Course Contents

DevOps Overview:

1. Evolution of Waterfall, Agile and DevOps
2. What is DevOps
3. Why DevOps
4. Benefits of DevOps
5. DevOps Stages
6. DevOps Lifecycle
7. Various Automation in DevOps
8. Overview of CICD

Fundamentals of Linux Operating System:

1. Overview of Linux
2. Linux Architecture
3. Linux Distributions
4. Basic Linux Commands
5. File Permission Management
6. User Creation
7. Shell Scripts
8. SSH and VI Utility

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2. Features, Benefits, Uses of Python
3. Installation and Setup of Python Environment
4. Various Types of Sequences in Python
5. File Operations
6. Python Functions
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8. Modules
9. Errors and Exception Handling
10. Python Console based application and Web Application using Flask
11. Deploying and Consuming Python Applications

Version Control System using - Git and GitHub:

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3. Introduction to Git
4. Installation and setting up Git

5. Important Git Commands
6. Creating and Managing git Repositories
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10. Reverting and Resetting
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12. Working with GIT Branching
13. Branching, Merging
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18. Handling Github repositories using Visual Studio Code

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7. Jenkins Management
8. Jenkins Freestyle and Pipeline Jobs
9. Scripted and Declarative Pipelines
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14. Enable Email Notifications

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2. What is Containerization
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6. Docker Commands
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9. Docker file
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13. Docker Compose
14. Overview of Docker Swarm

Container Orchestration Tool – Kubernetes:

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3. Kubernetes Architecture
4. Installation of Kubernetes – Minikube
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6. Kubernetes Pods
7. Kubernetes Deployments
8. Rolling updates and rollbacks
9. Scaling up and down of the application
10. Services in Kubernetes
11. Kubernetes Volume (remove HostPath as we will cover other volume types as well).
12. Namespaces

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3. Ansible Architecture
4. Components of Ansible
5. Installation and Configuration of Ansible
6. Ansible ad-hoc commands
7. Ansible Playbooks
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9. Ansible Handlers

10. Ansible Role using Ansible Galaxy

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4. Terraform Configuration
5. Terraform Commands
6. Managing Terraform Resources
7. Terraform End to End Project

Continuous Monitoring using Prometheus and Grafana:

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2. Continuous monitoring tools in DevOps
3. Installation and Configuration of Prometheus and Grafana
4. Prometheus Architecture
5. Monitoring using Prometheus
6. Dashboard visualization using Grafana

AWS Solution Architect Associate

Module 1: Introduction to the Course

- Introduction
- Why should I learn AWS?
- Why should I get certified with AWS?
- Roles in Cloud Computing

Module 2: Introduction to Cloud Architecting

- Introducing to Cloud Architecting
- The AWS Well Architected Framework
- Best Practices for Building Solutions on AWS
- AWS Global Infrastructure

Module 3: Compute Layer

- EC2 (Introduction)
- Launch our First EC2 Instance with Windows (Part – I)
- Launch our First EC2 Instance with Linux (Part – II)
- Security Group - ***Practical Lab***
- EBS (Introduction)
- EBS Volume and Snapshots - ***Practical Lab***
- AMI Types (EBS BS Instance Store)
- ENI
- Encrypted Root Device Volume and Snapshot
- EC2 Pricing Model
- EC2 Hibernate
- CloudWatch (Introduction)
- CloudWatch - ***Practical Lab***
- AWS Command Line (CLI) - ***Practical Lab***

Module 4: Storage Layer

- S3 (Introduction)
- Create an S3 Bucket - ***Practical Lab***
- S3 Pricing Tiers
- S3 Security
- S3 Encryption
- S3 Versioning - ***Practical Lab***
- Lifecycle Management with S3 - ***Practical Lab***
- S3 Performance
- S3 Select and Glacier Sheet
- AWS Organizations and Consolidated Billing
- Sharing S3 Buckets Across Accounts - ***Practical Lab***
- Cross-Region Replication - ***Practical Lab***
- S3 Transfer Acceleration
- AWS Data Sync
- Creating a Static Website using Amazon S3
- EFS - Practical Lab
- Amazon FSX for Windows and Amazon FSX

Module 5: Database Layer

- Databases (Introduction)
- Let's create our First RDS Instance - ***Practical Lab***
    - RDS: o Backups
    - Multi-AZ
    - RDS: o Backups - ***Practical Lab***
    - Multi-AZ - ***Practical Lab***

Module 6: Securing User and Application Access

- Identity and Access Management (Introduction)
- Identity and Access Management - ***Practical Lab***
- Create a Billing Alarm - ***Practical Lab***
- AWS Directory Service
- IAM Policies - ***Practical Lab***
- AWS Single Sign-on
- Advanced IAM Summary

Module 7: Creating a Network Environment

- VPC (Introduction)
- Create your Own Custom VPC: Part 1 - ***Practical Lab***
- Create your Own Custom VPC: Part 2 - ***Practical Lab***
- NAT Instances - ***Practical Lab***
- NAT Gateways - ***Practical Lab***
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- VPC Flow Logs - ***Practical Lab***
- Bastions - ***Practical Lab***
- AWS Network Costs
- Working with AWS VPC Flow Logs for Network - ***Practical Lab***
- Creating a Basic VPC - ***Practical Lab***
- Associated components in AWS - ***Practical Lab***

Module 8: Connecting Networks

- VPC peering same region
- VPC peering another region
- VPC peering same region another account
- VPC peering another region another account
- VPN

Module 9: Implementing Elasticity, High availability

- Elastic Load Balancer (Introduction)
- Load Balancers - ***Practical Lab***
- Health Checks - ***Practical Lab***
- Advanced Load Balancer Theory
- Auto-scaling
- Launch Configurations and Auto Scaling Groups - ***Practical Lab***
- HA Architecture
- Building a Fault-Tolerant WordPress Site: Getting Set Up - ***Practical Lab***
- Building a Fault-Tolerant WordPress Site: Setting Up EC2 - ***Practical Lab***
- Building a Fault-Tolerant WordPress Site: Adding Resilience and Auto Scaling
- Building a Fault-Tolerant WordPress Site: Cleaning Up - ***Practical Lab***
- Building a Fault-Tolerant WordPress Site: - ***Practical Lab***

Module 10: Cashing Content and Global Delivery

- CloudFront (Introduction)
- Create a CloudFront Distribution - ***Practical Lab***
- CloudFront Signed URLs
- CloudFront Signed Cookies
- Global Accelerator
- DNS (Introduction)
- Register a Domain Name - ***Practical Lab***
- Route 53: Routing Policies Available on AWS
- Route 53: Simple Routing Policy - ***Practical Lab***
- Route 53: Weighted Routing Policy - ***Practical Lab***
- Route 53: Latency-Based Policy - ***Practical Lab***
- Route 53: Failover Routing Policy - ***Practical Lab***
- Route 53: Geolocation Routing Policy - ***Practical Lab***
- Route 53: Geo-proximity Routing Policy (Traffic Flow only)
- Route 53: Multi-value Answer Policy - ***Practical Lab***

Module 11: Building Decoupled Architecture

- Simple Notification Service - ***Practical Lab***
- Lambda - ***Practical Lab***

Module 12: Planning for Disaster

- • Planning for Disaster
- • Part 1: Disaster Planning Strategies
- • Part 2: Disaster Planning Strategies
- • Part 3: Disaster Planning Strategies
- • Part 1: Disaster Recovery Patterns
- • Part 2: Disaster Recovery Patterns
- • Hybrid Storage and Data Migration with AWS Storage Gateway - ***Practical Lab***
- • File Gateway - ***Practical Lab***

Module 13: Some Additional AWS Services Overview

- Code Pipeline
- Code build
- ECR
- ECS
- Systems Manager
- Security hub
- Config
- Backup
- Secrets Manager
- CloudTrail
- Security Hub
- Certificate Manager
- Billing-Costs reports

Project:

- **Create a high availability architecture. Deploying a webserver with a Dynamic Website. We will be deploying our database on Relational Database Service. After attaching the database to the webserver, the client will be able to write the content on the database from the provided website.**