DevOps Internship Assignment

Objective

The aim of this assignment is to understand the hands-on experience with GitOps practices, utilizing Argo CD for continuous deployment and Argo Rollouts for advanced deployment strategies within a Kubernetes environment. You will be responsible for setting up a GitOps pipeline that automates the deployment and management of a simple web application.

Prerequisites

- Familiarity with Kubernetes concepts (Pods, Deployments, Services).
- Basic understanding of Docker and containerization.
- Experience with Git for version control.
- Access to a Kubernetes cluster for testing (you can use Minikube, kind, or a cloud provider's Kubernetes service).
- Argo CD and Argo Rollouts documentation: Familiarize yourself with the basics of these tools.

Assignment Overview

You will dockerize a simple web application, deploy it to a Kubernetes cluster using Argo CD, and manage its release process with Argo Rollouts. The assignment consists of four main tasks: setup and configuration, creating the GitOps pipeline, implementing a canary release, and documentation.

Video Link of whole Project: [Link]

https://twitter.com/apaar_tw/status/1790216305708331498

Task 1: Setup and Configuration

1. **Created a GitRepository**: [Link] https://github.com/apaar-gh/tetris-rollout
2. **Install Argo CD on Your Kubernetes Cluster**: [Link Documentation] https://archive.eksworkshop.com/intermediate/290_argocd/install/

   Commands :

   kubectl create namespace argocd

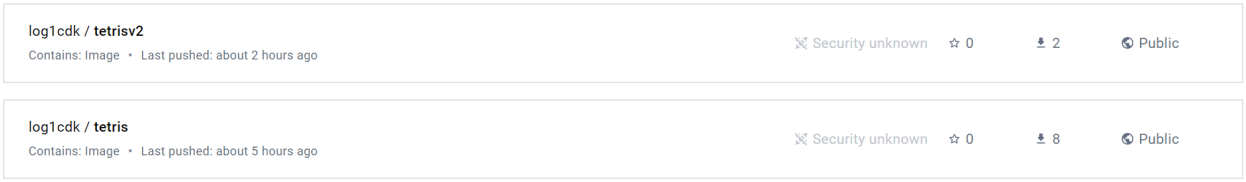
   kubectl apply -n argocd -f https://raw.githubusercontent.com/argoproj/argo-cd/v2.4.7/manifests/install.yaml

3. **Install Argo Rollouts**: [Link Documentation]
   https://argo-rollouts.readthedocs.io/en/stable/installation/
   Commands :
   kubectl create namespace argo-rollouts
   kubectl apply -n argo-rollouts -f
   https://github.com/argoproj/argo-rollouts/releases/latest/download/install.yaml

   Kubectl Plugin Installation :
   brew install argoproj/tap/kubectl-argo-rollouts

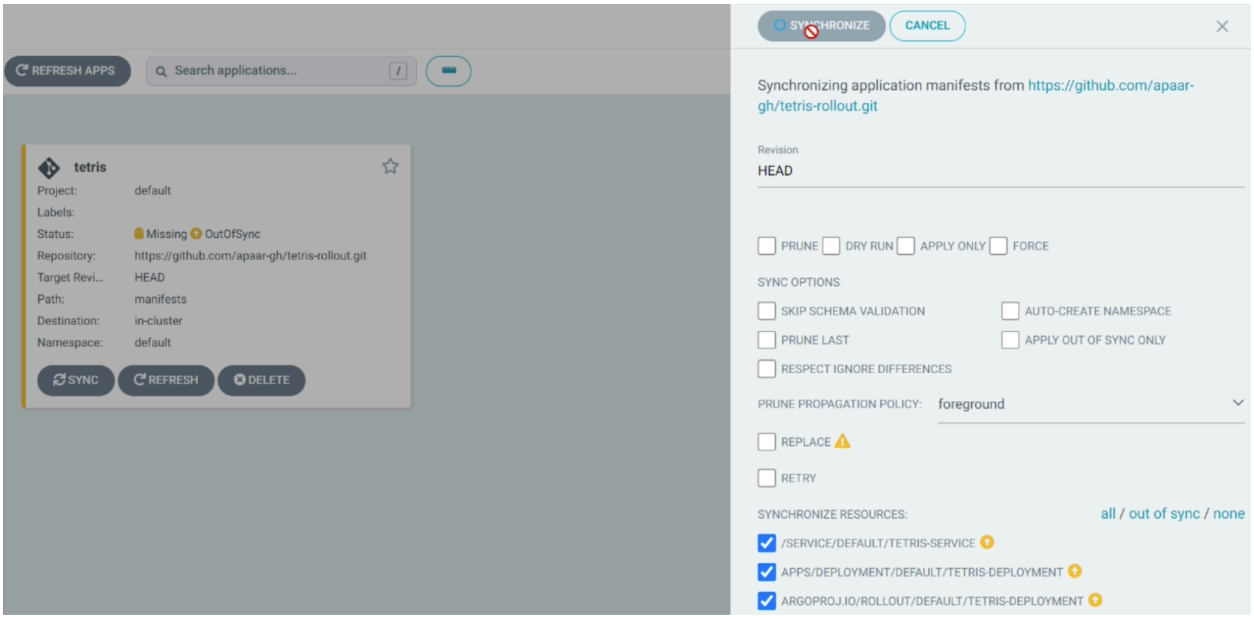
Task 2: Creating the GitOps Pipeline

1. **Dockerize the Application**: [Docker Hub Link]
   https://hub.docker.com/repositories/log1cdk
   Docker Images v1(initial version) and v2 after update.

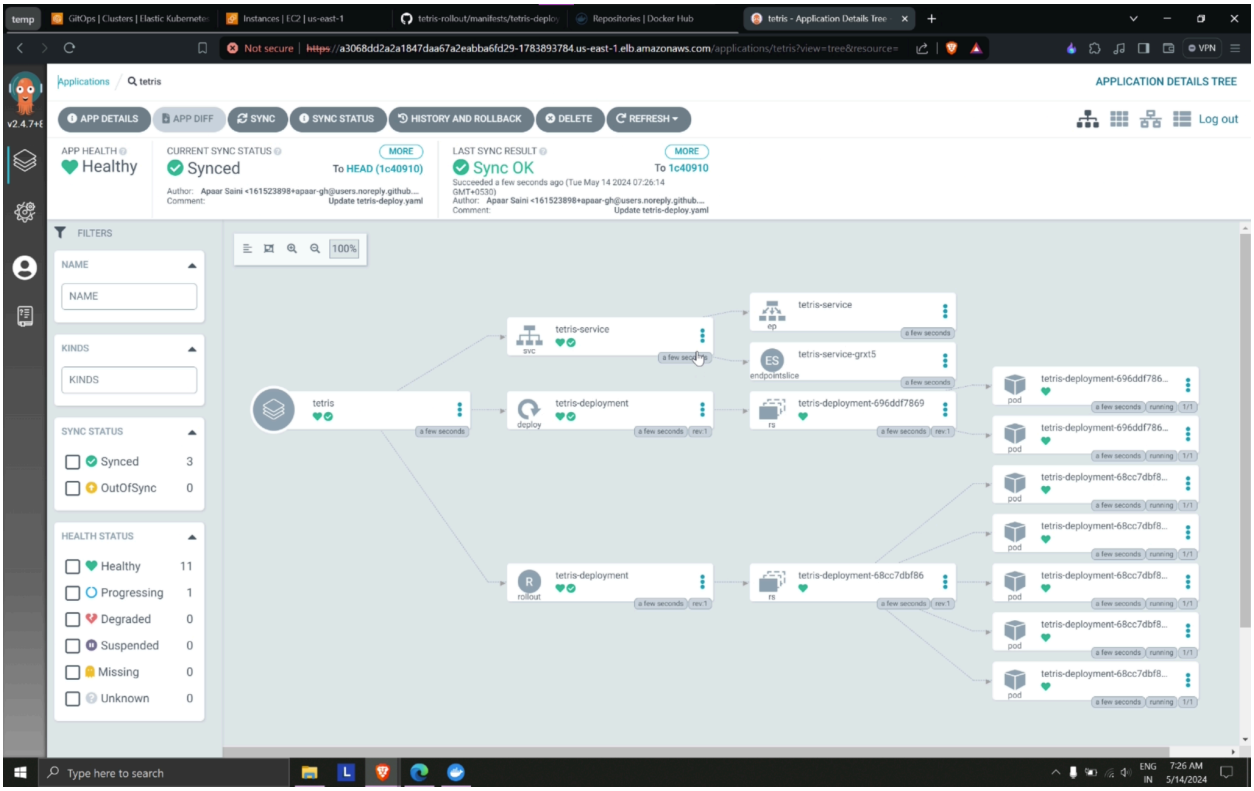


2. **Deploy the Application Using Argo CD**:

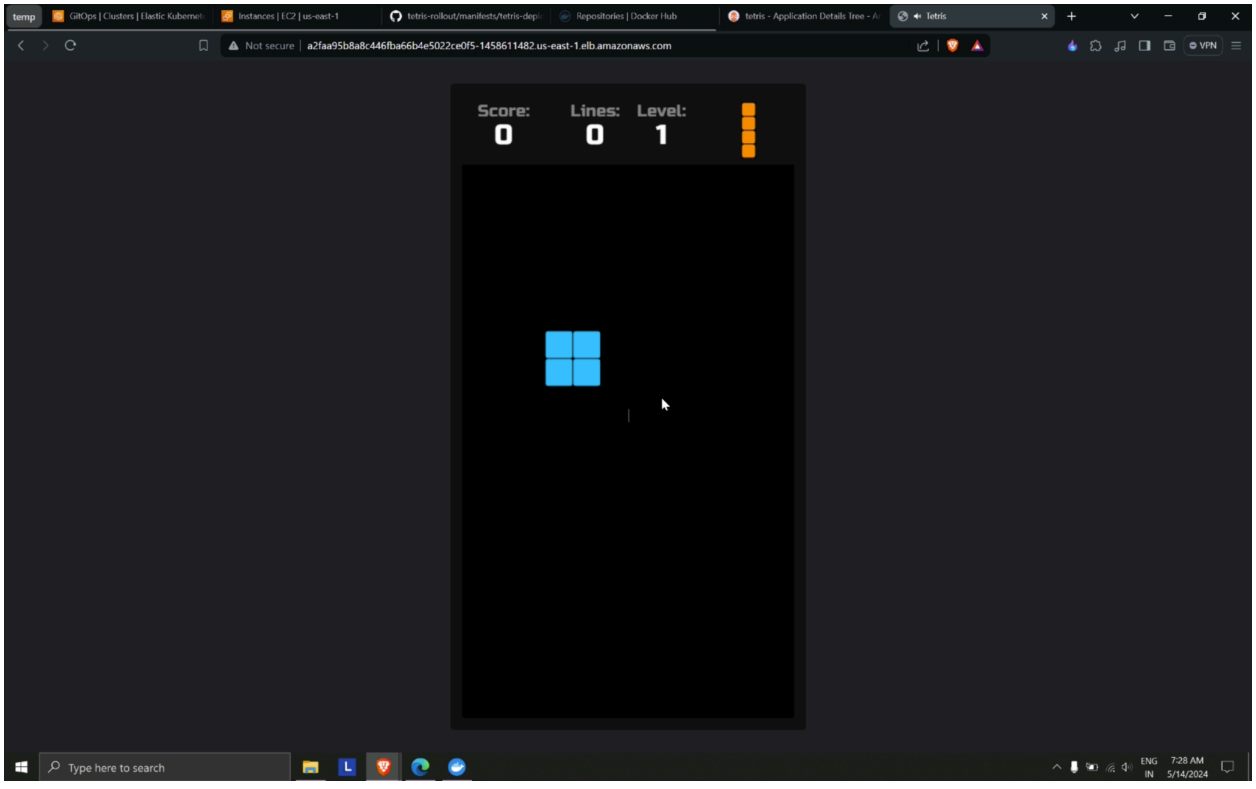
   Deploying and Synchronizing Application

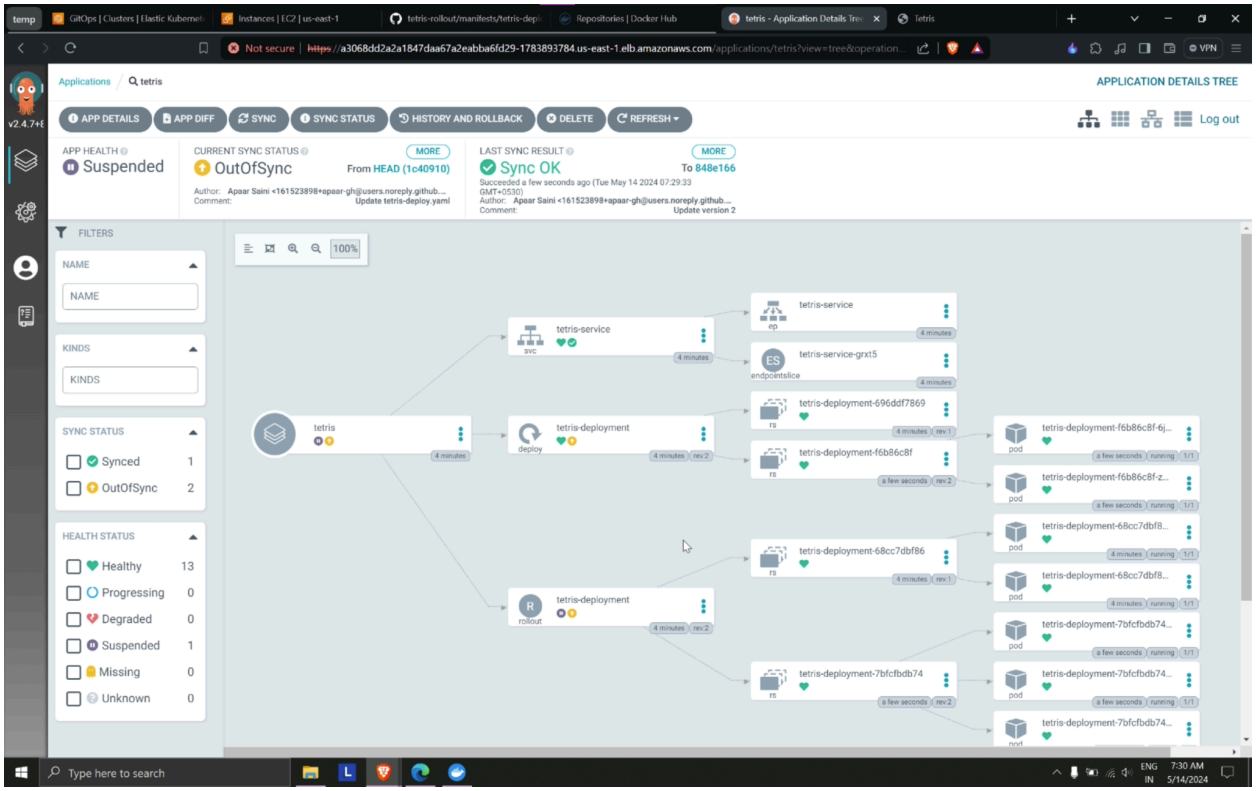


Task 3: Implementing a Canary Release with Argo Rollouts

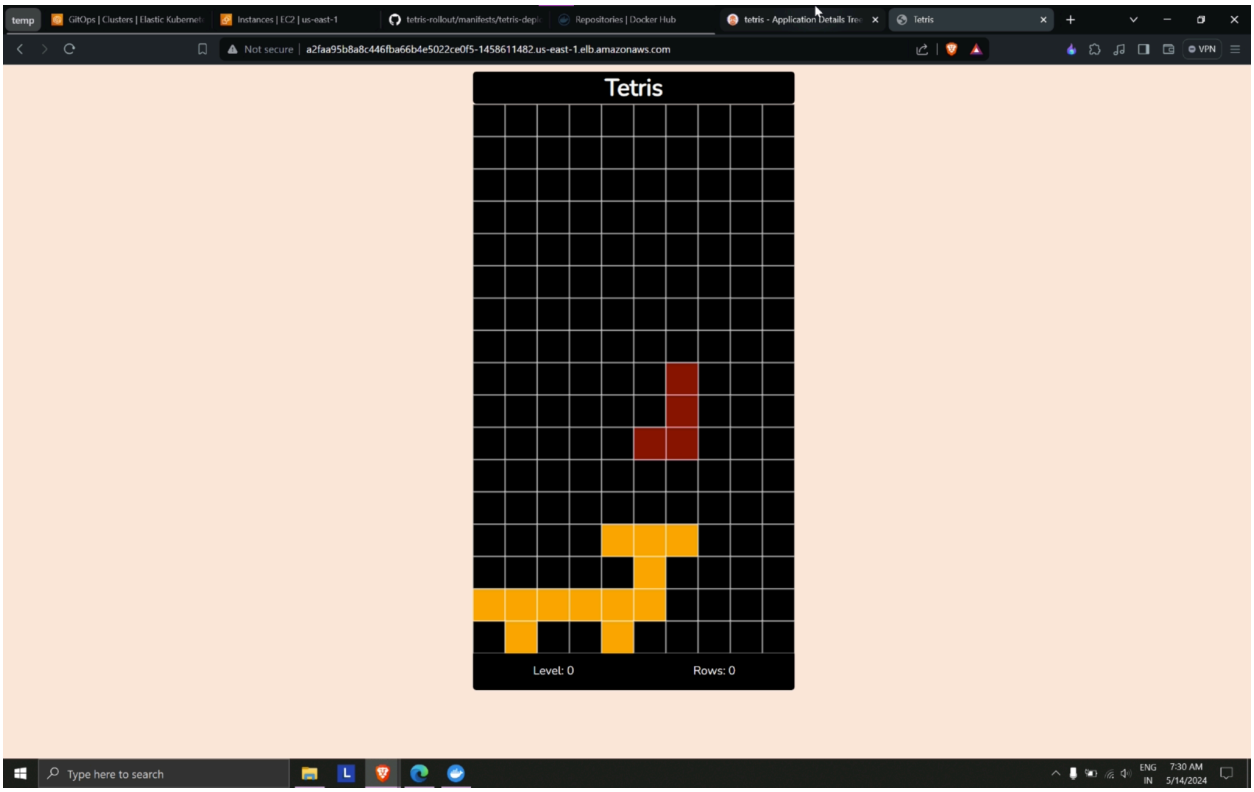


Canary Rollout-1 | Tetris Version-1



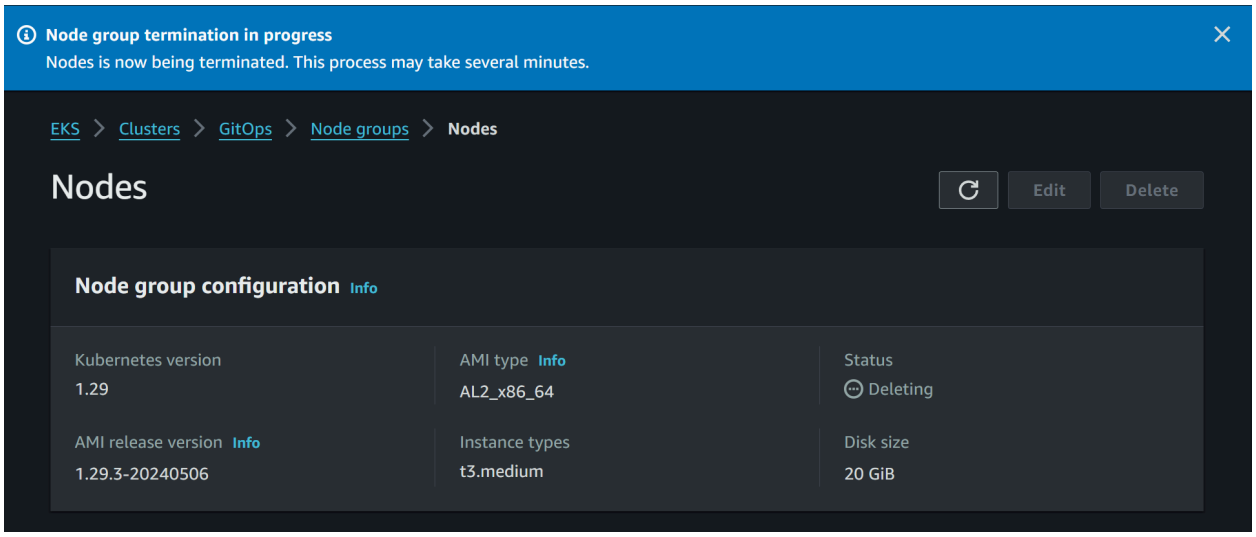


Canary Rollout-2 | Tetris Version-2

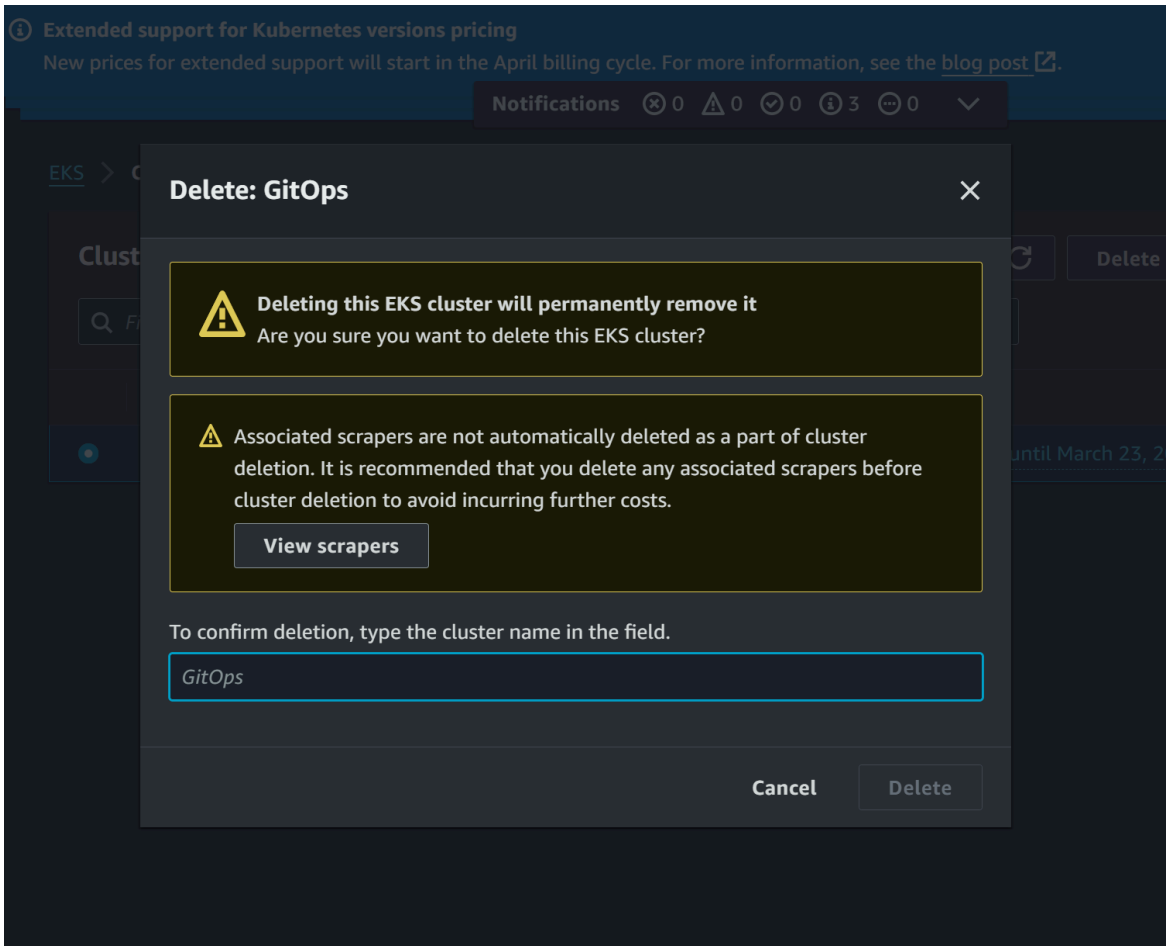


Task 4:Cleanup

Clean Up: 1-Deleting Nodes



2-Deleting Kubernetes Cluster



3-Deleting Load Balancer