Key Value System over HTTP

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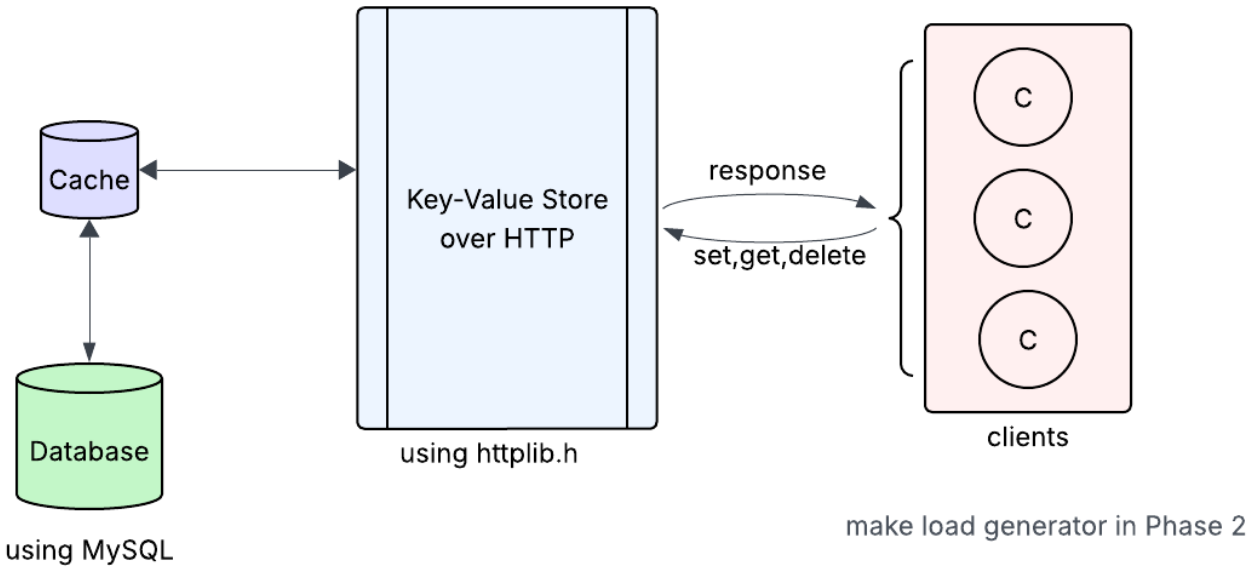
Phase 1 Submission

Project Overview

This project implements a minimal HTTP-based Key–Value (KV) system in **C++** using library **cpp httplib** for the web layer. Now we just focuses on a working server exposing simple endpoints to set, get, and delete keys. For the final system architecture, the HTTP server communicates with an in memory cache (for fast access) backed by a persistent **MySQL** database.

System Architecture

High level architecture for the final design is shown below. The client sends HTTP requests to the C++ server, which interacts with an in memory KV cache and persists data to a MySQL database.



HTTP Endpoints (Phase 1)

Method	Path	Query Parameter	Description
GET	/set	key, value	Insert or update the value for a key.
GET	/get	key	Fetch the value for the given key.
GET	/delete	key	Delete the given key if present.

Implementation Notes

- **Language & HTTP:** C++ with cpp httplib
- **Cache and Main DB :** Database used as the in memory KV store with MySQL
- **Persistence (Phase 1 working):** persistence database to retain values across restarts.
- **Final Backend:** MySQL database for durable storage and future scaling.

Github Repository : https:/ /github.com/harshay922/DECS_PROJECT

Future Plans -

- Replace file persistence with direct MySQL storage using MySQL Connector/C++.
- Implement basic benchmarking multi client load and simple metrics endpoints.(Load Generator)