Summary

This project adds replica to the previous one. Replica improves read performance significantly with the cost of extra servers and slightly reduced write performance. It is great for a lot of systems to serve increasing user requests, most of which are read requests. One big challenge of using replica is to maintain data consistency. This project utilizes 2pc techniques to ensure write operation be performed among all the replicas.

Technical impression

The key challenge of this project is certainly the 2pc implementation. My idea is to modify the PUT and DELETE functions of the server so that the server would update other replica servers as well as its own data storage. In order to prevent a infinite function invocation loop, I add a flag in the two functions which tells them to update other replicas or not.

The project requirement simplifies the 2pc by assuming replica servers never fail. So I don't need to worry about how to restore the data when a server fails. My immature idea is to first update the replica lists among all replica servers, and then sends all data to the recovered server.