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DevOps with AWS

What is DevOps

- Introduction
- Stakeholders of DevOps
- What is SDLC
- Phases of SDLC
- Role Of Dev in SDLC
- Role of Ops in SDLC

SDLC (Software Development Lifecycle)

- What is SDLC?
- SDLC Methodologies
- Waterfall Model
- Advantages of Waterfall
- Dis-Advantages of Waterfall

What is Agile and Scrum

- Agile Development Process
- Agile Manifesto
- Agile Scrum Work Flow
- Agile Analysis Estimation Techniques
- Types of Roles and Responsibilities
- Problem That DevOps Solves

DevOps Life Cycle

- Introduction
- Tools
- DevOps Technology Categories
- Collaboration
- Planning
- Configuration Management
- Source Control
- Dev Environments
- Continuous Integration
- Continuous Testing
- Continuous Deployment

Linux

- Linux Overview
- What is Operating system
- What is Unix, Linux
- Linux vs Windows
- Linux flavors
- Linux Architecture
- Linux commands
- Reading files
- Redirection operators
- User management
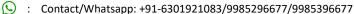- Group management
- File system management
- Editors

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Shell Scripting

- Shell history and introduction
- Types of shells
- Shebang line in shell
- Command line arguments
- Variables
- Types of Operators
- Loops
- Case statement
- Functions

GIT (Source Code Management)

- Introduction
- What is a Version Control System (VCS)? Distributed Vs Non-distributed VCS
- What is Git and where did it come from?`
- Alternatives to Git
- Git Hub Account Setup
- Obtaining Git Installing Git
- Key Terminology
- Staging Vs Un-Staging
- Adding Files to Staging Ares
- Removing Files from Staging Area
- Commit to Local Repository
- Push to Central Repository
- Repository Cloning
- Stashes & Stash Apply
- Branching in Git
- Why We need Branches
- Cloning & Switching Branches

- Fetching Changes (git fetch) Rebasing (git rebase)
- Git Pull
- Git Conflicts
- Branch Merging
- Pull Request
- Merging & Re Basing
- Deleting a Branch

MAVEN (Build Tool)

- What is Build Tool
- Automated build process
- Maven Introduction & Objectives
- Maven Installation
- Maven Terminology
- Maven Archetypes
- Maven Project Creation
- Maven Dependencies
- Maven Repositories
  - Local Repo
  - Central Repo
  - Remote Repo
- Maven Goals

Continuous Integration Tool (Jenkins)

- Introduction
- How to achieve Continuous Integration with Jenkins
- JENKINS Server Setup

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- Jenkins Jobs
- How to integrate Jenkins with Maven
- Jenkins dashboard
- Jenkins plugins – how to download and use
- Setup and Running Jenkins Jobs
- Configure Dashboard Configure System Environment Global Properties
- Create and configure a job Run a job manually Triggering a Build Scheduled Build job Manual Build job
- Polling SCM
- Post-Build Actions Archiving Build Results Notifications
- Jenkins Plugins
- Jenkins Master Slave Architecture
- Jenkins Pipeline Introduction
- Multi Stage Pipeline
- Jenkins with Maven & Git Integration
- Jenkins with Sonar Integration
- Jenkins with Nexus Integration
- Jenkins with Docker Integration
- Jenkins with Kubernetes Integration

Sona Type Nexus (Artifactory Repo)

- Introduction
- What is Artifact Repo
- Nexus Introduction
- Nexus Setup
- Snap Short Repository
- Release Repository
- Shared Libs

- Maven with Nexus Repo Integration
- Uploading Build Artifacts

Configuration Management (ANSIBLE)

- What is Configuration Management
- What is Ansible
- Introduction
- Installing Ansible
- Testing with First Ansible Commands
- Introduction to Play Books
- YML File
- Writing Play Books
- Play Books Execution
- Tags
- Handlers
- Introduction to Roles
- Role Basics
- Creating Role
- Ansible Galaxy
- Ansible Tower

DOCKER (Containerization Tool)

Introduction
- What is Docker
- Life without Docker
- Life with Docker
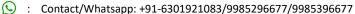- Installing Docker on Linux
- What is container

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- Docker run command
- Working with images
- Container Life cycle
- Docker File
- Docker Network
- Docker Volumes
- Docker Compose
- Docker Swarm
- Spring Boot App with Docker
- Python App with Docker
- MySql with Docker

KUBERNETES

- What is Kubernetes
- Docker Swarm Vs Kubernetes
- Kubernetes Architecture
- Control Plane
- Worker Nodes
- Namespaces
- Pods
- Pod Life cycle
- Services
  - Cluster IP
  - Node Port
  - Load Balancer
- Replication Controller
- Replication Set
- Daemon Set

- Stateful Set
- Deployment
  - Recreate
  - Rolling Update
  - Blue Green Deployment
- Config Map
- Secrets
- Ingress Controller
- HELM Charts

Monitoring Tools

- Grafana
- Prometheus
- ELK Stack

INFRASTRUCTURE AS CODE (IAC)

TERRAFORM

- Introduction to Terraform
- Terraform Vs Ansible
- Terraform installation
- Terraform Architecture
- Terraform Scripts
- Infrastructure Creation
- Credentials Management

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AWS (AMAZON WEB SERVICES)

Introduction to Cloud Computing

- What is Cloud Computing?
- Why Cloud?
- Types of Cloud Deployment Models
- Types of Cloud Services
- IaaS Vs. SaaS Vs. PaaS
- Future of Cloud Technologies
- Advantages and Disadvantages of Cloud
- Cloud Providers

Introduction to Amazon Web Services (AWS)

- What is AWS?
- How to Subscribe for AWS account
- What is the AWS Free Usage Tier
- AWS Certification
- Introduction to the AWS management Console
- List of services given by AWS

VM Creation in AWS

- Creating Windows VM
- Connecting to Windows VM using RDP
- Creating Linux VM
- Pem file & Ppk File
- Putty & Putty Gen
- MobaXterm
- Connecting to Linux VM using Putty
- Linux Introduction
- Linux Commands

Elastic Compute Cloud (EC2)

- What is Amazon EC2?
- Features of Amazon EC2
- Managing the EC2 infrastructure
- EC2 Dashboard
- Pricing for Amazon EC2
- EC2 instance Types
- EC2 Families

AWS Regions and Availability Zones

- Describing Regions
- Availability Zones, and Endpoints

Amazon Machine Images (AMI)

- Managing AMIs
- Working with Windows, Linux AMIs
- Shared and Paid AMI
- Making an AMI Public

EC2 Instances

- Instance Type
- Instance life cycle
- Differences between reboot, stop, and terminate
- Building an EC2 windows and linux instances
- To install instance in public and private subnet

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- Security via Key Pairs
- EC2 Class and VPC Security Groups
- Managing Elastic IP's
- Pricing model in EC2 instances
- EC2 with Amazon command line interface

Amazon Elastic Block Store (EBS)

- Features of Amazon EBS
- Amazon EBS volumes
- Managing EBS volumes
- Increasing the volume size
- Volume Mounting
- Amazon EBS snapshots
- Life Cycle Manager

Load Balancing (ELB)

- Creating a load balancer
- Internal and external load balancer
- Load balancing protocols
- Security groups for the load balancer
- Health check for the load balancer
- Cross-zone load balancing
- Target Groups
- Microservices Load Balancing

Auto Scaling

- What is auto scaling?
- Auto scaling components
- Creation of launch configuration
- Configuration of auto scaling policies
- Advantages of using auto scaling with ELB

Network & Security

- Security Groups
- Inbound Rules
- Outbound Rules
- Elastic IPs
- Placement Groups
- Key Pairs
- Network Interfaces

Amazon Virtual Private Cloud (VPC)

- What is Amazon VPC?
- VPC Essentials
- Default and Non Default VPC
- VPC Networking and ACL
- Security Groups
- DNS and DHCP Options Sets
- VPC Peering and Endpoints
- Subnet Routing
- VPC Internet Gateway
- Elastic IP addresses and network interfaces
- VPC integration with many other AWS services
- Creating a NAT instance in a VPC
- Configuring a Web application in VPC
- Pricing for Amazon VPC

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Amazon Route 53

- Route 53 as your DNS service
- Using Traffic Flow
- Route 53 Health Checks
- Configuring DNS Failover
- Latency Based Routing
- Weighted Routing Policies
- Hosting web portal using Route53
- Bucket Policies

Security & Identity Services
Identity Access Management (IAM)

- IAM Features
- Getting Started With IAM
- Creation of user, groups, roles
- Managing & Writing policies
- Credential Report
- IAM Console and the Sign-in Page

Amazon S3

- What is object Storage?
- Data as objects
- Lifecycles of S3
- Managing Buckets
- Versioning
- Pre-Signed URL
- Bucket Policies
- Accessing S3 storage via tools
- Creation of a static website using S3 storage

Relational Database Service (RDS)

- RDS Essentials
- Launching RDS instance
- Selecting the Engine
- Configuring the Database Engine
- Managing RDS Database
- Setting up automatic backups
- Authorizing access to the DB
- SQL Vs No SQL Databases

Amazon Cloud Watch

- Amazon CloudWatch Architecture
- List of services monitored by CloudWatch
- Collect and track metrics
- Monitoring memory and disk Metrics
- Monitoring logs, Graphs
- Set Alarms

Cloud Formation

- Building AWS infrastructure as a code
- Design a template
- Create a Stack
- Create a Template from your Existing Resources
- Introduction to JSON

Amazon Simple Email Service (SES)

- Simple email service overview
- Configuring Amazon email service
- Amazon SES and Deliverability
- Amazon SES Email-Sending Process

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- Email format and Limits of SES

Amazon Simple Queue Service (SQS)

- Simple Queue service overview
- SQS for background work task
- Creating a Queue
- Confirming the Queue exists
- Add a permission to the Queue

Amazon Simple Notification Service (SNS)

- Simple Notification Service overview
- SNS architecture
- Publishers and subscribers
- Creation of a topic
- Subscribing to topic via Email
- Setting notification for EC2 instance changes.

Elastic Bean Stalk

- What is Platform as a Service
- Bean Stack Advantages
- EC2 vs Bean Stack
- EC2 Pricing
- Deploy Web Application using BeanStack

AWS Lambdas

- What is Serverless Computing
- Advantages of Serverless Computing
- What is Lambda
- How to Create Lambda
- How to invoke Lambda
- Java App with Lambdas

Interview Guide

- Resume Preparation
- Frequently Asked Interview Questions
- Interview Tips & Tricks
- Certification Overview