

Social media Friends API Design

Background

You are in a company that building a fast grown social media app like Instagram or Facebook. Download them and go through the major function if you haven't use them before.

Since the business grows very fast recently, you have foreseen the requirements and propose to restructure the current back-end architecture to leverage user experience and to facilitate business intelligence.

Tasks

1. Use Fake data to design a SQL database structure to model a table to storage user information. (Please include your DDL in your project folder)
2. Build a demo API to simulate user follow processes (follow user, unfollow user, get follower list, and get following user list). You can use any SQL database for data storage and any programming language for business logic.
3. One of the APIs in next release is that a user wants to search his/her followings by their username with pagination (20 returns/request). Please modify your database designed in Task 2 and write a complete RESTful API to achieve this.
4. (Optional) Improve the backend system you designed in Task 3 to improve concurrent read-write performance. If you don't have time to implement it, describe the architecture with texts and charts. (Hint: You may use Redis, Memcached or Message Queue etc.)
5. (Optional) Containerize your solution and build a docker image for each component of your system.

Tips: Please make necessary and reasonable assumptions to complete the tasks