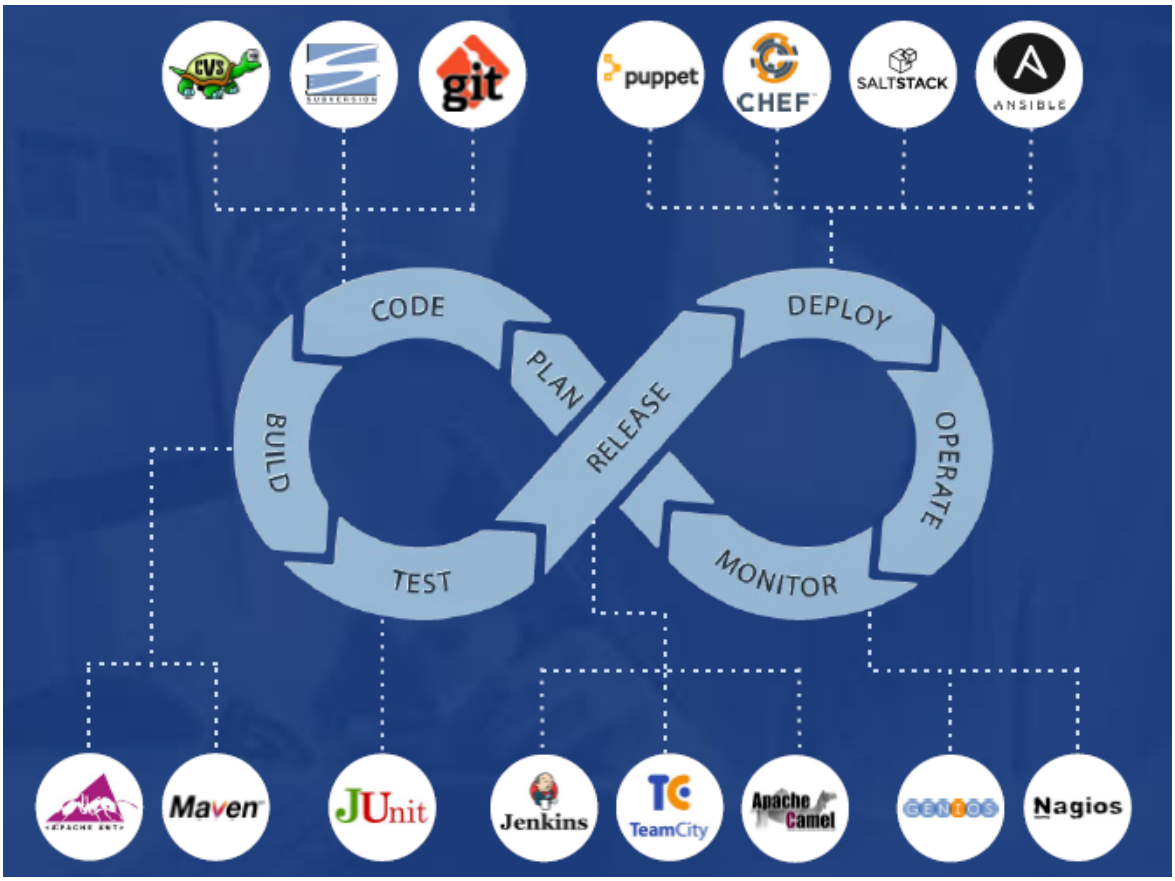
DevOps Training

About the Course

This course will provide you the in-depth knowledge of various DevOps tools including Git, Jenkins, Selenium, Docker, Ansible, Puppet, Kubernetes and Nagios. DevOps Practice: Continuous Development, Continuous Testing, Configuration Management, including Continuous Integration and Continuous Deployment and finally Continuous Monitoring of the software throughout its development life cycle.

New Aspect of devops: **Continous Security**



Module 1

Overview of DevOps

Learning Objective: Upon completing this module, you should be able to understand the benefits of DevOps over other software development processes and gain insights of the DevOps environment and will also get the picture of working of DevOps Delivery Pipeline.

Topics:

- Why DevOps?
- What is DevOps?
- DevOps Market Trends
- DevOps Engineer Skills
- DevOps Delivery Pipeline
- DevOps Ecosystem

Hands On/Demo:

- Sample use-case for using DevOps

Module 2

Version Control with Git

Learning Objective: Upon completing this module, you should be able to install GIT and work with remote repositories and perform management of files for small as well as large projects, execute branching and merging operation and will learn about various GIT commands in Git cheat sheet.

Topics:

- What is version control
- What is Git
- Why Git for your organization
- Install Git
- Working with Remote Repositories
- Branching and Merging in Git
- Git workflows
- Git cheat sheet
- Implementation of Git in the demo Project

Hands On

- GIT Installation, Version Control, branching and merging of code
- Pulling and pushing repositories from remote servers

Module 3

Continuous Integration using Jenkins

Learning Objective: Upon completing this module, you should be able to understand the importance of Continuous Integration, learn about Jenkins and Maven by building and deploying codes using Jenkins and Maven, also perform automation tests and build Delivery Pipelines.

Topics:

- What is CI
- Why CI is Required
- Introduction to Jenkins (With Architecture)
- Introduction to Maven
- Jenkins Management
- Build Setup
- Test Automation (with Maven)
- Securing Jenkins
- Notification System
- Building Delivery Pipeline
- Implementation of Jenkins

Hands On

- Build the project by pulling the code from git using Jenkins
- Build the complete pipeline by invoking top level maven project

Module 4

Continuous Testing with Selenium

Learning Objective:

Upon completing this module, you will learn and install Selenium, create Test Cases in Selenium WebDriver, will be introduced to X-Path and TestNG and execute code on several browsers using Selenium suite of tools and in the end, you will Integrate Selenium with Jenkins.

Topics:

- Introduction to Selenium
- Why Selenium?
- Selenium – Webdriver
- Creating Test Cases in Selenium WebDriver (Waits)
- What and why X-Path
- Introduction to TestNG
- Handling different controls on Webpage
- Framework in Selenium
- Selenium Integration with Jenkins
- Implementation of Selenium

Hands-On:

- Installing Selenium
- Creating Test Cases in Selenium WebDriver
- Integrating Selenium with Jenkins

Module 5

Continuous Deployment: Configuration Management with Puppet

Learning Objectives: Upon completing this module, you should be able to install and configure Puppet, understand master-slave architecture of Puppet, Automate server configuration.

Topics:

- Introduction to Puppet
- Puppet Installation
- Puppet Configuration
- Puppet Master and Agent Setup
- Puppet Module
- Node Classification
- Puppet Environment
- Puppet Classes
- Automation Reporting
- Implementation of Puppet

Hands on:

- Install and configure Puppet
- Configure and manage servers using Puppet

Module 6

Configuration Management with Ansible

Learning Objectives: Upon completing this module, you should be able to install Ansible on your machine, write Ansible Playbooks, execute ad-hoc commands using Ansible and differentiate Ansible and Puppet.

Topics:

- Introduction to Ansible
- Ansible Installation
- Configuring Ansible Roles
- Write Playbooks
- Executing adhoc command
- Implementing Ansible instead of Puppet

Hands on:

- Installing Ansible
- Configuring Ansible Role
- Write Playbooks
- Execute adhoc commands
- Implementing Ansible instead of Puppet

Module 7

Continuous Deployment: Containerization with Docker

Learning Objectives: Upon completing this module, you should be able to state Dockers benefit over VM, get a brief idea about Architecture of Docker and various terminology associated with it , run Hello World in Docker, describe what is Container in Docker, why to use it, and its various scopes, Create, start, stop and remove containers and create Docker images and containers.

Topics:

- Shipping Transportation Challenges
- Introducing Docker
- Understanding images and containers
- Running Hello World in Docker
- Introduction to Container
- Container Life Cycle
- Sharing and Copying
- Base Image
- Docker File
- Working with containers
- Publishing Image on Docker Hub

Hands on:

- Create and Implement docker images and containers
- Publish image on the docker hub

Module 8

Containerization with Docker: Ecosystem and Networking

Learning Objectives: Upon completing this module, you should be able to manage multiple containers, understand the use of docker compose, implement networking concepts in Docker environment.

Topics:

- Introduction to Docker Ecosystem
- Docker Compose
- Docker Swarm
- Managing Containers
- Running Containers
- Introduction to Docker Networking
- Network Types
- Docker Container Networking
- Implementation of Docker

Hands on:

- Use Docker Compose to create a WordPress site
- Start Containers on a Cluster with Docker Swarm
- Manage Containers locally using Kitematic UI, Managing Container through Docker UI
- Implementation of Docker

Module 9

Containerization using Kubernetes

Learning Objective: Upon completing this module, you should be able to integrate Docker and Kubernetes, Automate and manage containers resources, deploy Services, scale and deploy containers in Kubernetes.

Topics:

- Introduction to Kubernetes and Minikube(Tool)
- Installing Kubernetes
- Container Orchestration / Container Management using Kubernetes
- Managing Workloads in Kubernetes (ReplicaSets and Deployments)
- Overview of Services
- Volume Management
- Auto-scaling
- Load-Balancing using Ingress
- Deploying and scaling an application using Minikube locally

Hands-On:

- Scaling and deployment of Docker Application using Kubernetes

Module 10

Continuous Monitoring with Nagios

Learning Objective: Upon completing this module, you should be able to operate Continuous Monitoring tools, use various plugins and objects associated with Nagios, implement Nagios commands, finally implement the learning insights of this module .

Topics:

- Introduction to Continuous Monitoring
- Introduction to Nagios
- Installing Nagios
- Nagios Plugins(NRPE) and Objects
- Nagios Commands and Notification
- Implementation of Nagios

Hands-On:

- Installing Nagios
- Monitoring of different servers using Nagios
- Implementing Nagios