Continuous Integration and Delivery Pipeline for a Web Application

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Project Description

The goal of this project is to design and implement a continuous integration and delivery pipeline for a web application. The pipeline should automatically build, test, and deploy the web application to production whenever changes are made to the source code.

Project Requirements

To achieve the goal of our project, the following requirements should be met:

- ▷ **Version Control System:** Set up a version control system using Git to manage the source code of the web application.
- ▷ **Automated Build Process:** Create an automated build process using a build automation tool such as Jenkins to automate the building process of the web application.
- ▷ **Deployment Automation:** Use Elastic Kubernetes Service (EKS) to automate the deployment process of the web application and describe the implementation details.We will set up an EKS cluster on AWS and deploy our application to the cluster using Kubernetes manifests.

Project Deliverables

The project should be presented as a report that includes the following:

- ▷ **Design of the Pipeline:** Provide a detailed overview of the pipeline architecture and workflow.
- ▷ **Implementation Details:** Discuss the implementation of each requirement and how they work together in the pipeline.
- ▷ **Challenges and Recommendations:** Discuss any challenges faced during the project and provide recommendations for future work.

Bonus

In case we reached our target, we will implement the following:

- ▷ **Configuring monitoring and alerting :** Configure monitoring and alerting using tools such as Grafana or prometheus notify the team of any issues that may occur during the deployment process

This project will provide an opportunity for us to learn and apply DevOps principles and practices, including automation, continuous integration, and continuous delivery. Through the use of Git for version control, Jenkins for build automation, and Elastic Kubernetes Service (EKS) for deployment automation, we have created a robust pipeline that automates the entire software development process from code changes to production deployment. By leveraging Kubernetes to manage containerized workloads, we can ensure scalability and reliability for our application in a cloud-native environment.