

DevOps Assignment

Task 1: Infrastructure as Code (IaC)

Scenario:

You are tasked with provisioning a basic web application stack in AWS using Terraform.

Requirements:

1. Deploy an EC2 instance running an Nginx server.
2. Use a security group to allow HTTP (port 80) and SSH (port 22) access.
3. The Nginx server should display a custom webpage with the text: "Deployed via Terraform."
4. Use variables to make the configuration reusable for different environments (e.g., dev, prod).

Task 2: CI/CD Pipeline

Scenario:

Set up a CI/CD pipeline to build, test, and deploy a simple Node.js application.

Requirements:

1. The pipeline should:
 - * Run on GitHub Actions or AWS CodePipeline.
 - * Install dependencies.
 - * Package the application as a Docker container.
 - * Deploy the container to a Kubernetes cluster (use Minikube, kind, or a cloud provider).
2. Rollback deployment if any step fails.

Task 3: Kubernetes Deployment

Scenario:

Deploy a sample Python application on a Kubernetes cluster with monitoring and auto-scaling enabled.

Requirements:

1. Write Kubernetes manifests for:
 - * A Deployment with at least 2 replicas.
 - * A Service to expose the application.
 - * An Ingress to route HTTP traffic.
2. Configure a HorizontalPodAutoscaler to scale based on CPU usage.
3. Set up monitoring using Prometheus and Grafana. (If known)
4. Create a Grafana dashboard to visualize application metrics.