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Course Duration - 40 Hours

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- Various Models of SDLC
- Waterfall model
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- Expected Interview Questions on SDLC

❖ WHAT IS DEVOPS

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- Continuous Delivery tools
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- Continuous Deployment tools
- Continuous monitoring tools

❖ **DEVOPS PREREQUISITES - VIRTUALISATION**

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- Virtualization Types
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- Hypervisors
- Virtual Machine Setup

❖ **DEVOPS PREREQUISITES - LINUX**

- Introduction to Operating Systems
- Types of Operating Systems
- History of Unix
- General Architecture of Unix
- Unix basics
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 - ❑ Shell
 - ❑ System Calls

- ❑ Utilities

- Difference between Kernel, Shell, Utilities
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- Linux File Hierarchy Structure
- Expected Interview Questions

❖ LINUX COMMANDS

- Understanding Login Screen of Linux systems
- Case Study of Login incorrect or Password Incorrect
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 - ❑ How to change Ownership of a file
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 - ❑ About visudo
 - ❑ Steps to give sudo access to a normal user
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 - Passwd change commands
 - About /etc/passwd file
 - About /etc/shadow file
 - Expected Interview Questions on Linux User Administration
- Linux Software Management
 - About Utilities of Software Installation
 - Install software using RPM
 - Install Software using YUM
 - Perform consistency tests on software packages before installation
 - Troubleshooting Software installation issues
 - Expected Interview Questions on Linux Software Management
- Linux Service Management
 - Need of Service management
 - Service - start, stop, reload, restart, status
 - Chkconfig - list, on, off, runlevels
 - Systemctl - start, stop, reload, restart, status
 - Troubleshooting Service Error messages
 - Implementation Procedures of Service Management in Real Time
 - Expected Interview Questions on Linux Service Management

❖ **VERSION CONTROL SYSTEMS (VCS)**

- Introduction to VCS
- Purpose of VCS
- VCS Workflow
- Types of VCS
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 - Benefits
 - Drawbacks
- Centralised VCS
 - What is CVCS
 - Benefits of CVCS
 - Drawbacks of CVCS
 - Notable Vendors of CVCS
- DVCS

- What is DVCS
 - Benefits of DVCS
 - Drawbacks of DVCS
 - Notable Vendors of DVCS
- Differences between DVCS and CVCS
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 - Working Copy
 - Trunk
- VCS Basic Actions Terminologies
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 - Revision
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 - Changelog
 - update/Sync
 - Revert
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- Version Control Systems Best Practices
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- Introduction to Git
- Git Features
- Role of Git in Real Time
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- Git installation on Linux
- Git Architecture
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 - ❑ Local Repo
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- Git with Local Repositories
- Git with Remote Repositories
- Git Configuration Files
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 - ❑ Git Configuration files Precedence
 - ❑ git config command usage
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 - ❑ Difference between git init, git init --bare
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 - ❑ Case study to understand Git config global and local levels
 - ❑ Create alias for git commands
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 - ❑ Expected Interview Questions
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 - View log commit changes based on date ranges
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 - How to move the files in git
 - How to delete the files in git before staging
 - How to delete the files in git after staging
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 - Submit the changes of rename, move and delete in git
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 - git branch
 - git merge
 - git rebase
- Comparing git project files from working area with Local Repo using git diff
- Git diff --staged
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 - git reset HEAD
 - git checkout
 - Case study on backout changes in git
- Git Remote
- Real Time Workflow of Git Branching
- Delete Git branches on Local Repo and Remote Repo
- How to remove git files from Local Repo and Remote repo
- How to Rename Git files in Repositories

❖ GITHUB

- Introduction to Github
- Various vendors of Remote Repository

- ❑ Features of github
 - ❑ Create Account in github
 - ❑ Create Project Repository in github
 - ❑ Create files in github
 - ❑ Clone Github Repository
 - ❑ Pull changes from github Repository
 - ❑ Push changes to github Repository
- Best Practices of Git
- Troubleshooting Git Error messages
- Expected Interview Questions on Git

❖ CONTINUOUS INTEGRATION

- About Continuous Integration (C.I)
- Need of Continuous Integration
- Benefits of Continuous Integration
- Best practices of Continuous Integration
- Generic Architecture of Continuous Integration in Projects
- Continuous Integration Workflow
- Components of Continuous Integration
- Case Study - situation if there is no C.I tool used in Projects
- Few notable Continuous Integration Tools
- Market Share of C.I Tools
- Expected Interview Questions on Continuous Integration

❖ JENKINS

- Introduction to Jenkins
 - ❑ Why Jenkins
 - ❑ Relation between Jenkins and Hudson
 - ❑ History of Jenkins
 - ❑ Why Jenkins is so popular
- Features of Jenkins
 - ❑ General Features
 - ❑ Technical Features
- Jenkins Architecture
- Jenkins Prerequisites
 - ❑ Minimum Hardware Requirements

- Recommended Hardware Requirements
 - Docker Container Requirements
 - Software Requirements
 - Supported Platforms
- Setup Jenkin Server
 - Install Software Pre-Requisite softwares (Java)
 - Setup Environment Variables
 - Install Jenkins using war file
 - Deploy Jenkins on RHEL
 - Setup firewall settings for Jenkins Server
- Jenkins Terminologies
 - Master
 - Slave or Node
 - Job or Project
 - Executor
 - Build
 - Plugin
- Jenkins Dashboard Overview
 - Job Listing Section
 - Jenkins Menu Section
 - Jenkins Menu- Item
 - Jenkins Menu-People
 - Jenkins Menu-Build History
 - Jenkins Menu-Manage Jenkins
 - Jenkins Menu-views
 - Build Queue Section
 - Build Executor status Section
- Jenkins - Creating Jobs in Jenkins
 - Naming a Project or Job
 - Choosing right Project Type
 - About Project Descriptions
 - Set the storage limits for old discard builds
 - How to disable the build systems
 - Source Code Management
 - Build Triggers
 - Create a Sample Project
- Understand Jenkins Job Process
 - How to check Build Information
 - Jenkins Build Color Code system

- Configure Jenkins Build Server
 - ❑ Configure Java JDK for Jenkins Build Server
 - ❑ Configure Apache Maven for Jenkins Build Server
 - ❑ Configure the JAVA JDK for Build jobs in Jenkins
 - ❑ Configure the Maven for Build Jobs in Jenkins
 - ❑ Configure Github for Build Jobs in Jenkins
 - ❑ Configure SCM-Git Plugin for Build Jobs in Jenkins
- Secure Jenkins
- Manage Jenkins Plugins
 - ❑ Install Plugins
 - ❑ Upgrade Plugins
 - ❑ Backup plugins
- Jenkins User administration
 - ❑ Create Jenkins User Accounts by various methods
 - ❑ Configure Jenkins User Accounts
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- Manage Jenkins Users based on Roles
 - ❑ Install plugins to manage roles
 - ❑ Roles - Manage Roles, Assign Roles, Role Strategy Macros
- Configure Jenkins
 - ❑ How to change the Jenkins Admin Password
 - ❑ Change Home Directory
 - ❑ Configure system messages in Plain text or HTML format
 - ❑ Configure - Executors, Labels, Quiet Period, SCM Checkout Retry Count
 - ❑ Configure - Jenkins URL Location and Admin email ID
- Build Triggers
 - ❑ Configure Poll Source Code management in Jenkins
 - ❑ Configure Poll SCM Changes using Crontab in Jenkins
 - ❑ Trigger Builds Remotely using URL
 - ❑ Trigger Builds using Token ID
 - ❑ Trigger Builds based on build Pipeline or other Projects
 - ❑ Case Study on Access Denied Error message when trigger builds remotely
 - ❑ Build triggers Periodically
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- Distributed Builds
 - ❑ What is Distributed Build
 - ❑ Architecture of Distributed Build
 - ❑ Configure Jenkins Master Server
 - ❑ Configure Jenkins Slave Server

- ❑ Configure authentication between Master-Slave
 - ❑ Setup Relationship between Master and Slave
 - ❑ Configure Project to build on Jenkins slave server
 - ❑ Configure Various Launch options using SSH, Java Web Start
- Email Notifications in Jenkins
 - ❑ Purpose of Email Notification
 - ❑ Email Notification plugins
 - ❑ Configure Email Notification in Jenkins
 - ❑ Demonstrate usage of email notification on builds
- Expected Interview Question on Jenkins

❖ **BUILD TOOLS**

- What is Build
- Purpose of Build Tools
- Build Tools Ideology
- Evolution of Build Tools
- Few Notable Build Tools
- Environment Based Build Tools
- Java Based Build Tools
- Sample Build Code of Ant-Ivy
- Sample Build code of Maven
- Sample Build Code of Gradle
- Market Share of Build Tools
- Expected Interview Questions on Build Tools

❖ **BUILD TOOL - APACHE MAVEN**

- About to Build tools
- Introduction to Apache Maven
- Maven Architecture
- Installation of Maven
- Various Phases of Maven
- Configure path variables for Apache Maven in Jenkins
- Expected Interview Questions on Apache Maven

❖ CONTINUOUS INSPECTION - CHECKSTYLE

- Continuous Inspection in Jenkins
 - ❑ What is Continuous Inspection
 - ❑ What is Code Coverage
 - ❑ Code Coverage Benefits
 - ❑ Few notable Code Coverage Tools
 - ❑ Configure checkstyle code coverage tool for maven projects

❖ CONFIGURATION MANAGEMENT

- Introduction Configuration Management
- Configuration Management terminologies
- Configuration Management tools
- Difference between Chef, puppet, Ansible
- Expected Interview Questions on Configuration Management

❖ CHEF

- Introduction to Chef
- Features of Chef
- Architecture of Chef
- Core components of Chef
- Chef Server types
- Chef infrastructure requirements
- Chef Terminologies
- Chef Server Hands on
- Chef Workstation setup
- Chef node setup
- Chef Client commands
- Chef knife commands
- Chef concepts - Cookbooks, templates, Resources, Runlist, Recipes, Environment, data bags, Roles etc
- Chef Resources
 - ❑ What is a chef Resource
 - ❑ Resource Types
 - ❑ Resources Definition

- ❑ What is Desired State in chef
 - ❑ What is Convergence in chef
 - ❑ Case Study on Resources
 - ❑ How to Execute a Resource file (Recipe)
 - ❑ Exercise on Resources
- Implementation Procedures of Chef in Real Time
- Expected Interview Questions on Chef

❖ ANSIBLE

- Introduction to Ansible
- Features of Ansible
- Architecture of Ansible
- Setup Ansible Control machine and node
- Ansible Concepts
 - ❑ Modules
 - ❑ Ad Hoc-commands
 - ❑ Playbooks
 - ❑ Roles
 - ❑ Ansible Galaxy
- Expected Interview Questions on Ansible

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- Introduction to Vagrant
- Features of Vagrant
- Vagrant Architecture
- Vagrant Terminologies
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- Docker Variants

- Setup Docker
- Create Docker images
- Docker Hub
- Docker CLI commands
- Configure Docker file
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- Set Hostname to Docker container
- Set DNS to Docker Container
- Set External Storage to Docker Container
- Expected Interview Questions on Docker

❖ **NAGIOS**

- Introduction to Monitoring
- Setup and configure Nagios
- Server Monitoring
- Application Monitoring
- Expected Interview Questions on Nagios

❖ **OTHERS**

- Interviews Questions and Answers
- Conduct Mock interviews
- Feedback sessions
- Resume Preparation Support