

DevOps Practitioner Training

Day 1:

Highlights:

1. One year access to any DevOps batch
2. iwayQ QA Portal access for technical support
3. Weekly assignments
4. 15 real-time projects with various AWS & DevOps tools combinations
5. Resume preparation
6. Mock interviews

Projects:

1. AWS: Real-time 3-Tier Architecture Project
2. Ansible-1: Real-time Linux Patching Automation Project
3. Ansible-2: Real-time AWS Auto Scaling with Persistent Volume Project
4. Ansible-3: Real-time Docker Build automation Project
5. Docker: Real-time Magenta/Web Application deployment using Docker Compose
6. Jenkins CICD Project -1: Declarative Pipeline using SSH deployment
7. Jenkins CICD Project -2: Declarative pipeline for Build and Deployment using Helm.
8. Terraform-1: Kafka Automation with Packer
9. Terraform-2: VPC Deployment
10. Terraform-3: Deploy 3 node EC2 cluster
11. Terraform-4: Deploy EC2 Instance
12. Lambda: Serverless Architecture Project
13. Grafana: Automation Project to deploy Monitoring Solutions
14. Kubernetes: Project on Micro Services Architecture.
15. Azure: DevOps CICD Project

Day 2:

1. On Premises Vs. Cloud
2. Cloud Service Models- IaaS, PaaS & SaaS
3. Cloud Deployment Models- Private Cloud, Public Cloud, Hybrid Cloud
4. AWS Global Infrastructure - AWS Regions & AWS Availability Zones

Day 3:

1. What is AWS EC2?
2. AWS Free Tier
3. AWS Key Pair for EC2

Day 4:

1. What is Networking?
2. What is Subnet/Network ID?
3. What is IPV4 IP Address?
4. CIDR Introduction

Day 5:

1. Private Subnet
2. Public Subnet
3. Private IP
4. Public IP
5. Route Table
6. Port Number
7. Service (ex: sshd)
8. IP Classes
9. CIDR Notation
10. Internet Gateway
11. Local Gateway
12. Default Gateway

Day 6:

1. What is VPC?
2. Private Subnet
3. Public Subnet
4. Public Route Table
5. Private Route Table
6. Internet Gateway
7. Default VPC Vs. Custom VPC
8. Security Group
9. Bastion Host

Day 7:

1. Deploy Private and Public EC2 Instances into VPC
2. NAT Gateway Deployment
3. VPC Peering

Day 8:

1. VPC Peering
2. Security Groups
3. Network ACL
4. Ephemeral ports
5. Cloud Resources scope
6. Service Limits
7. AWS Support

Day 9:

1. Linux Architecture
2. Linux User Account
3. Root Directory Structure
4. Absolute Vs. Relative Path

Day 10:

1. Manage Files - Create, Copy, Delete, Move
2. VI editor - Edit, Delete, Add Text to the file
3. File Permissions - Read, Write, Execute files/directory

Day 11:

1. File Permissions
2. Package Management - Install packages
3. Services - Apache HTTP web server
4. Domain Management
 1. Authoritative Name Server (NS)
 2. A Record
 3. CNAME Record

Day 12:

1. Tree command
2. Default directory structure
3. Launch Template
4. EBS Volumes
 1. Create / Modify
 2. Attach
 3. Detach
 4. Delete
 5. EBS Types
 - 6.
5. File System
 1. `mkfs -t ext4 /dev/xvdf`
 2. `mount /dev/xvdf /var/www/html`
 3. `df -h`
 4. `umount /var/www/html`

Day 13:

1. EBS Vs. Instance Store Volumes
2. S3 Buckets
3. S3 Replication Rules
4. S3 Classes
5. S3 Lifecycle Policies

Day 14:

1. Snapshot Vs. AMI
2. IAM
 1. IAM Policy - Custom Vs. Managed Policies
 2. IAM Role - Grant Policy to Trusted Entity
 3. IAM User - Console Vs. Programmatic Access
 4. IAM Group
3. AWS CLI
4. Know differences:
 1. Linux Root User Vs. Linux Ordinary User Vs. IAM User Vs. AWS root User Vs. IAM Role

Day 15:

1. EPEL Repo

2. SNS - Topic, Subscriptions
3. Cloud Watch - Alerts, Metrics, Dashboard
4. Auto Scaling - Scale on Demand
5. Elastic Load Balancer - High Availability, Load balancing

Day 16:

1. EC2 Launch Process - User Data
2. Auto Scaling - Scale on Demand
 1. Launch Configuration
 2. Scaling Policies
 3. Deploy EC2 instances in Private Subnets
3. Load Balancer - High Availability, Load balancing
 1. Target Groups
 2. Health Check Settings
 3. Listener Configuration
4. Associate Auto Scaling Group to Target Group
5. Associate Target Group to Load Balancer
6. Session Manager - Access EC2 terminal from console.
 1. Policy attachment to IAM Role to grant the Session Manager Access

Day 17:

1. Application Load Balancer path based routing
2. ALB Vs. NLB
3. What is Infrastructure as code
4. Visual Studio code setup for Terraform
5. Terraform Providers
6. Terraform init Plugins

Day 18:

1. terraform Provider Plugins (.terraform)
2. terraform Provider block (aws)
3. terraform resource block
4. terraform local state file
5. terraform s3 backend
6. terraform variable declaration (variables.tf)
7. terraform variable values (terraform.tfvars)

8. terraform environment variables to keep IAM keys (TF_VAR_access_key & TF_VAR_secret_key)

Day 19:

1. data source to import resources from AWS
2. data source to import resources from remote state file
3. Resource linking within same project scope
4. Deploy VPC Architecture (VPC components) using Terraform
5. Deploy EC2 into existing VPC
6. Output values

Day 20:

1. Terraform Module
2. Git Architecture

Day 21:

1. Git Architecture
2. Git add
3. git status
4. git config
5. git commit
6. git diff
7. git reset
8. git revert
9. git log

Day 22:

1. git clone
2. git pull
3. git push
4. git remote add
5. git branch
6. git checkout
7. Pull Request Model
8. How to add moderators to the Bitbucket repo

Day 23:

1. Branch Strategy

- master
- develop
- Feature
- Release
- BugFix

2. APache Maven Basics

- Maven Installation
- pom.xml
- Maven Build

Day 24:

1. Apache Tomcat Configuration
2. Artifact Deployment to App servers
3. Nginx Reverse Proxy configuration
4. Proxy_pass rules

Day 25:

1. Apache Tomcat

1.1 Users

1.2 Roles

1.3 Manager App

1.4 host-manager App

1.5 Logs

2. RDS

2.1 RDS Creation

2.2 RDS connection string configuration in Application

2.3 Create Database

2.4 show databases

2.5 show tables

2.6 describe table

2.7 create table

2.8 select statement

2.9 Login to RDS using MySQL client CLI

3. Environment

3.1 Realtime Multi Environment setup

3.2 Dev, QA, Perf, Stage, Prod envs

4. 3-Tier Architecture

4.1 Web, App, database Tiers

Day 26:

1. Multi-AZ RDS deployment
2. JAR Vs. WAR Artifacts
3. JFROG Artifactory
 1. Resolve dependencies
 2. Artifact deployment
 3. Version controlled artifacts
4. Jfrog Cloud
 1. Create Maven local repository

Day 27:

1. Jfrog
 1. Create Maven local repository
 2. Generate Settings.xml to resolve dependencies
 3. Generate distribution settings for Maven artifact deployments
 4. How to use encrypted server password in Maven
 5. Jfrog integration with Maven
2. Sonar
 1. How to create project in Sonar cloud
 2. Generate Project token

3. Integrate Sonar with Maven
4. Review Quality Gate
5. Review Code Analysis report

Day 28:

1. visudo
2. ping command
3. How to check port readability (telnet command)
4. localhost
5. SSH password less authentication

Day 29:

1. Ansible Architecture
2. Inventory File
3. Ad-Hoc commands
4. Ansible Facts

Day 30:

1. Ansible Modules
 1. yum
 2. service
 3. copy
2. Ansible Playbooks
3. Ansible Role
 1. Role directory structure
 2. Include multiple playbooks in the role
 3. Play
 4. task
4. Ansible variables
5. YAML syntax
 1. list
 2. dictionary
6. Handlers in Ansible Role

Day 31:

1. Packer Template

2. How to automate AMI build
3. Packer Variables
4. Packer Provisioner
 1. Shell
 2. ansible-local

Day 32:

1. Packer Template
2. Monolithic Vs. Micro Services Architecture

Day 33:

1. What is Container?
2. What is Docker?
3. Docker Hub Registry
4. Docker Images
5. How to create Docker Container?
6. How to check Docker Container Logs
7. How to map host port to container port?
8. Docker Commands
 1. docker info
 2. docker images
 3. docker create
 4. docker start
 5. docker stop
 6. docker ps
 7. docker ps -a
 8. docker inspect
 9. docker logs
 10. docker pull
 11. docker cp
 12. docker exec

Day 34:

1. docker commit
2. docker build
3. docker login
4. docker push

5. docker rm
6. docker rmi
7. docker run
8. docker network
9. Dockerfile Layers
 1. FROM
 2. COPY

Day 35:

1. Docker Compose
2. Dockerfile Layers
3. Native Docker Limitations
4. Container Orchestration Benefits
5. K8s Introduction
6. K8s Architecture

Day 36:

1. K8s cluster setup using kubeadm
2. kubeadm init
3. Apply Pod network
4. Initialize kubectl config
5. Join Worker nodes using kubeadm join
6. Run application in Pod
7. Kubectl commands
8. K8s Installation methods
 1. kubeadm
 2. minikube
 3. kops
 4. kubeadm

Day 37:

1. K8s bootstrapping with KOPS
2. K8s bootstrapping with eksctl
3. AWS Managed kubernetes - EKS setup
4. kubeadm Vs. kops Vs. eksctl

Day 38:

1. Deploy Pod
2. Deploy ReplicaSet Controller
3. Describe Pod
4. Describe Replicaset
5. How to check Pod events
6. Replicaset characteristics
 1. Selector & Labels

Day 39:

1. K8s Deployment Controller
2. K8s Replicaset Controller
3. NodePort Service
4. Rolling Upgrade strategy

Day 40:

1. Liveness Probe
2. Readiness Probe
3. Nodeport Service
4. ClusterIP Service
5. How Debug Pods
6. Networking & Kube DNS
7. Namespaces

Day 41:

1. Namespace
2. Requests and limits
3. Metrics API
4. Horizontal pod auto scaling
5. Secrets

Day 42:

1. Jenkins Introduction
2. Jenkins Installation
3. Jenkins Plugins
 1. Copy Artifact
 2. Deploy to Container

3. Build Pipeline
4. Jenkins Jobs
 1. Upstream/Downstream Jobs
5. Jenkins Pipeline

Day 43:

1. Jenkins Workspaces
2. Jenkins Home Directory
3. Jenkins Users
4. Trigger Jenkins Jobs remotely - Webhook
5. Jenkins Poll SCM
6. API Gateway Use cases

Day 44:

1. Kafka Architecture
2. Kafka & Zookeeper service
3. Produce/Consume message from Topic
4. Lambda Introduction - Serverless Architecture
5. Terraform Deployment
 1. MSK
 2. Webapp with ASG, LB and Lambda

Day 45:

1. Persistent Volume
2. Persistent Volume Claim
3. Volume Mounts
4. Daemonset
5. StatefulSet
6. ConfigMap
7. Elasticstack
8. Fluentd
9. Elasticsearch
10. Kibana

Day 46:

1. Helm Deployments

2. Jenkins CI
3. Jenkins CD

Day 47:

1. Jenkins CICD Planning
2. Jenkins CI implementation
3. Jenkins CD Implementation
4. Integration of DevOps tools in Jenkins CICD Project

Day 48:

1. Microservices Deployment Project

Day 49:

CI/CD and STS Project Integrations Scope and Skills implemented with Scrum(Highlevel skills)

1. AWS EC2
2. Route 53
3. Security Groups
4. Load Balancer
5. Auto Scaling Group
6. Jenkins CI/CD Pipelines
7. Multi Branch Pipelines
8. Build Pipeline
9. Release Pipeline
10. Helm deployments using Jenkins Pipeline
11. Sonar Cloud
12. Jfrog Cloud
13. Maven Repo
14. Helm Repo
15. Local and virtual repo in jfrog
16. Docker Registry
17. Ansible integration with Jenkins CI/CD
18. Dockerhub
19. kubectl client to manage remote kubernetes api server
20. Declarative Pipeline - Pipeline as Code
21. Jenkins Credentials

22. Jenkins Plugins
23. Jenkins Tools configuration
24. Jenkins Global Tools configuration
25. Environment specific deployment
26. Kubernetes liveness and readiness probes
27. Requests and Limits for Pod Configuration
28. Micro Services Architecture
29. Statefulset Applications
30. Persistent Volume
31. Persistent Volume Claim
32. MongoDB
33. Active MQ
34. Angular app deployment
35. Kubernetes Service discovery
36. Cluster IP Service
37. Load Balancer Service
38. nodePort Service
39. Deployment controller
40. Replicaset controller
41. Namespaces
42. Dockerfile
43. Apache Tomcat
44. Apache Maven build
45. How to debug pods
46. Deploy Elastic Stack - Fluend, Elasticsearch, Kibana
47. Install and setup Prometheus
48. Install and setup Grafana
49. JIRA
50. JIRA Board
51. Sprint Cycle
52. Sprint Planning
53. Jira Stories
54. Sub-tasks
55. Story Points
56. Scrum Process

