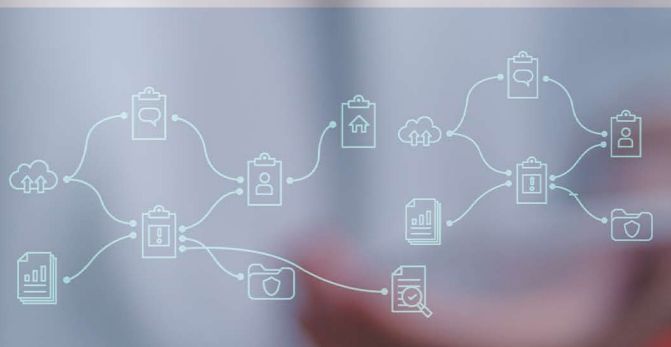


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datacontext() }}  
background-image: url("pix/samples/bg1.gif");  
text-align: center;  
font-size: 200px;">  
can be tiled across the background, while the text runs across the top.</p>  
</div>  
<div>  
  <img alt="Diagram illustrating the DevOps cycle with gears and icons." data-bbox="107 183 715 307"/>  
</div>  
<div>  
  <img alt="Diagram illustrating the DevOps cycle with gears and icons." data-bbox="107 183 715 307"/>  
</div>  
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```



# DEVOPS CURRICULUM

# Module 1

## Module 1 Total: 25hrs

### DevOps Overview (4hrs)

- Evolution of Waterfall, Agile and DevOps
- What is DevOps
- Why DevOps
- Benefits of DevOps
- DevOps Stages
- DevOps Lifecycle
- Various Automation in DevOps
- Overview of CICD

## **AWS Fundamentals (10hrs)**

- Understanding of Physical and Virtual Servers
- Overview of Public/Private Cloud Computing
- Overview of AWS/Azure/GCP
- Benefits of Cloud Computing
- Pricing and Usage Policy
- Overview of IAM Service
- Overview of EC2 Service
- Overview of RDS Service
- Overview of Cloud Storages
- Overview of Public and Private Ips
- Overview of Elastic IP, CloudFront and ELB.
- Overview of EKS, ACR:

## Practical Includes

- AWS Free Tier Account Creation
- IAM User Creation
- EC2 Instance Creation
- Security Group Configuration
- Creation of database using RDS
- Connecting Ec2 Instance
- Connecting database
- Creation of S3 storage

## DevOps on Cloud (AWS) (4hrs)

- Overview of AWS DevOps and Azure DevOps
- Cod Build,
- Code Commit,
- Code Deploy
- Code Pipeline
- Working with Cloud Formation

## **Linux Fundamentals**

- Overview of Linux
- Linux Architecture
- Linux Distributions
- Basic Linux Commands
- File Permission Management
- User Creation
- Shell Scripts
- SSH and VI Utility

## **Practical Includes:**

- Creation of User.
- Establishing SSH Connection to the Server
- File creation and Manipulation using VI editor
- Managing permissions
- Basic commands execution
- Writing Shell Scripts Program

# Module 2

## Module 2 Total : 25hrs

### Application Development Fundamentals (4hrs)

- Overview of Application Development
- Various Types of Application
- Introduction to Databases
- Multi-tiered application architecture
- Overview of Monolithic and Microservices

### Introduction to Java Concepts (4hrs)

- Overview of Java and its Architecture
- Compiling Source Code and Packaging Applications
- Java Console based and Web based Applications
- Deployment to Tomcat and Consuming Java Applications
- OOPs Concept Practical Includes

## **Practical Includes**

- Create a Console based Java Application
- Create a Dynamic web Application and Deploy it to Tomcat Server

## **Understanding and Using Build Tools (4hrs)**

- Overview of Various Build Tools
- What is Maven • Maven Architecture
- Maven Plugins
- Maven Archetypes
- Maven Commands
- Integration of Jacoco plugin for Code Coverage
- Setting up Maven Applications

## **Practical Includes**

- Creation of Simple Java Application using Maven
- Creation of Java Web Application using Maven
- Creation of Java Spring Boot Microservice using Maven
- Maven Commands demonstration to Build, Test and Package the projects

## Overview of Python (4hrs)

- Overview of Python
- Features, Benefits, Uses of Python
- Installation and Setup of Python Environment
- Python Console based application and Web Application using Flask
- Deploying and Consuming Python Applications

## Practical Includes

- Create a Console based Python Application
- Create a Web Application using Flask

## Structure Query Language (SQL) (4hrs)

- Overview of SQL
- DDL Statements
- DML Statements
- DCL Statements
- Database Constraints
- Aggregate Functions (Avg, Sum, Max, Min, Count)
- Order By, Group By and Having Clauses
- Various types of Joins



## Practical Includes

- Create and Alter and Drop Tables
- Insert, Update, Delete and View Data
- Apply database constraints
- Statements execution using Order By, Group By and Having clauses
- Applying Joins, Executing Subqueries and Aggregate functions

# Module 3

## Module 3 Total: 7hrs

### Managing Source Code – Git and GitHub 7hrs

- Overview of Version Control System
- Central vs Distributed Version Control System
- Introduction to Git
- Installation and setting up Git
- Important Git Commands
- Creating and Managing git Repositories
- Branching, Merging, Stashing, Rebasing, Reverting and Resetting
- Introduction to GitHub
- Managing Remote Repositories

## Practical Includes

- Installation and Configuration of git
- Creating Git Repositories
- Demonstrating various Git repositories
- Merging Branches and Managing merge conflicts
- Stashing, Reverting, Rebasing and Resetting
- Collaborating local and remote repositories

# Module 4

## Module 4 Total: 9hrs

### Continuous Integration Using Jenkins (9hrs)

- Overview of Continuous Integration
- Difference between Continuous vs Traditional Integration
- Overview of Jenkins
- Jenkins Master-Slave Architecture
- Jenkins Installation and Configuration
- Jenkins Plugins • Jenkins Management
- Jenkins Freestyle and Pipeline Jobs
- Scripted and Declarative Pipelines
- Configuring Slave Node to Jenkins

## Practical Includes:

- Installation and Configuration of Jenkins
- Configuration of Tools
- Configuration of Plugins
- Creation of Freestyle Jobs, scripted and declarative pipeline jobs
- Demonstrate pipeline triggering using GitHub webhooks
- Scripted and Declarative pipelines
- Integration of Code Coverage Tools and Static Code analysis tools
- Triggering pipelines using Git Web Hooks
- Creation of CI/CD pipelines
- Adding slave node to Jenkins

# Module 5

## Module 5 Total:12hrs

### Containerization, Docker, and Docker Hub (6hrs)

- Introduction to Virtualization and Containerization
- What is Containerization
- Docker Architecture
- Overview of Docker Hub
- Docker Installation
- Docker Commands
- Container Modes
- Port Binding
- Docker file
- Managing Docker Images
- Running and Managing Containers

- Docker Volume
- Docker Compose
- Overview of Docker Swarm

## **Containerization, Docker, and Docker Hub (6hrs)**

- Installation of Docker and Docker Compose on AWS EC2
- Running Docker Commands
- Writing Docker Files for various applications
- Building Docker Images
- Pushing Images to Docker Hub
- Running Docker Containers,
- Container Port Binding
- Running multiple containers using Docker Compose file
- Persisting container data using Docker Volume.
- Initialize a docker swarm and demonstrate workload deployments

## **Container Orchestration Tool - Kubernetes (6 hrs)**

- Overview of Container Orchestration
- Different between Docker swarm and Kubernetes Cluster
- Kubernetes Architecture
- Installation of Kubernetes – Minikube and EKS
- Kubernetes Nodes
- Kubernetes Pods
- Kubernetes Deployments
- Rolling updates and rollbacks
- Scaling up and down of the application
- Services in Kubernetes

### **Practical Includes:**

- Installation and configuration of Kubernetes Minikube
- Creation of Pods and Deployments using ad-hoc Commands
- Creation of Pods and Deployments using YAML files
- Scaling up and Scaling Down of the application
- Rolling out Deployments and Rolling Back
- Creation of Services



# Module 6

## Module 6 Total: 9hrs

### Configuration Automation using Ansible (5 hrs)

- Overview of Configuration Automation
- Introduction to Ansible
- Ansible Architecture
- Components of Ansible
- Installation and Configuration of Ansible
- Ansible ad-hoc commands
- Ansible Playbooks
- Ansible Variables
- Ansible Handlers
- Ansible Role using Ansible Galaxy

## **Practical Includes:**

- Installation and Configuration Ansible
- Running Ansible ad-hoc commands.
- Writing Ansible Playbooks to Configure Servers
- Creating Ansible Roles

## **Terraform Overview (4hrs)**

- Introduction to Terraform
- Terraform Vs Ansible
- Terraform Architecture
- Terraform Configuration
- Terraform Commands
- Managing Terraform Resources
- Terraform End to End Project

## **Practical's Includes:**

- Installation of Terraform on AWS EC2 Instance
- Writing Terraform Configuration
- Creation of AWS EC2 instance using terraform
- Managing AWS resources using terraform
- End to End Infrastructure Creation Project.

# Module 7

## Module 7 Total: 5hrs

### Continuous Monitoring using Prometheus and Grafana 5hrs

- Overview of continuous monitoring
- Continuous monitoring tools in DevOps
- Installation and Configuration of Prometheus and Grafana
- Prometheus Architecture
- Monitoring using Prometheus
- Dashboard visualization using Grafana

## **Practical Includes:**

- Installation and Configuration of tools
- Monitoring Targets using Prometheus
- Visualizing Reports using Grafana

## **Capstone Project Total (10hrs)**

### **Projects 10hrs**

- Project 1: Finance Me - Finance and Banking Domain
- Project 2: Medi cure - Health Domain
- Project 3: Insurance Me - Insurance Domain



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## Contact Us

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