Backend API development using serverless

Overview

By combining **Cloud Functions** and other services, you can easily develop a backend API without servers. **Cloud Functions** quickly creates and executes functional applications in the cloud. You can increase development productivity by writing and deploying only the codes needed to solve problems without taking into account the entire application or infrastructure.

Development languages such as Python, Java, JavaScript, and Shell are available and resources required to execute codes are dynamically assigned and flexibly scaled.

Architecture Diagram

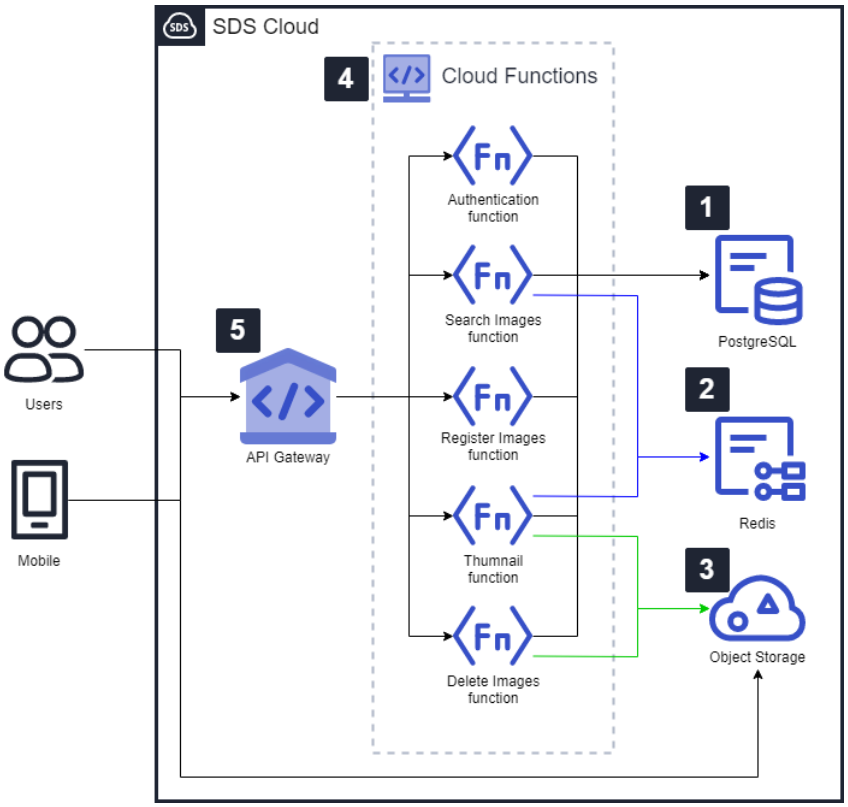

Figure 1. Backend API development configuration using serverless

1. Apply for **DB Service** (PostgreSQL) and configure data for application.
2. Request and configure **DB Service** (Redis), an in-memory DB, to enable quick search for application data.
3. Request for **Object Storage** service for photos and other static files.
4. Develop only with codes without server configuration for application development. The services of **Cloud Functions** allow the data requested by the user to be processed with **DB Service** (PostgreSQL, Redis) and **Object Storage**. An application code developed with an IDE tool provided by **Cloud Functions** and registered as a Cloud Function is called for every user request to run the backend application.
5. To expose the backend-developed applications to a user's web UI or mobile, apply and configure **API Gateway** service and register the API developed in **Cloud Functions** to **API Gateway** to configure the application service.

Use Cases

A. Mobile backend

You can use **Cloud Functions** to develop backend APIs for mobile applications. Server provision or management is unnecessary as codes can run immediately after registration, enabling quick API development. The infrastructure for deploying and executing codes is automatically managed to ensure an environment in which developers can focus on building the services. You can easily expand the service by linking with other services, such as **API Gateway** and **DB Service**.

B. Event notification function development

You can use the Cloud Functions service to develop various notifications (build success/failure, server restart, etc.) necessary for system development/operation. **Cloud Functions** help easy development of event processing features (trigger, process, and send) required for notifications. Resources are dynamically assigned only when an event notification is needed, and expand according to the size of the event, enabling efficient use of resources.

Pre-requisites

None

Limitations

There is a limit on the maximum CPU/memory to run a unit function, and there is a limit on the maximum running time for a single call.

Considerations

Cloud Functions support a programming model based on triggers and bindings that enable responses to events and connection to other services. The applications developed in this programming model should have a structure that does not store state values, whose functions are developed in an appropriate size in consideration of the initial driving time. It is not recommended for latency-sensitive services.

Related Products

- API Gateway
- Object Storage
- DB Service (Redis)
- DB Service (PostgreSQL)
- Cloud Functions (To be available in 2022)