- Introduction to CI/CD pipeline as a code project
- Introduction to the types of pipelines as a code
- Creating CI/CD pipeline as a code project
- Creating scripted pipeline as a code
- Creating Declarative pipeline as a code
- Working with popular plugins like blue ocean

## Docker

- What is Docker
- History of Docker
- Features of Docker
- Docker Architecture
- Virtualization vs Containerization



- VMware vs Docker
- Docker Components
- Docker installation and setup
- Docker Images and Containers
- Docker commands
- Creating docker containers
- Understanding the stages of containers
- Pulling docker images from the registry
- Multi- Container architecture with the Docker-compose and --link
- Understanding of Docker Volumes
- Attaching docker volumes to containers
- Creating docker snapshots using docker commit
- How to see container logs
- How to tag docker images
- Introduction to Docker file
- Creating Docker file
- About Docker file instructions
- Creating customized image using Docker file
- Understanding of Docker networking
- Creating custom networks in Docker
- Introduction to DockerHub
- Understanding the DockerHub GUI
- Pushing the images in the DockerHub
- DockerHub private and public images

## **Kubernetes**

- What is Kubernetes.
- Advantages of Kubernetes.
- Kubernetes Architecture
- What is Pod.



- Pod Lifecycle.
- Kubernetes Cluster and important components of Kubernetes cluster.
- Understanding of Kubernetes components like Control plane, Kube-Api-Server, etcd, Controller Manager, Kube-scheduler, Kubernetes nodes, Kube-proxy, Kubelet, CRI, CNI.
- Setup of cluster on EC2 servers.
- Setup of cluster on the AWS EKS (Elastic Kubernetes Services).
- Manifest file in Kubernetes.
- Single container Pod and Multi-container Pod.
- Annotations in Kubernetes
- Environment variables in Kubernetes.
- Labels and Selectors.
- Replication in Kubernetes, Replication Controller, Replica Set
- Scale Up and Scale Down in Kubernetes.
- Deployment and Rollback.
- Kubernetes Networking.
- Volumes in Kubernetes.
- Config Map and Secrets.
- Namespaces in Kubernetes.
- Resource Quota.
- Horizontal Pod Autoscaling and Vertical Pod Autoscaling.
- Helm and Helm chart.

## **Ansible**

- What is Ansible
- Introduction to configuration management tools
- How ansible is different from other configuration management tool
- Difference between Ansible and Terraform
- Advantages of Ansible and Configuration management tools



- Use cases of Ansible
- Ansible Architecture
- Installation of Ansible
- Idempotency in Ansible
- Agentless Policy in Ansible
- How to Connect of Ansible with the nodes machine
- Ansible inventory file
- Working with Ansible Ad-hoc commands
- What is Ansible Modules
- Working with Ansible modules
- Installing packages with the Ansible modules
- What is YAML language in Ansible
- Introduction to Playbook
- Working with the Ansible playbook
- What is Dry Run in Ansible
- Installing packages with the help of Ansible Playbook
- Working with multiple hosts machines in Ansible
- Ansible Variables
- Ansible Handlers
- Loops playbook in Ansible
- Conditional Playbook in Ansible
- Encrypt Playbook (Ansible Vault)
- Configuration of Tomcat in Ansible
- Error handling in Ansible
- Roles in Ansible



## Chef

- What is Chef.
- Advantages of Chef.
- Components of Chef.
- Architecture of Chef
- Introduction to Recipes and Cookbooks in Chef.
- Creating Recipes and Cookbooks in Chef
- Installing packages in Chef machine
- Chef Attributes.
- Linux commands in Chef.
- Creating user in Chef.
- Creating groups in Chef
- Introduction to Chef-Server
- Bootstrapping Nodes to the Chef server
- Run\_list in Chef.
- Chef roles

## Grafana

- What is Grafana.
- Advantages of Grafana.
- Architecture of Grafana
- Workflow of Grafana
- Installation of Grafana.
- Overview to the Grafana Dashboards
- Dashboards in Grafana.
- Monitoring of servers with Grafana.
- Adding the data sources in Grafana.
- Working with the Prometheus in Grafana.
- Creating alerts in Grafana.



## Prometheus

- What is Prometheus.
- Advantages of Prometheus.
- Components of Prometheus.
- Architecture of Prometheus.
- Installation of Prometheus.
- Overview of Prometheus GUI
- Monitoring the servers with Prometheus.
- Node-exporter.
- Monitoring Number of servers with Prometheus
- Working with Grafana in Prometheus

## Nagios

- What is Nagios.
- History of Nagios.
- Advantages of Nagios.
- Nagios Architecture.
- Installation of Nagios.
- Overview of Nagios Server GUI
- Monitoring multiple servers with Nagios.
- NRPE agent.
- Email alert with Nagios.

## Terraform

- What is Terraform.
- What is IAC
- Advantages of Terraform.
- Installation of Terraform.
- Terraform commands and execution
- Terraform validate, Terraform plan, Terraform apply and terraform



destroy etc.

- Introduction to HCL (HashiCorp Configuration Language)
- Adding Providers in Terraform.
- Adding Resources in Terraform.
- Creating Resources with the help of Terraform.
- How to create EC2 instances (servers) with the help of Terraform
- How to create S3 buckets with the help of Terraform
- Creating AWS infrastructure with the help of Terraform
- Variables in Terraform.
- Data Source in Terraform.
- State file in Terraform.
- Remote Backend in Terraform
- Securing state file access.
- Terraform Workspaces
- Terraform Provisioners
- Terraform Modules
- Terraform Import.

## **Tomcat Server**

- Installation
- Configuration
- Tomcat manager
- Application management
- App deployment methods

## **Apache Web Server**

- Installation
- Types of web packages
- Configuration
- Directory Structure



- Index file
- Starting service
- Enabling Service

## Projects

- DevOps Real time project - 1
- DevOps Real time project - 2
- CI-CD Pipeline projects
- Interview questions (Technical, Manager & HR)
- Resume preparation & Evaluation
- Real time Scenarios
- Day-to Day activities
- Provide Material

## Duration

- 3 to 4 months

more info - <https://quickxpertinfotech.com/dev-ops-course>



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