

# DevOps Certification Syllabus

## Note:

- 1) All the topics which we mentioned below, we are going to give training on from basic to advanced level with Hands on Training.
- 2) For Each Topic Soft copy material and Interview Questions will provide.
- 3) Realtime Use Case Scenarios
- 4) Resume Preparation
- 5) Job Assistance

## 1) DevOps Introduction

- Software Development Life Cycles (SDLC)
  - Waterfall Model
- Agile Methodology
  - Scrum Model
- What is DevOps?
- Why DevOps?
- DevOps Importance
- DevOps Model
- DevOps Life cycle
- Market Trend and Career Scope for DevOps
- DevOps Tools

## 2) Linux

- Installing Pre-requisite Softwares (SSH Tools and FTP Tools) in Desktop/Laptop.
- Create an account in AWS.
- Create EC2 Instance in AWS.
- Understand Linux Command Line.
- Linux File/Directory structure.

Linux Commands

<b>mkdir</b>	<b>cat</b>	<b>ps</b>	<b>groupdel</b>	<b>uname</b>
<b>ls</b>	<b>head</b>	<b>kill</b>	<b>crontab</b>	<b>cat /etc/*releases</b>
<b>cd</b>	<b>tail</b>	<b>top</b>	<b>free</b>	<b>netstat</b>
<b>pwd</b>	<b>more</b>	<b>zip</b>	<b>ssh</b>	<b>exit/logout/ctrl+d</b>
<b>rmdir</b>	<b>less</b>	<b>unzip</b>	<b>scp</b>	
<b>touch</b>	<b>sort</b>	<b>tar</b>	<b>rsync</b>	
<b>locate</b>	<b>tr</b>	<b>useradd</b>	<b>ssh-keygen</b>	
<b>find</b>	<b>sed</b>	<b>passwd</b>	<b>ssh-cpy-id</b>	
<b>umask</b>	<b>grep</b>	<b>chage</b>	<b>awk</b>	
<b>chmod</b>	<b>who</b>	<b>groupadd</b>	<b>cut</b>	
<b>chown</b>	<b>w</b>	<b>usermod</b>		
<b>chgrp</b>	<b>whoami</b>	<b>ps</b>	<b>mail</b>	
<b>cp</b>	<b>whereis</b>	<b>kill</b>	<b>clear</b>	
<b>mv</b>	<b>date</b>	<b>id</b>	<b>cal</b>	
<b>rm</b>	<b>df</b>	<b>lid</b>	<b>wget</b>	
<b>file</b>	<b>du</b>	<b>su</b>	<b>tee</b>	
<b>wc</b>	<b>hostname</b>	<b>sudo</b>	<b>script</b>	
<b>In</b>	<b>ipconfig</b>	<b>users</b>	<b>ping</b>	
<b>vim</b>	<b>man</b>	<b>groups</b>	<b>telnet</b>	
<b>echo</b>	<b>help</b>	<b>userdel</b>	<b>history</b>	

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## 3) Shell Scripting

- Introduction
- What is Shell?
- Types of Shells
- What is Shell Scripting?
- First Shell Script program
- File Naming Conventions
- Comments
- Variables
- Command line Arguments
- Escape Characters
- String
- Arithmetic Operations
- User Interaction using read command
- Input and Output Redirection
- Control commands – if
- Control commands – for
- Control commands – while loop
- Control commands – Switch case
- Functions
- Pipe

## 4) Git

- What is git?
- What is the VCS?
- What is SCM?
- What is Branch?
- What is Tag?
- Git Administration.
- Git commands
- Working with git as a Developer perspective
- SSH Key generation
- PAT creation
- Cloning Repositories
- Merging Branches
- Branching strategy
- Best practices for Releases/Code commits in any VCS

## 5) Maven

- Introduction
- Features & Benefits of Maven
- Installation (Maven Environment Setup)
- Directory Structure
- Content of pom.xml
- Maven Repositories
- Maven Life Cycles
- Executing some Examples
- Maven Multi Modules
  - Parent pom
  - Child pom
- Maven Profiles

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## 6) Tomcat

- ▶ Introduction
- ▶ Difference between App server and Web server
- ▶ Understanding of Web Servers, App Servers and DataBase Servers
- ▶ Installation (In Windows - Extraction, In Linux Installation)
- ▶ Directory structure
- ▶ Start the Tomcat server
- ▶ Users creation
- ▶ Stop the server
- ▶ Roles
- ▶ Port number change
- ▶ Application Deployment
  - Through Admin Console
  - Copy artifact into webapps folder
- ▶ Tomcat Tuning
- ▶ Data source Creation

## 7) Apache HTTP Server

- ▶ Introduction
- ▶ Installation
- ▶ Directory Structure
- ▶ Start the HTTP server
- ▶ Deploy the web static application.

## 8) SonarQube

- ▶ Introduction
- ▶ Pre-Requisites
- ▶ Architecture
- ▶ Installation
- ▶ Change the Port Number
- ▶ Execution
- ▶ Administration
  - Users Creation (Normal User and Administrator)
  - Project Creation
  - Project deletion
  - Token Generation
  - Create Quality Profiles
  - Create Quality Gates
  - Configure Email settings

## 9) SonarQube

- ▶ Introduction
- ▶ Installation
  - Password and Email change for Admin User
  - Email server Configuration
  - Port Number Change
  - Context root change
- ▶ Nexus Directory structure  
Create the Repositories  
Integrate the Maven with Nexus  
Create Users

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## 10) Jenkins

### ► Introduction

- Continuous Integration (CI)
- Continuous Delivery (CD)
- Continuous Deployment (CD)

### ► Installation

- In Linux Server

### ► Create the Maven Project using Freestyle Project type

- Integrate Maven software if not done.
- Integrate Nexus with Jenkins
- Integrate SonarQube with Jenkins
- Deploy the App into Tomcat
- Through “Deploy to container” plugin
- Through Script – SSH Agent Plugin
- Configure Email Functionality
- Poll SCM
- Build Periodically
- Git Web Hooks
- Discard Old Build
- Disable this project
- Delete workspace before build starts
- Add timestamps to the Console Output
- JACOCO plugin

### ► Jenkins Directory structure

### ► Create the Maven Project using Maven Project type

- Plugin Management
- Safe Restart
- Next Build Number
- Email Extension
- SonarQube Scanner
- Schedule Build
- Artifactory Plugin
- Cloud Foundry
- Blue Ocean
- Deploy to container
- Deploy WebLogic
- Maven Integration
- JACOC
- SSH Agent
- Publish Over SSH
- Thin Backup
- Build Name Setter
- Convert To Pipeline

### ► External Plugins Installation

- Urban Code Deploy

### ► Port Number Change

### ► Build with parameters

### ► Create View

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## 10) Jenkins

- ▶ Jenkins Security
  - Create Users (Default Admin)
  - Provide the specific access Jenkins
  - Provide the access to specific access to specific projects
- ▶ Create the Pipeline Project Jobs
  - <http://localhost:8080/env-vars.html/>
- ▶ Create the Multibranch Pipeline Project Jobs
- ▶ Create Master/Slave
- ▶ Jenkins Backup
- ▶ Jenkins Migration

### Optional Topics

- Jenkins Home Directory Change in RHEL 7.5 Version
- Jenkins CLI
- Integrate the Urban Code Deploy server with Jenkins
- Deploy the App into IBM Cloud
- Slack integration

## 11) Docker

- ▶ Docker Introduction
- ▶ Containerization Vs Virtualisation
- ▶ Docker Vs Virtual Machine
- ▶ Docker Installation
- ▶ Dockerfile
- ▶ Docker Image
- ▶ Docker Container
- ▶ Docker Adhoc Commands
- ▶ Docker Networks
- ▶ Docker Volumes
- ▶ Docker Keywords
- ▶ Dockerfile Creation
- ▶ Docker Images creation
- ▶ Docker Images save to Dockerhub
- ▶ Docker Compose
- ▶ Docker Swarm

## 12) Kubernetes

## 13) Ansible

- ▶ Introduction
- ▶ Architecture
- ▶ ssh-key generation
- ▶ Copy SSH Key
- ▶ Ansible adhoc Commands
- ▶ Ansible Playbooks
- ▶ Execution of Ansible Playbooks
- ▶ Ansible Modules
- ▶ Roles
- ▶ Ansible Vault
- ▶ Ansible Galaxy

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## 14) AWS

### ► Elastic Compute Cloud (EC2)

- Introduction to Amazon EC2
- Launch Our First EC2 Instance - Part 1
- Launch Our First EC2 Instance - Part 2
- How to use Putty (Windows Users Only)
- Security Groups
- Volumes vs Snapshots
- EC2 Instance Meta-data
- EFS Service
- Summary of EC2 Section
- Amazon Machine Instance (AMI)

### ► Elastic Block Store (ELB)

- What is ELB and it's uses
- ELB Policies and it's benefits
- How to launch ELB with N nodes and other concepts on ELB.

### ► Auto Scaling

### ► Elastic IP (EIP)

### ► Virtual Private Cloud (VPC)

- VPC Overview
- Building our own custom VPC
- Build A Custom VPC - Part 2
- Network Address Translation (NAT)
- Access Control Lists (ACLs)
- Custom VPC's
- Direct Connect and it's benefits and limitations
- VPC Clean Up
- VPC Summary

### ► Simple Storage Service (S3)

- S3 Essentials
- Creating An S3 Bucket Using The Console
- S3 Storage Options and Types
- Create An S3 Website
- S3 Version Control
- Cross Region Replication
- S3 Lifecycle Management & Glacier
- Cloud Front Overview
- Create a CDN
- S3 - Security
- Snowball
- S3 Summary
- Elastic Volumes, Instance stores

### ► Elastic Load Balancer (ELB)

### ► Identity Access Management (IAM)

- Introduction of IAM
- Users
- Groups
- Roles
- Policies
- Permissions
- Security Measures like MFA etc.

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## 15) Monitoring Tools (New Relic)

- ▶ Introduction
- ▶ Creating Synthetic Monitors
  - Ping
  - Simple Browser
  - Scripted Browser
  - API Test
- ▶ Creating Channels
- ▶ Creating Alerts
- ▶ Integrating with Slack