Technical Notes: Docker, GCP, CI/CD, Image Hosting, and Webhook

🐳 Docker Basics

Docker Image

A Docker Image is a read-only template containing everything needed to run an application:

- Operating systems (like Debian, Alpine)
- Project code
- Environment variables
- Dependencies
- Configuration files

Features:

- Read-only nature
- Portability (can run on any platform)

Analogy: Like a recipe (An Image is like a cooking recipe - you can't eat it, but you can follow it to make something)

Docker Container

A Container is a running instance of an Image, providing an isolated runtime environment:

- Read/write capability

- Lightweight environment
- Guaranteed isolation

Analogy: Like a prepared dish (Image is the recipe, Container is the served meal)

☁️ Google Cloud Platform (GCP)

Essence: Migrating local development environment to cloud servers

Core Component	Function	Description
Compute Engine	Virtual Machine Service	VM service to host apps
Cloud APIs	API Service Calls	Connect cloud services
IAM	Identity and Access Management	Control who can do what
Cloud Storage	Static File Storage	Store files like an object store
GKE	Container Orchestration	Powerful container orchestration

🔁 CI/CD Workflow

CI (Continuous Integration): Automation of code submission, building, and testing

CD (Continuous Delivery/Deployment): Automated deployment process

Analogy: Like a factory assembly line, automating the entire process from code to production

🖼️ Image Hosting Service

Function: Converting images into accessible URLs

Popular Platforms:

- GitHub (High convenience)
- Alibaba Cloud OSS (Professional storage)

Image Format Notes:

- Base64 images: Embedded in HTML/Markdown, no file system dependency, but larger size
- Recommended to convert to .png, .jpg, .webp and reference via links

🔔 Webhook Mechanism

A Webhook is a mechanism for automatic response to specific events on the web

Examples:

- When someone pushes code to GitHub, it automatically triggers CI/CD builds
- When users place orders, the system automatically sends notifications or payment requests

Memory Aid: Think of Webhook as a "trigger mechanism" - when you perform an action (like submitting code), Webhook automatically "pulls the lever" to trigger the next step (like building, deploying, etc.)