

## Overview

The system combines `tsc.cc` and `tsd.cc` to form a user management and real-time communication system. It provides functionalities for user authentication, managing follow/unfollow interactions, listing users, and maintaining a live timeline of posts shared among users. gRPC is used for server-client communication, enabling real-time interactions.

## Files with Changes

1. `tsd.cc`
2. `tsc.cc`
3. `client.h` (only the signature of the `display()` function is changed)

## Status

All 5 test cases are passed.

## GitHub Repository

(<https://github.com/sirija-tamu/Distributed>)

## Server Initialization

- All `_timeline.txt` files are deleted.
- The server is started.

## Client Initialization

- User login is invoked, and the stub calls the `Login()` function.

## Functionalities

### Login Process

- If the user is new, they are added to the database, and a timeline file is created (format: `username_timeline.txt`).
- The `Login()` function handles authentication and profile creation.

### Follow Functionality

- Users can follow others after validating the existence of both the current and target users.
- The target user is added to the current user's "following" list, and the current user is added to the target user's "followers" list.

**Unfollow Functionality**

- Users can unfollow others, with verification that the current user is indeed following the target user.
- The target user is removed from the current user's "following" list and vice versa.

**Listing Users**

- The server fetches all registered users and returns the following/followers list.

**Timeline Feature**

- The client sends a dummy message to initiate the timeline streamer.
- The server fetches the top 20 followers and uses the `hasStreamed` variable to track the first-time stream.
- Once `hasStreamed` is set to `false`, new posts are pushed to followers' timelines.