Gowit DevOps Intern Case Study

Submission Deadline: Within 4 days after receiving the case

Scenario

You have developed a simple REST API in Golang that returns `"Hello, World!"` at the `/` endpoint. The goal is to containerize, deploy, and expose this application using Kubernetes and Helm, and optionally set up a CI/CD pipeline and provide access with a loadbalancer.

Tasks

1. Containerize the Application

- Create a `Dockerfile` for your Go application.
- Build the container image and push it to a container registry (e.g., Docker Hub, GitHub Container Registry).

2. Set Up a Kubernetes Cluster

You may choose any of the following options based on cost, availability, and your preference:

- Minikube (recommended for local development or if cloud access is limited)
- Google Cloud Platform (GCP): You can use the free $300 credit to set up a Kubernetes cluster (GKE).
- If cost is not a problem, you can use any cloud provider.

3. Create a Helm Chart

- Write a simple Helm chart to deploy your application to Kubernetes.
- Include values for image repo/tag, replica count, service type, and other basic settings.
- Deploy the application with Helm chart
- Controlling service access with kubectl port-forward after deployment with Helm

Bonus Points:

- **CI/CD Pipeline Enhancement:**
  Set up a CI/CD pipeline that:
    - Builds and pushes the Docker image on each commit to the `main` branch.
    - Uses GitHub Actions for this automation.

- **Internet Accessibility:**
  Ensure that the application is accessible from the internet after deployment.
  You may choose one of the following methods based on your setup:
    - For cloud clusters (e.g., GKE, EKS, AKS):
        - Use a `LoadBalancer` service or
        - Use an Ingress Controller like **NGINX Ingress** or **AWS ALB Ingress Controller**.
    - For local clusters (e.g., Minikube):
        - Use `minikube service` or `kubectl port-forward` to access the application locally.
        - If using an Ingress Controller, document how to access the ingress (e.g., via `/etc/hosts` and Minikube IP).
        - It is acceptable if the app is only accessible from your local machine—just be sure to document how to test access (e.g., using `curl`, browser, or Minikube IP).

Submission Expectations

- Please send us all the steps you have taken with screenshots.
- Please add the Helm chart, Dockerfile and the address of the github repository where your application code is located to the document.
- If a cloud provider is used, please do not forget to create a user for access and send it.

Thanks. Good work :)