Introduction

BackGround

This project is a course review website. In today's universities, students have many choices for their courses.But they cannot judge whether they are suitable to enroll in this course just by ECP. Therefore, this website is a platform where you can share your feelings about a course. Those who have enrolled for a course can share their feelings on this platform. So that freshman can know the details of this course.

Motivation

The motivation of this website is to allow each student to know in advance the course they are about to enroll in, and to know the specific structure and information of the course. This website helps them understand and become familiar with the courses which they will enroll in.

Features

The features currently implemented by this project are:
1. user log in
2. user sign up
3. uaer add course
4. View descriptions of popular courses

Limitation of traditional computing solutions

The limitation of traditional computing solutions is that the scalability and reliability of the service cannot be guaranteed. When a service node crashes, the system cannot control the new node start automatically. In this process, traditional computing solutions need operators to renew a node and config the service manually. And in the traditional computing solutions, the reliability can not be guaranteed. When one node crashes. maybe the whole application will crash.
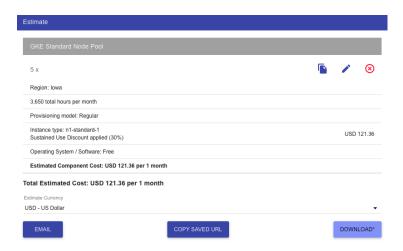
Benefit by Cloud Computing

The benefit of cloud computing is scalability and reliability. When one node crashes, the k8s can generate a new node and assign this node to service. All services in cloud computing are running in the container, all services are isolated. This can guarantee all containers can run correctly without the influence from other services.

Technical Solutins

Cloud Technologies

This project adopts the microservice architecture, mysql database, phpmyadmin and php and nginx are all deployed in the k8s cluster in the form of containers. At the same time, the mysql database is configured with pv and pvc in the k8s cluster to ensure data persistence. The customized container is also stored in my docker hub depository. The k8s pod directly pulls the container from the docker depository. Also the k8s cluster has the load balancer service which is used to communicate between different pods.

Cost estimation

Estimate	
GKE Standard Node Pool	
5 x	
Region: Iowa	
3,650 total hours per month	
Provisioning model: Regular	
Instance type: n1-standard-1 Sustained Use Discount applied (30%)	USD 121.36
Operating System / Software: Free	
Estimated Component Cost: USD 121.36 per 1 month	

Total Estimated Cost: USD 121.36 per 1 month

Estimate Currency
USD - US Dollar

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If there are 5 work nodes in my cluster, the monthly cost of the whole cluster is USD 121.36.

Architecture Design