



Azure DevOps

This course will help you to learn various developmental and operational aspects of software development, operations, continuous delivery, automated build, test, continuous integration, and deployment.

Module 1: Introduction to DevOps

1. About waterfall model and agile development
2. Scrum models
3. Sprints
4. What is the DevOps and its benefits
5. What is CI and CD and role DevOps Engineer
6. About Azure Devops and its features
7. Using azure Devops features in Project Lifecycle
8. DevOps engineer delivery pipeline
9. Real-time Tools we use in DevOps
10. Steps to Setup azure Devops organization and manage users

Module 2: Version Controlling: Get and GitHub

1. Version Controlling, Centralized vs Distributed
2. Installation and Configuration
3. Initializing Git functionality on local servers
4. Git SCM, Git Branching
5. Git Merging, Git Tagging
6. Git Rebase, Stashing, Squash, Rearranging Commit history
7. Branching Strategies
8. Git References
9. SSH Key generation, Cloning Repositories
10. Git Pull, Push and Fetch
10. GIT Merge
11. Real time Branching Design patterns
12. Understand UseCases for GIT

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Module 3: Build Tools

1. Maven Tool
 - Maven Installation
 - Features and Requirements of Maven
 - Maven pom builds
 - Executing Some examples
 - Maven Build Lifecycle
 - Maven Plugins
2. Dotnet Tool

Module 4: Azure DevOps Repos

1. Azure Devops repo creation
2. Secure repo
3. Branch policies
4. Pull request validations
5. Using Azure Cli for repo operations
6. Managing repo tags

Module 5: SonarQube

1. Intro to SonarQube
2. Architecture and Installation of SonarQube
3. Execute the projects in SonarQube and generate reports
4. Administration activities
5. User creation, Project creation configure email settings etc.,

Module 6: Introduction to CI Tools

1. Understand CI
2. Jenkins
3. Git Lab
4. Azure Devops
5. AWS

Module 7: Azure Pipelines

1. Design pipelines
2. YAML pipelines Stages, Jobs & Steps
3. Service Principles & Service Connections
4. Secure Service Connections



5. Understand Environments
6. Classic Releases
7. Pipeline Libraries
8. pipelines for dotnet project
9. pipelines for java project

Module 8 : Azure DevOps Artefacts

1. Feeds as artefacts
2. Creating feeds
3. Promoting feeds
4. Using feeds in CI/CD of azure pipelines
5. Secure feeds

Module 9: Azure DevOps CI CD Part-1

1. The Five stages of CICD in detail
 - Continuous Download
 - Continuous Build
 - Continuous Deployment
 - Continuous Testing
 - Continuous Delivery
2. Azure Devops pipelines for CI/CD
3. Perform Build, configure multiple projects in Azure Devops
4. Multibranch pipeline projects
5. Azure Devops administration
6. Creating users, assigning Permissions in Azure Devops
7. Azure Devops Build Triggers
8. Configuring Email Notifications

Module 10: Azure DevOps CI CD Part-2

1. Virtualization and Containerization – Differences
2. Docker Introduction - Architecture
3. Docker Installation and Administration
4. Creating Docker Containers (OS, Applications, Databases)
5. Multi Container Architecture in Docker
6. Docker Volumes
7. Docker Builds
8. Docker file concepts



9. Docker Networks
10. Creating customized Registry in Docker
11. Pushing images to Remote Repositories (Public and Private)
12. Docker Swarm (Container Orchestration)
13. Overlay Network
14. Docker Stack

Module 11: Docker

1. Virtualization and Containerization – Differences
2. Docker Introduction - Architecture
3. Docker Installation and Administration
4. Creating Docker Containers (OS, Applications, Databases)
5. Multi Container Architecture in Docker
6. Docker Volumes
7. DockerBuilds
8. Dockerfile concepts
9. Docker Networks
10. Creating customized Registry in Docker
11. Pushing images to Remote Repositories (Public and Private)
12. Docker Swarm (Container Orchestration)
13. Overlay Network
14. Docker Stack

Module 12: IaC (Infrastructure as a code)

1. Terraform for Azure
 - Infrastructure as Code
 - Why Terraform
 - Variables in Terraform
 - Local and Dynamic Blocks in Terraform
 - Commands in Terraform
 - Remote States in Terraform
 - Connecting Local Machine to Terraform Cloud
 - Modules in Terraform
 - Creating Vnet on AWS
 - Creating public and private subnets
 - Creating VM instances
 - Configuring Storage
 - Terraform Plugins



2. ARM Templates

- Understand ARM templates
- Design ARM templates
- Variables
- Parameters
- Loops
- Pipelines Parameters
- Deploy ARM templates for CI
- Deploy ARM templates for CD
- Real time design patterns
- Deploying Azure Resources with ARM templates
- Nested ARM templates

Module 13: Azure Kubernetes Services

1. Kubernetes Introduction, Architecture
2. Different approaches of Setting up Kubernetes Cluster
3. Kubernetes Namespaces
4. Kubernetes Objects
 - Pods
 - ReplicaSets
 - Replication Controllers
 - DaemonSet
 - Deployments
 - Rolling Updates
 - Services
 - Persistent Volumes
 - Dynamic Volumes
5. Kubernetes cluster setup in Azure using Azure Devops
6. Kubernetes Cluster setup using Powershell
7. Monitor AKS Dashboards
8. Integrate Kubernetes with Azure Devops
9. Helm Charts

Module 14: Azure Key vault secrets managements using pipelines

1. Accessing secrets from Azure Keyvaults
2. Linking secrets using Azure Keyvault
3. AKS accessing Keyvault secrets
4. Understand Application accessing Keyvault Secrets



5. Secure the secrets

Module 15: Azure DevOps Nodes

1. Understand Azure Devops Nodes
2. Self-Hosted Nodes
3. Azure Hosted Nodes