CSCE 662: MP1 Design Document

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1 Problem Statement

To build a server, client in C++, utilizing gRPC and Google Protocol Buffers to establish connectivity. The application intends to provide a functionality similar to posting tweets. Users (clients) can login, follow, unfollow and make posts.

2 High Level Diagram

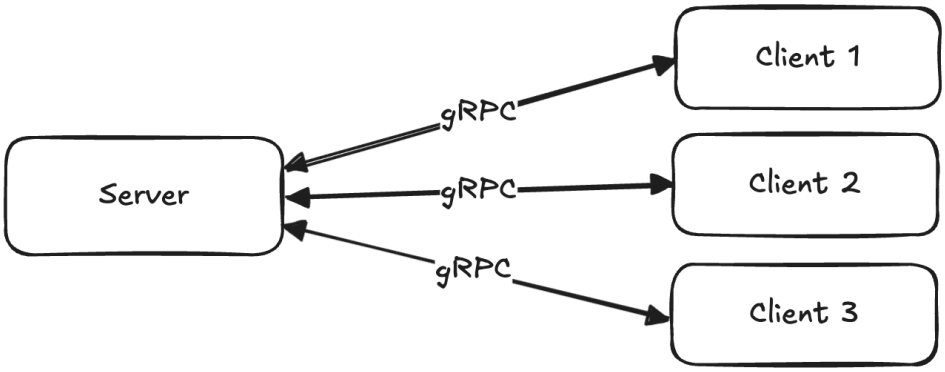

Figure 1: High Level Diagram

3 Functionality Description

3.1 Login

a) User provides a unique username

b) Server checks client_db if any client present with provided username, if not found, success is sent and Client is stored in the database, else `grpc::Status::ALREADY_EXISTS` is sent to Client

c) If username is unique, the Client is stored in client_db at Server

d) If username is unique, the Client displays Welcome Page with commands

e) Otherwise it returns connection failed: -1

3.2 Follow

a) Current User inputs command to follow user

b) Server checks the possible incorrect scenarios, that are listed in Sequence Diagram 4.2, accordingly returns error code

c) In a positive scenario, the user is added to Current User's following_list

d) Current User is added to the user's follower_list

3.3 Unfollow

a) Current User inputs command to unfollow user

b) Server checks the possible incorrect scenarios, that are listed in Sequence Diagram 4.3, accordingly returns error code

c) In a positive scenario, the user is removed from Current User's following_list

d) Current User is removed from the user's follower_list

e) User's Posts are removed from the timeline file of the Current User

3.4 Timeline

a) User provides a command to enter timeline mode

b) A bi-directional stream is setup between Client and Server

c) Server checks if it is the first time the Client is connecting to the stream

d) If first time, the user's timeline file is opened, and latest 20 posts are sent from Server to Client, that are dispalyed

e) For subsequent inputs, it is considered as a Post, the message is sent to active client's using their stream by server

f) The Post is added to each follower's timeline file

g) The Post is also added to the user's posts file

4 Sequence Diagrams

4.1 Login

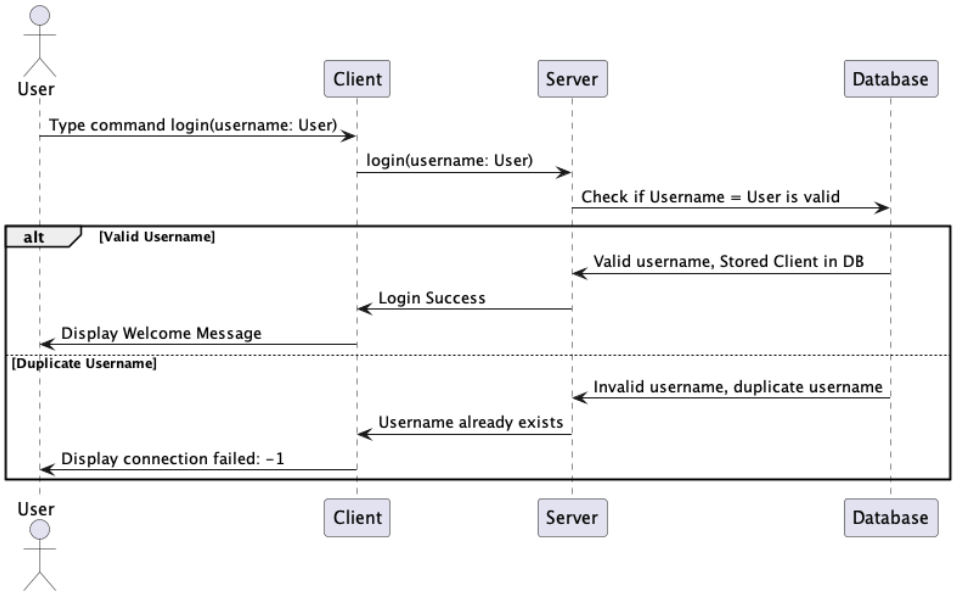

Figure 2: Login Sequence Diagram

4.2 Follow

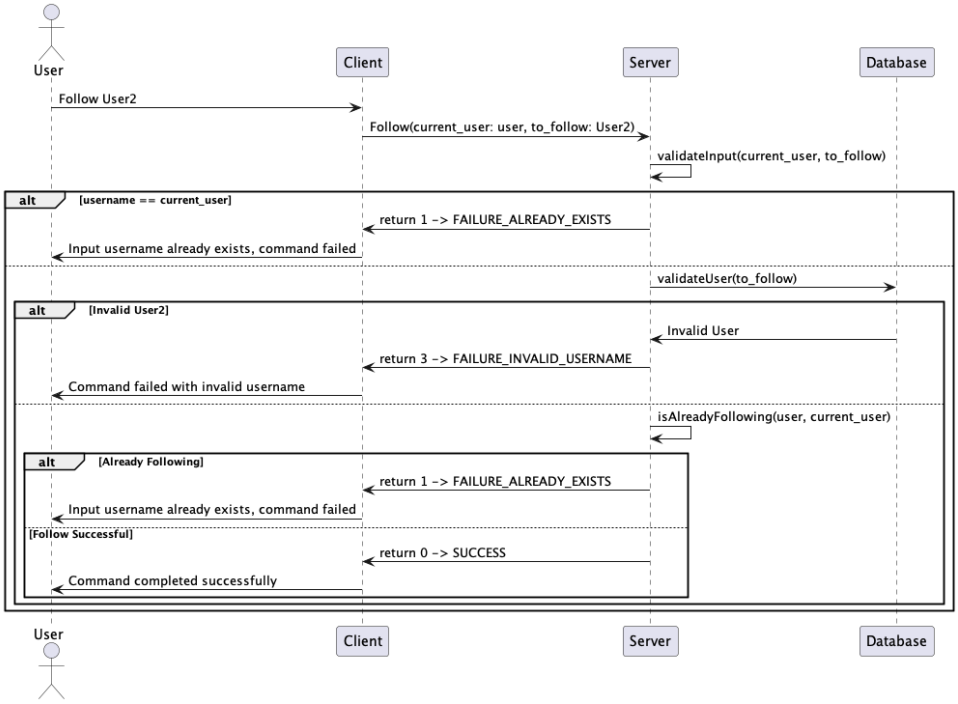

Figure 3: Follow Sequence Diagram

4.3 Unfollow

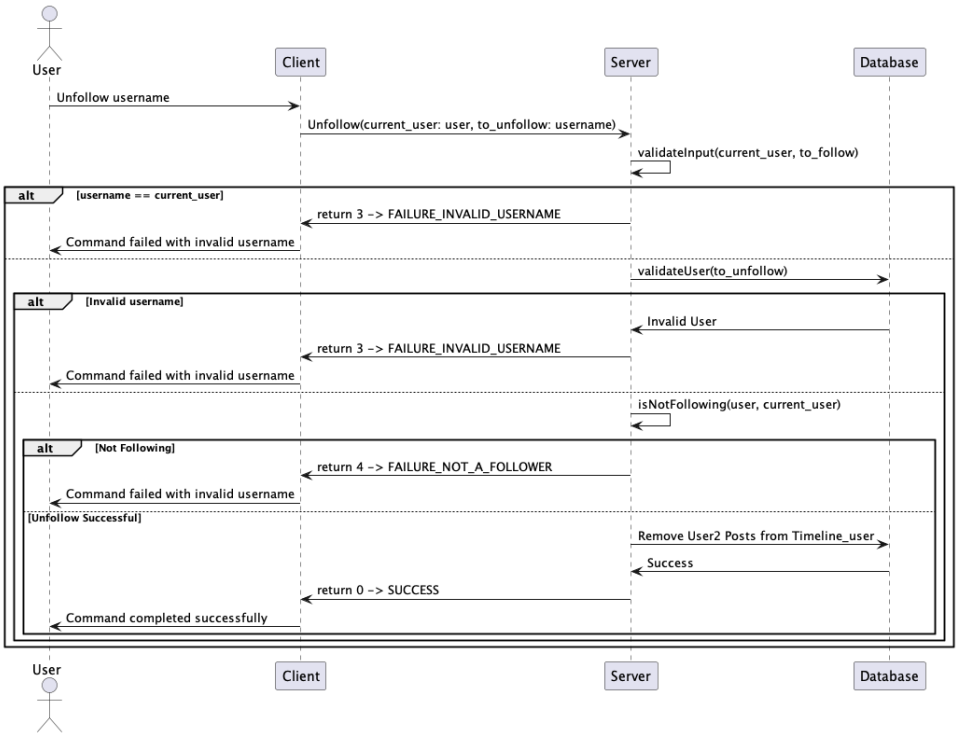

Figure 4: Unfollow Sequence Diagram

4.4 Timeline

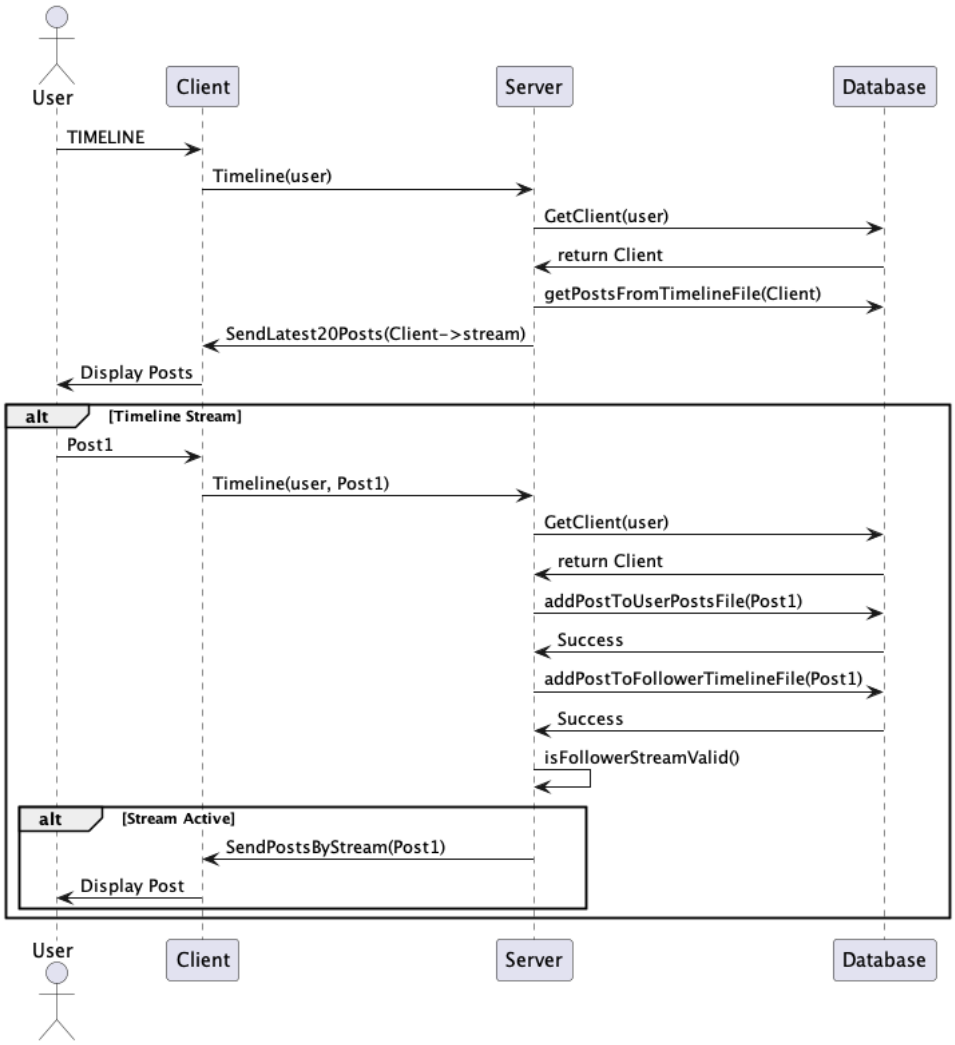

Figure 5: Timeline Sequence Diagram

5 Test Cases

5.1 Test Case 0

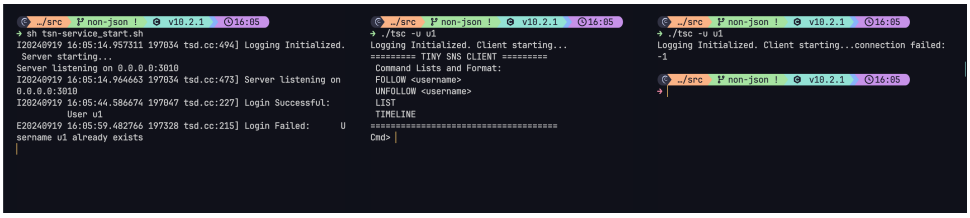

Figure 6: Test Case 0

5.2 Test Case 1

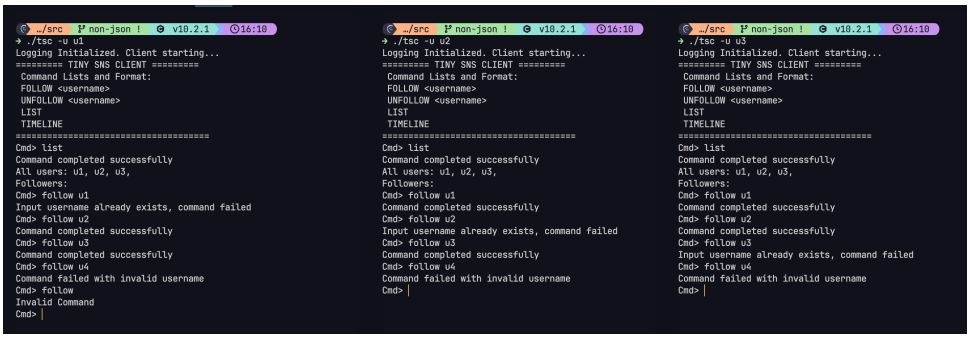

Figure 7: Test Case 1

5.3 Test Case 2

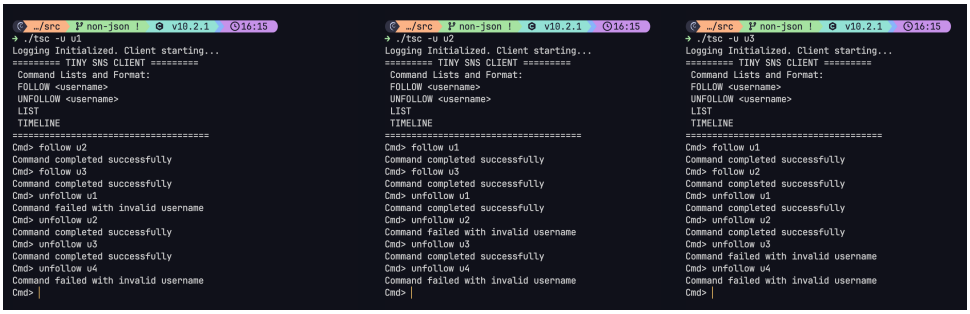

Figure 8: Test Case 2

5.4 Test Case 3

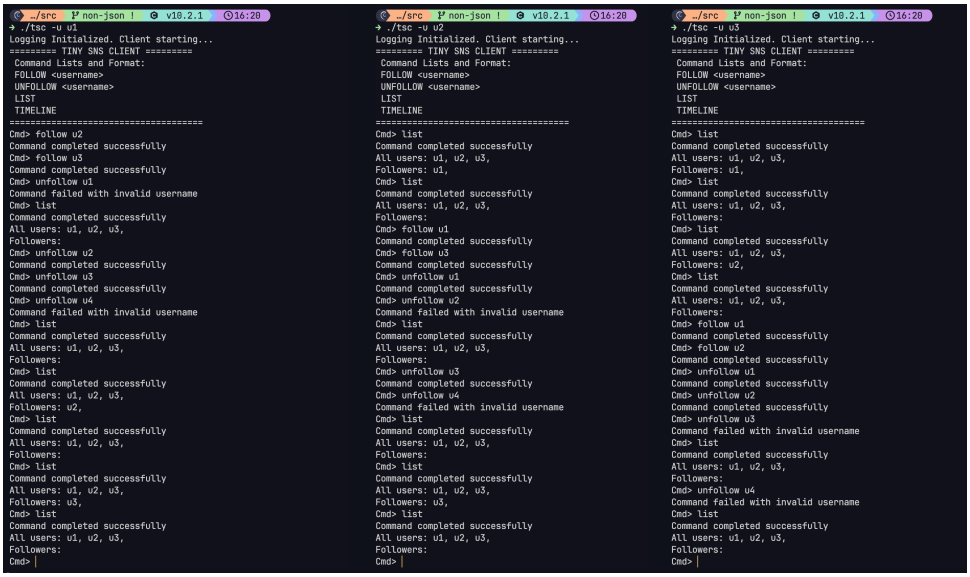

Figure 9: Test Case 3

5.5 Test Case 4

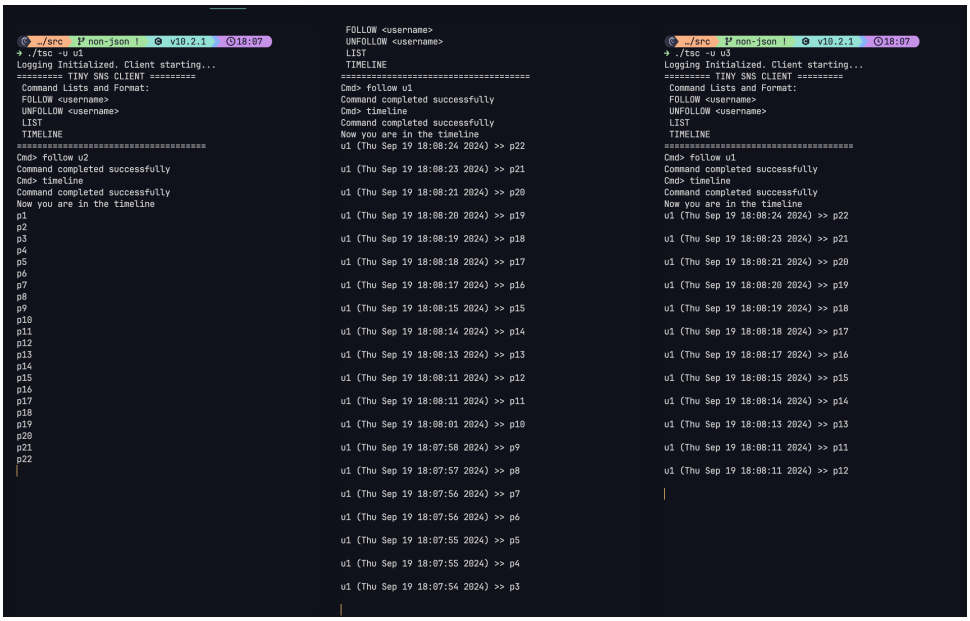

Figure 10: Test Case 4

5.6 Test Case 5

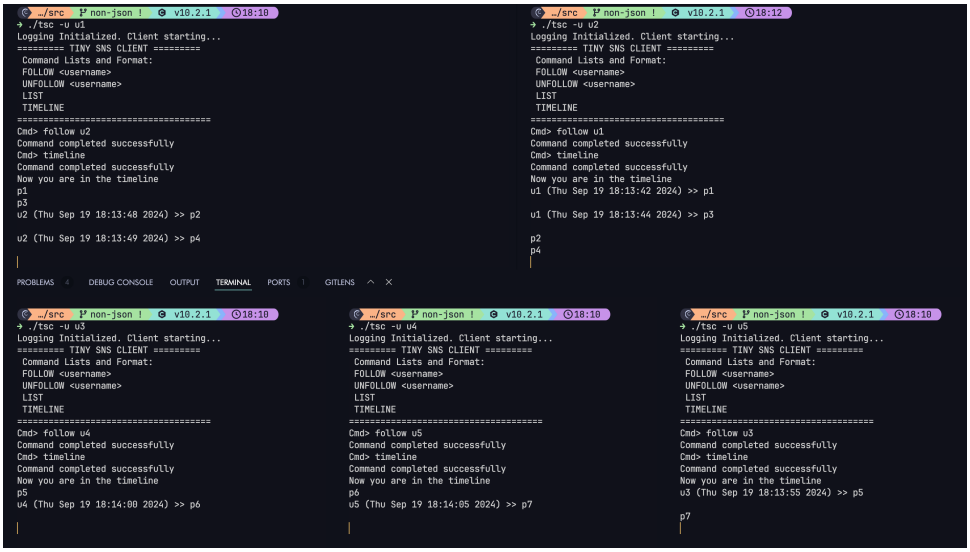

Figure 11: Test Case 5-a

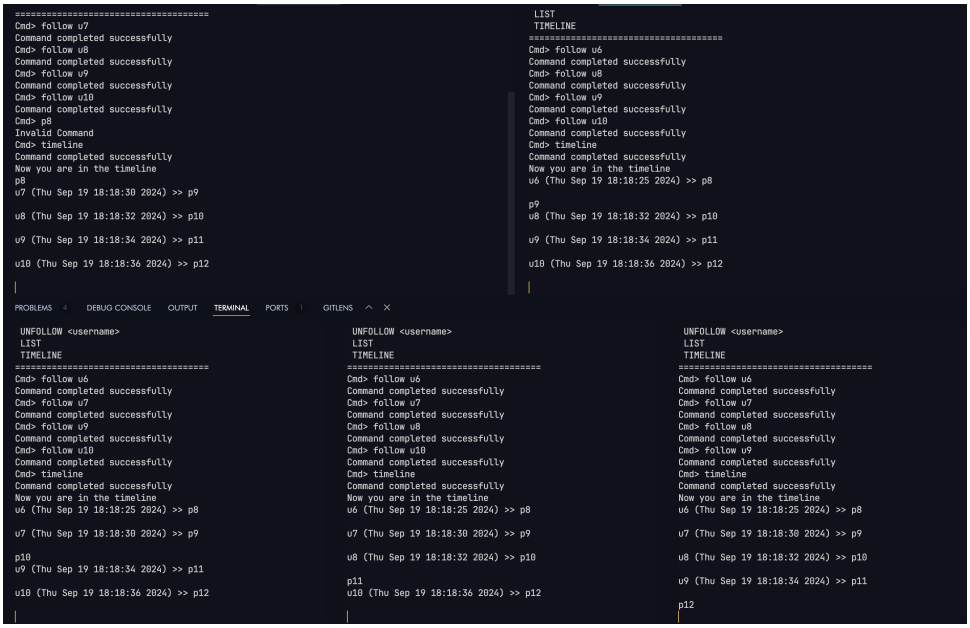

Figure 12: Test Case 5-b