Overview

This assignment will help us evaluate your skills in containerization, cloud infrastructure planning, Kubernetes deployment and Documentation. Make sure you read and follow the instructions below, and make sure to demonstrate your understanding of DevOps best practices, infrastructure-as-code principles, and Kubernetes deployments.

Task:

Write a fast API Python App to count the number of requests responded by a http route (/count) that responds with {"count": "<int>"}. The count should be recorded in a database.

1. Dockerize the app using a Dockerfile and prepare a docker-compose.yaml for local testing.
2. List the AWS services and resources needed for deployment. Create an Architecture diagram illustrating how a user request would travel through the application and AWS infrastructure. Prepare a Documentation based on your architecture how the app will be deployed and accessible to the user.
3. Create the necessary deployment files (YAMLs for Kubernetes manifests, Helm charts, or Kustomize overlays) to run the app on a Kubernetes cluster. Test the templates on a local Minikube setup to ensure they deploy the app correctly.

Criteria:

1. Git should be used from the very first stage of development of this assignment. All of the components should reside in a single repository (though we understand that this is not the best practice). The submission should include a single zip file containing application source code, Infrastructure documentations in PDF, deployment manifests, CICD files along with .git directory and any other artifacts built and used during the completion of assignment.

2. The approach for solving the assignment should consider simple design, cost efficient, secure and proper documentation of the task completed.

How will your assignment be evaluated?

Your assignment will be evaluated for repo organization, repo usage, dockerfile, system architecture, documentation, cost consideration, security consideration, deploy manifests and templates best practices.