

Devops Course Syllabus

Module 1: – Introduction to Devops

- Define Devops
- What is Devops
- SDLC models, Lean, Agile
- Why Devops?
- History of Devops
- Devops Stakeholders
- Devops Goals
- Important terminology
- Devops perspective
- Devops and Agile
- Devops Tools
- Configuration management
- Continuous Integration, Continuous Deployment and Continuous Delivery

Module 2: Introduction to Cloud computing

- What is cloud computing
- Characteristics of cloud computing
- Cloud implementation models
- Cloud service models
- Advantages of cloud computing
- Concerns of cloud computing

Module 3: Introduction to Virtualization

- What is Virtualization?
- History of Virtualization
- What is Hypervisor?
- Types of Server Virtualization
- Benefits of Virtualization
- Important Virtualization products

Module 4: AWS Cloud Technical Essentials

- Amazon EC2
- Amazon Elastic Load Balancer
- Amazon Route 53
- Amazon VPC
- Amazon Simple Storage Service (Amazon S3)
- Amazon Elastic Block Store (Amazon EBS)
- Amazon Content Delivery Network (Amazon CloudFront)
- Amazon Relational Database Service (Amazon RDS)

- Amazon DynamoDB
- Amazon ElastiCache
- Amazon Simple Notification Service (SNS)
- Amazon CloudWatch
- Amazon CloudTrail
- Amazon Simple Email Service (Amazon SES)
- AWS Identity and Access Management (IAM)
- Amazon Command Line Interface API
- S3-Browser

Module 5: – Fundamental of Linux Administration

Module 6: GIT: Version Control

Introduction

- Version control systems
- Local, Centralized and distributed

Installing Git

- Installing on Linux
- Installing on Windows
- Initial setup

Git Essentials

- Creating a repository
- Cloning, check-in and committing
- Fetch pull and remote
- Branching

Module 7: Jenkins – Continuous Integration

- Introduction to Jenkins
- CI/CD Concepts
- Continuous Integration and Continuous Delivery
- Quiz: CI/CD Concepts
- Installing and Configuring Jenkins
- Prerequisites
- Jenkins Install
- The Dashboard
- User Management and Security
- Adding a Jenkins Slave
- Setting Up GitHub
- Plugin Manager
- Exercise: Install a Jenkins Master and Prerequisites
- Exercise: Configuring Matrix-Based Security
- Exercise: Add a Jenkins Slave
- Exercise: Working with the Plugin Manager

- Quiz: Installing and Configuring Jenkins
- Projects
- Freestyle Project Configuration
- Source Code Management and the Git Plugin
- Git Hooks and Other Build Triggers
- Workspace Environment Variables
- Parameterized Projects
- Upstream/Downstream Projects and the Parameterized Trigger Plugin
- Folders
- Views
- Exercise: Configure a Parameterized Freestyle Project?
- Hands-on Labs: Configure a Jenkins Freestyle Project
- Hands-on Labs: Jenkins Upstream and Downstream Projects with the Parameterized Trigger
- Plugin
- Quiz: Projects
- Pipelines
- Our Java Pipeline Project
- Docker Install
- Installing and Configuring Ant
- The Jenkinsfile
- Configuring and Running a Pipeline
- Artifacts and Fingerprints
- Exercise: Build a Simple Pipeline Without SCM
- Hands-on Labs: Configure a Jenkins Pipeline
- Quiz: Pipelines
- Testing With Jenkins
- About Testing
- Unit Testing with JUnit and Ant
- Deploying to Apache
- Functional Testing
- Quiz: Testing With Jenkins
- Pipeline Enhancements
- Multibranch Pipelines and Code Promotion
- Tagging
- Notifications
- Shared Pipeline Libraries
- Exercise: Configure Notifications in a Pipeline
- Hands-on Labs: Configure a Jenkins Multibranch Pipeline
- Quiz: Pipeline Enhancements
- Advanced Jenkins Administration
- The Jenkins CLI
- The Jenkins REST API

- Setting Up a Jenkins Master with Docker
- Exercise: Using the Jenkins CLI
- Exercise: Using the Jenkins REST API
- Quiz: Advanced Jenkins Administration

Module 8: Nagios: Monitoring

- Introduction
- Configuring Our Server
- Configuring Nagios Core
- Nagios: The Basics – I
- Plugins
- Checks
- Hosts, Host Objects, and Host Definitions
- Macros
- Services, Service Objects, and Service Definitions
- Commands, Command Objects, and Command Definitions
- Timeperiods and Timeperiod Definitions
- Contacts, Contact Objects and Contact Definitions
- Notifications
- Verifying Our Configuration and Starting Nagios
- Configuring Apache
- Authoring Groups
- Templates
- Adding Remote Hosts
- Monitoring Remote Hosts via Publicly Available Ports
- Installing the Nagios Remote Plugin Executor
- Exercise: Adding a Remote Host
- Exercise: Installing the Nagios Remote Plugin Executor
- Nagios: The Basics – II
- Active Checks Using NRPE
- Passive Checks
- Exercise: Adding Services to Service Groups
- Exercise: Troubleshooting HTTPS Checks on the Nagios Core Host
- Exercise: Troubleshooting the NRPE on Remote Hosts
- Quiz: Nagios Basics
- Beyond Basics: Escalations, Event Handlers, and Dependencies
- Event Handlers
- Escalations
- Host and Service Dependencies
- Reports
- Exercise: Active Check w/NRPE
- Exercise: Monitoring MySQL With Nagios Core and NRPE
- Quiz: Final Quiz

Module 9: Ansible

- Introduction to Ansible
- Ansible Agentless Architecture
- Installation
- Ansible Inventories
- Ansible Modules
- Ansible Playbooks

Module 10: Docker– Containers

Introduction of Docker

- What is a Docker
- Use case of Docker
- Platforms for Docker
- Dockers vs Virtualization

Architecture

- Docker Architecture.
- Important Docker components
- **Understanding the Docker components**

Installation

- Installing Docker on Linux.
- Understanding Installation of Docker on Windows.
- Some Docker commands.

Provisioning

- Docker Hub.
- Downloading Docker images.
- Running Docker images
- Running commands in the container.
- Running multiple containers.

Custom images

- Creating a custom image.
- Running a container from the custom image.
- Publishing the custom image.

Docker Networking

- Accessing containers
- Linking containers
- Exposing container ports
- Container Routing