

DevOps

The Foundations

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1. Introduction to DevOps

- SDLC – Waterfall to Agile
- What is DevOps
- Why DevOps?
- History of DevOps
- DevOps Stakeholders
- DevOps Goals
- Important terminology
- DevOps perspective
- DevOps Tools
- Configuration management
- Continuous Integration and Deployment

2. Version Control - GIT

- Version Control System
- Distributed Version Control System
- Advantages of Git
- Environment Setup
- Installation of Git Client
- Life Cycle
- GIT Operations
 - Create New User
 - Create a Bare Repository
 - Push Changes to the Repository
 - Clone Operations
 - Change Operations
 - Commit Operations
 - Push Operations
 - Branching Operations
- Exercises
 - Install GIT
 - Configure GIT
 - GIT Operations

3. Continuous Integration - Jenkins

- Continuous Integration Overview
- What is the Jenkins integration server?
- Jenkins and extensibility
- Installation
- Configuring Jenkins
- Plug-in management
- Support for the Git version control systems

- Setting up a Jenkins job
- Exercises
 - Install Jenkins
 - Configure Jenkins
 - Integrating Jenkins with GIT

4. Configuration Management - Ansible

- Introduction
- Ansible and Infrastructure Management
- Inventory
 - Hosts and Groups
 - Host Variables
 - Group Variables
 - Groups of Groups, and Group Variables
 - Splitting Out Host and Group Specific Data
- Playbooks
 - Playbook Roles and Include Statements
 - Variables
 - Conditionals
 - Loops
 - Blocks
- Modules
 - Core Modules
 - Extras Modules
- Exercises
 - Install Ansible
 - Configure Target hosts
 - Playbook writing Exercises

5. Knowledge Assessment - I

6. Continuous Deployment – Docker

- What is Container virtualization
- Advantages of Container
- Case Study - Container
 - What is Docker
 - Docker Vs Traditional VM
 - Docker Installation
 - Docker Images
 - Docker Engine
 - Docker Hub

- Docker Registry
- Provision and Setup Docker hosts

7. Container Orchestration – Kubernetes

- Overview
- Architecture
- Setup
- Images
- Jobs
- Labels & Selectors
- Important Terms - Namespace, Node, Service, Pod
- Deployments
- Volumes
- Secrets
- Network Policy
- Exercises
 - Install Kubernetes
 - Configure Kubernetes
 - Deploy and manage pods in Kubernetes

8. Continuous Monitoring: Nagios

- Introduction
- Installation
- Configuration
 - Configuration overview
 - Main configuration file options
 - Object configuration overview
 - Object definitions
 - Verifying configurations
- Monitoring Linux/Windows hosts
- Inside Nagios
 - Plugins
 - Macros and how they work
 - Standard macros available in Nagios
 - Host checks
 - Service checks
 - Active checks
 - Passive checks
 - State types
 - Time periods

- Determining status and reachability of network hosts
 - Notifications
- Exercises
 - Install Nagios
 - Configure Nagios
 - Configure target hosts for monitoring
 - Monitor Resources / Parameters of target hosts

9. Knowledge Assessment – II

10. Case Studies

- How Netflix implemented devops to stream live videos
- How Amazon releases frequently using devops solution

11. Live Project on Continuous Integration and Continuous Deployment

Cloud Computing & AWS Essentials

Table of Content

1. CLOUD COMPUTING

- What is Cloud computing
- Cloud computing History
- Cloud Computing Models
 - Deployment Model
 - Service Model
- Benefits of Cloud
- Planning
- Cloud Architecture
- Infrastructure components
- Infrastructure Constraints
- Cloud Services

2. AWS Essentials

- Creating an EC2 Instance
- AMI Selection
- Pricing
- Instance Types
- Tags and Key Pairs
- Security Groups
- Elastic IPs and ELB
- Auto Scaling configuration
- IAM - Creating and Managing User Access
- Understanding AWS Network Management
- AWS Storage services
 - S3 : Working with S3 storage
 - Glacier
 - EFS
- Virtual Private Cloud – VPC
- Cloud Monitoring – Cloud Watch