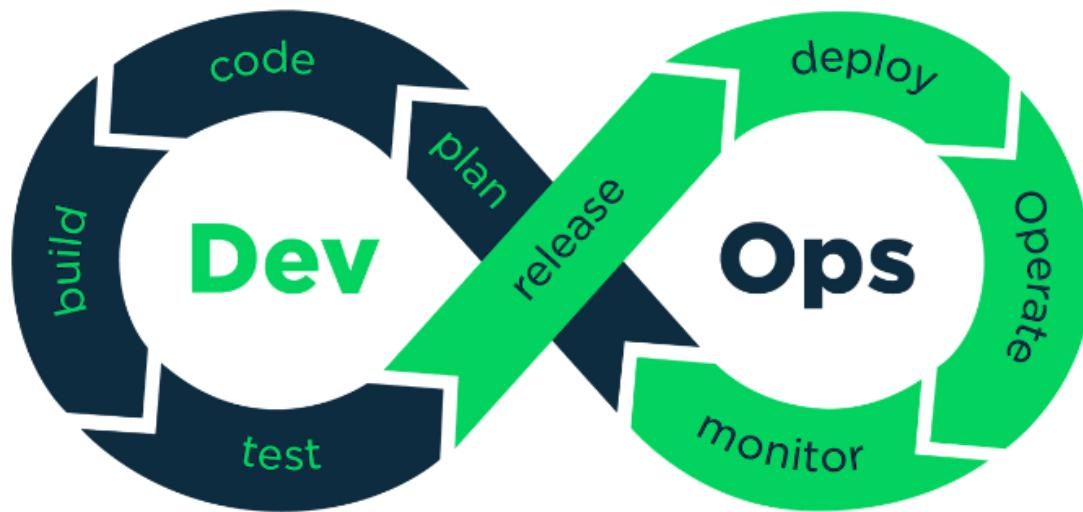# DevOps with AWS - Course Content
By Ravi (Sr. DevOps Architect)

(AWS SA Certified and 10+ Years of I.T. Experience)

Course Duration – 70 to 75 Days (Approx.)

Cloud Basics - 2hrs

- What is the cloud all about?
- Why do we need a cloud?
- Which are the cloud providers?
- Private Cloud, Public Cloud, and Hybrid Cloud.

AWS Account Creation (Free Tier)

AWS Billing Alerts Setup

AWS Basics - 1hrs

- Exploring the AWS account.
- Regions.
- AZ's.
- Support Centre.
- Services.

IAM - Identity Access management - 3hrs

- How to Create Users.
- How to Create Groups.
- IAM Policies
- IAM Roles.
- Enabling MFA.
- Hands-on Tasks.

EC2 - Elastic Compute Cloud - 7hrs

- EC2 Overview.
- Creating an Ec2(Ubuntu, Red-Hat, Windows).
- How to SSH.
- Instance Type, Security Group, key pairs.
- Hosting a website in Ec2 using an apache webserver.
- Public, Private, and Elastic IP.
- AMI Creation-EC2 Creation.
- Hands-on Tasks

AWS CLI & Cloudshell - 1hrs
- Access AWS services.
- Setup CLI on Ec2.
- Cli and MFA.
- Credentials Provider.
- Access the AWS services.

VPC - Virtual Private Cloud - 4hrs

- Introduction to Networking
- Difference between IPV4 and IPV6
- CIDR Block Calculation
- VPC Overview.
- Subnets.
- RouteTables.
- Internet Gateway & NAT Gateway
- Network ACL.
- Setup complete custom VPC
- VPC Peering, VPC Endpoints, VPC Flowlogs
- Hands-on Tasks

ELB - Elastic Load Balancer - 2hrs

- What is the Load Balancer?
- Types of Elastic Load balancer.
- Creating/Setup Classic Load Balancer.
- Creating/Setup Application Load Balancer.
- Hands-on Tasks

Autoscaling - <u>1hrs</u>

- Autoscaling Overview.
- Launch Configuration.
- Autoscaling Groups.
- Create an Autoscaling for EC2.
- Horizontal Scaling vs Vertical Scaling
- <u>Hands-on Tasks</u>

S3 - Simple Storage Service - <u>3hrs</u>

- S3 Overview.
- Static Website Hosting.
- Versioning, Lifecycle management.
- S3 Security and Bucket policies.
- S3 Encryption.
- <u>Hands-on Tasks</u>

AWS Service Monitoring - <u>1hrs</u>

- CloudWatch - Setting up alarms.
- Creating widgets in Cloudwatch
- Setting up Billing Alarms using CloudWatch service
- <u>Hands-on Tasks</u>

Project-Based approach - 2<u>hrs</u>

- CICD Introduction and Live Project explanation
- Sharing of 3 other Sample Project Dumps (Recorded Videos)

DevSecOps Course with Infrastructure and Deployment Project – 2 hrs

Project – Netflix Web Application Clone Deployment using Jenkins, Github, Maven, Sonarqube, Trivy, Owasp, Nexus, S3, Apache Tomcat, EC2, Prometheus & Grafana
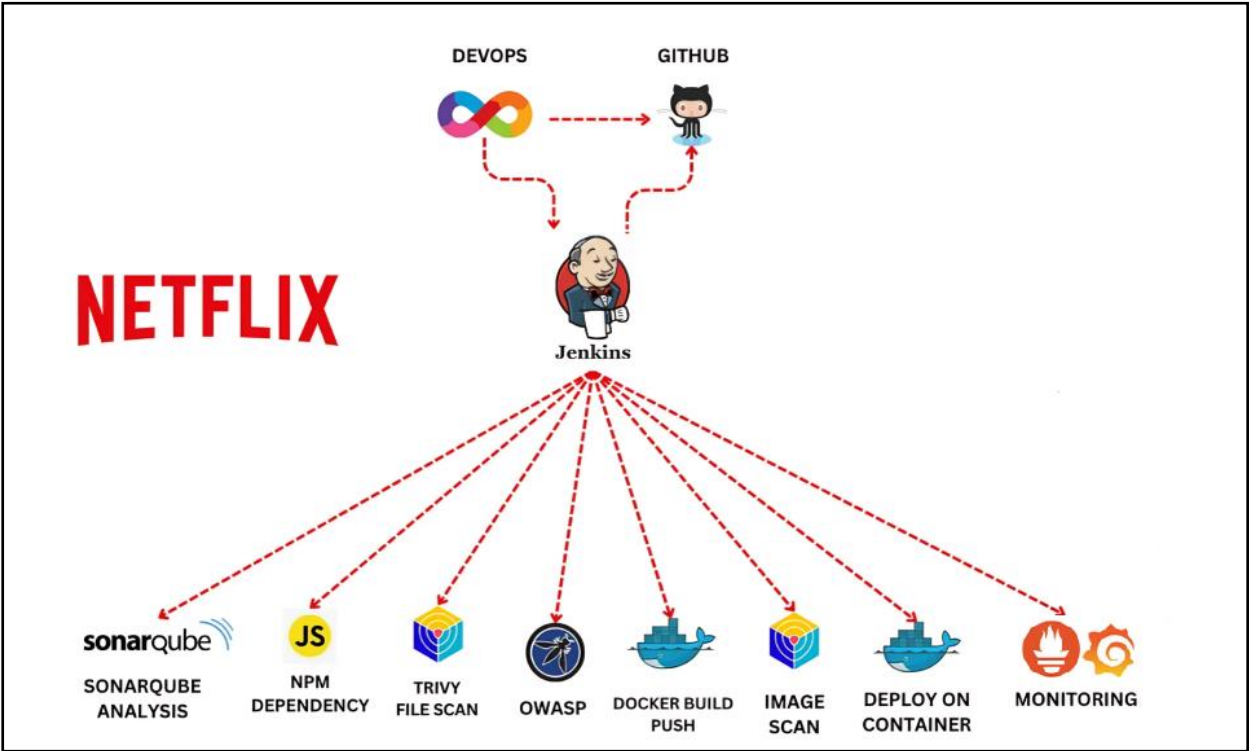
Linux Basics – 4 hrs

- A Linux Introduction
- Distributions
- Basics Commands
- Exercise: Basic Command Line
- Using Directories and Listing Files
- Files, Directories
- Hidden Files and Directories
- Creating, Moving, and Deleting Files
- Text Editor and commands
- User and Groups creations.
- User Management.
- Zip and extract files and Directories.
- File and directory permissions.
- Find files and Directories
- Process and services.

Shell Scripting – **4 hrs**

- Basic Shell Scripting
- How to run a shell script file
- System Variables and User-defined variables
- Read user input and REPLY
- Passing arguments to the script
- If Statement, If Else, Else if
- Case Statement.
- Conditional Statement, Loops, Functions
- File Operations, Arithmetic Operations, Case statement
- Timeout, Error Handling.

Git – **5 hrs**

- Git Overview.
- Git workflow and architecture.
- Git init, add, remote add, push
- Git clone and pull.
- Git branching and merging.
- Git stash.
- Setting up a project

Jenkins – 7 hrs

- Jenkins Overview
- Essentials of Continuous Integration
- An example scenario where CI/CD is used
- Setting up Jenkins on AWS EC2
- Jenkins Dashboard overview
- Creating a first Jenkins freestyle job
- Post-installation setup wizard
    - Unlocking Jenkins
    - Customizing Jenkins with plugins
    - Creating the first administrator user
- Creating jobs and automatic build settings
    - What is Jenkins Pipeline?
    - Why Pipeline?
    - Integration with GIT
    - Source code management while creating jobs
    - Triggering automated build
- Excercise: Git - Github - Jenkins
- Master-Slave Configuration
- Upstream and Downstream Jobs and pipeline plugin
- Parameterized jobs

Docker – <u>6 hrs</u>

- Virtual Machines vs Containers
- What are Containers?
- Why and What is Docker?
- Setting up/Installing Docker on EC2
- Docker WorkFlow
- What is Dockerhub, Images, Containers, Dockerfile?
- How to create a Container
- How to Pull the Images from Docker Hub and use it?
- Getting inside a Container, start, stop, remove
- Setting up a website in Container
- Docker Volumes
- Docker Port Expose
- Creating an Image with Dockerfile and push it to Dockerhub
- Important Docker Commands

Ansible – 6 hrs

- What are configuration management tools?
- Ansible vs Chef vs Puppet
- YAML Basics
- Setting up ansible
- Host file and playbooks
- Writing playbooks
- Ansible Modules
- Ansible Vault
- Ansible Roles
- Ansible Tower

Grafana & Prometheus – 4 hrs

- Grafana and Prometheus
- Grafana installation and setup.
- Configuring the Dashboard.
- Setting up Metrics Collector.
- Setting up Prometheus.
- Docker Containers monitoring
- Synthetic monitoring of a website
- Embedding Grafana dashboard into a website
- Setting up email and telegram alerts

Kubernetes – 4 hrs

- What are Orchestration Tools and which are the tools?
- What is Kubernetes and why Kubernetes?
- Setting up a Kubernetes environment on AWS - EC2 using Minikube
- Kubernetes commands using kubectl
- Pods, Replicasets, Deployments.
- NodePort service and Exposing the Application
- Different services like NodePort, ClusterIP, Load Balancer
- Kubernetes Cluster setup using Kubeadm
- Creating cluster on AWS EKS service using eksctl
- Deploying a Microservice application and accessing via Browser

Interview Preparation – 1 hr

- How to prepare for the DevSecOps Engineer role interview?
- How to introduce yourself and explain your previous experience as DevSecOps Engineer?

Resume Preparation – 1 hr

- Tips and Tricks to prepare a good DevSecOps role resume.
- Quality resume preparation to achieve good ATS score.
- Steps to secure a DevOps Career