

# DevOps



## Module 01 - DevOps Essentials

- Why DevOps?
- What is DevOps?
- Agile and DevOps
- DevOps Lifecycle
- DevOps Market Trends
- DevOps Delivery Pipeline
- DevOps Ecosystem & Use Case
- Introduction to Virtualization
- Introduction to Cloud Computing

## Module 02 - Managing Source Code – Git and GitHub

- Overview of Version Control systems
- Central vs Distributed Control systems
- Introduction to Git
- Git file workflow
- Important Git Commands
- Branching and Merging, Stashing, Rebasing, Reverting and Resetting
- Introduction to GitHub
- Using Git and GitHub together.

## Module 03 - Understanding and Using Build Tools

- Overview of Various Build tools
- What is Maven?
- Maven Plugins
- Maven Archetypes



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- Project Object Model (POM)
- Source Control Integration

## **Module 04 - Containerization Basics Using Docker**

- What and Why of Containers
- Difference between VMs and Containers
- Docker Architecture and Components
- Image Distribution using Docker Hub
- Working with Containers and Docker Hub

## **Module 05 - Continuous Integration and Delivery Using Jenkins**

- Overview of Continuous Integration
- Overview of Jenkins
- Jenkins architecture
- Installing and Configuring Jenkins
- Jenkins Management
- Jenkins Build Pipeline

## **Module 06- Continuous Testing**

- Overview of Continuous Testing
- Software Testing Life cycle
- Different Types of Testing
- Test -Driven Development Approach using J unit
- Testing Web Applications using Selenium
- Working with Apache J Meter and Blaze Meter for Performance Testing



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## Module 07 - Docker Commands and Use-Cases

- Docker Files
- Docker Compose
- Docker Networking
- Docker Swarm

## Module 08 - Introduction to Kubernetes

- Basics of Kubernetes container orchestration
- Differences between Docker Swarm and Kubernetes
- Kubernetes Architecture
- Installing Kubernetes using Kubectl
- Creating Pods and Deployments using YAML
- Selectors & Labels in Kubernetes
- Using ReplicaSets & Rolling Updates
- Scheduling the applications on the container
- Services in Kubernetes

## Module 09- Configuration Management Using Ansible

- Overview of Configuration Management
- Introduction to Ansible
- Ansible Architecture
- Ansible Components
- Installation & Configuration
- Writing Ansible Playbooks
- Working with Ansible variables



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- Working with Ansible Modules
- Creating Roles using Ansible Galaxy

## **Module 10 - Continuous Deployment Using Terraform**

- Infrastructure as Code using Terraform
- Terraform vs other tools (Chef & Puppet)
- Overview of Hash Corp Configuration Language
- Installation of Terraform in Linux
- Terraform commands and usage
- Providers in Terraform
- Understanding Terraform variables
- Using provisioners in Terraform
- State Management in Terraform
- Understanding Terraform State
- Configuring a Remote State
- Understanding resources needed in VPC creation
- Configuring EC2 Instances
- Working with Terraform Modules

## **Module 11- Continuous Monitoring Using Prometheus, Graf Ana and ELK**

- Overview of Logging and Monitoring
- Exploring Logs-Kubernetes
- Monitoring using Prometheus and Graf Ana
- Working with ELK



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## Module 12- AWS DevOps Services

- Why Cloud?
- Overview of AWS
- Overview of AWS DevOps
- Working with Cloud Formation
- Introduction to Code Commit, Code Build, Code Deploy and Code Pipeline

## Module 13- Agile

### Introduction to Agile

- Project Definition
- Difference Between Traditional & Agile Project Mgmt.
- Agile Manifesto and Principles
- Agile Methodology
- Agile Principles
- Agile Frameworks and Terminology

### Agile Methodologies

- Scrum
- XP

### Agile Analysis and Design

- Product Roadmap
- Product Backlog
- Story Maps
- Agile Modeling
- Wireframes



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- Charting
- Personas

### **Planning and Monitoring**

- Iteration and Release Planning
- Progressive Elaboration
- Time Boxing
- Cumulative Flow Diagram
- Kanban Boards
- WIP Limits
- Burn Charts
- Retrospectives
- Innovation Games

### **Agile Metrics and Estimations**

- Relative Sizing
- Story Points
- Wideband Delphi Technique
- Planning Poker
- Affinity Diagram
- Ideal time
- Velocity
- Cycle Time
- EVM
- Escaped Defects

### **Quality**

- Frequent Verification and Validation



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- Test Driven Development
- Definition of Done
- Continues Integration
- Feedback Techniques
- Incremental Delivery
- Continuous Improvement

### **Value-Based Prioritization**

- Customer Valued Prioritization
- Compliance
- Relative Prioritization
- Value Stream Mapping
- Minimum Marketable Feature

### **Risk Management**

- Risk-adjusted backlog
- Risk Burn down charts
- Risk-based spike

### **Agile Communications**

- Team Space
- Information Radiator
- Agile Tooling
- Daily Stand-ups
- Osmotic Communication



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## Module 14 - AWS Technical Essentials

### Cloud Basics and Introduction to AWS

- Overview of Cloud Computing
- Introduction to Cloud Terminologies
- Primary Benefits of Cloud/AWS
- AWS Global Infrastructure
- Getting Started with AWS
- Overview of AWS
- Access and Tour the AWS Console
- AWS Free Tier

### AWS Networking

- Networking Basics in AWS
- Understanding CIDR and Subnets
- Understanding VPC
- AWS Compute

### Compute Basics

- Overview of AWS Compute Services
- Understanding EC2 Instances
- Working with AMIs

### ELB and Scaling EC2

- What is Elastic Load Balancing (ELB)?
- Types of ELB
- Overview of Auto Scaling
- Auto scaling Components
- What is AWS Global Accelerator?



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## **Identity and Access Management (IAM)**

- Understanding IAM
- Managing Users, Groups, and Roles

## **AWS Storage**

- Overview of AWS Storage Services
- Working with EBS
- S3 Properties
- S3 Storage Classes
- Working with Storage Gateway
- Overview of AWS Glacier

## **Database Service**

- Differences between SQL and No SQL
- Working Relational Database Service (RDS)

## **Monitoring, Logging, and Notifications**

- Monitoring and Logging Basics
- Working with Cloud Watch (Monitoring, Metrics, and Logs)
- Working with Cloud Trail

## **Module 15 - Java Overview**

- Introduction to Java
- Installing the tools (JDK, JRE, IntelliJ)
- Java Basics
- Java Operators
- Control Flow in Java



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- Classes,
- Objects and methods

## **Module 16 - LINUX Fundamentals**

### **What is LINUX?**

- Why choose LINUX?
- Navigating LINUX?
- The LINUX? Kernel
- Versions and distributions
- Installing LINUX?
- Slack ware

### **LINUX? Exploration and User Interaction**

- Using the Command-Line Interface
- Common commands
- Managing files and directories
- Using the Graphical Interface
- Configuring the system
- Networking with LINUX?
- Using security features
- Switching User Contexts
- Graphical Desktop
- Editing Text

### **LINUX? Files**

- LINUX? File System Features
- Navigating the File System



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- LINUX? Disk Usage
- Basic LINUX? Troubleshooting
- Changing File Permissions
- Directory Manipulation
- Archiving

### **Self-Paced Modules**

- Atlassian
- MAVEN
- SONARQUBE
- XLDEPLOY
- TEAMCITY
- JFROG
- MS BUILD
- NEXUS
- NPM
- ELK



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