

HandinThree Report

The following report describes how a grpc server could work for handling a server-client relation and how it is implemented into our program for this assignment. On the following link you can inspect the code:

<https://github.com/Rpou/Distributed-system/tree/main/ChittyChat>

Server-client relation

The program is using server-side streaming since it works in the following way. The client sends a single message to be posted and then receives a stream of data in the form of a list of all previous posts. Therefore server side streaming seems optimal for this project.

System architecture

The program utilizes a server-client architecture, because the client sends a single post to the server, where the server then responds with all the other information on the chat-service. Another reason the architecture fits the server-client, is because there is a single server that receives requests from multiple clients.

Program methods

The program only uses messages as types. These message types are used to create the following gRPC methods.

GetPosts

The GetPosts takes a ClientLT (The clients lamport time), and returns a list of all posts.

PublishPost

The PublishPost takes a Post (a string with a chat and a lamport time) and it returns Posted (a boolean).

Connect

The Connect takes a ClientInfo (the client Nr and the clients local lamport time) and returns nothing

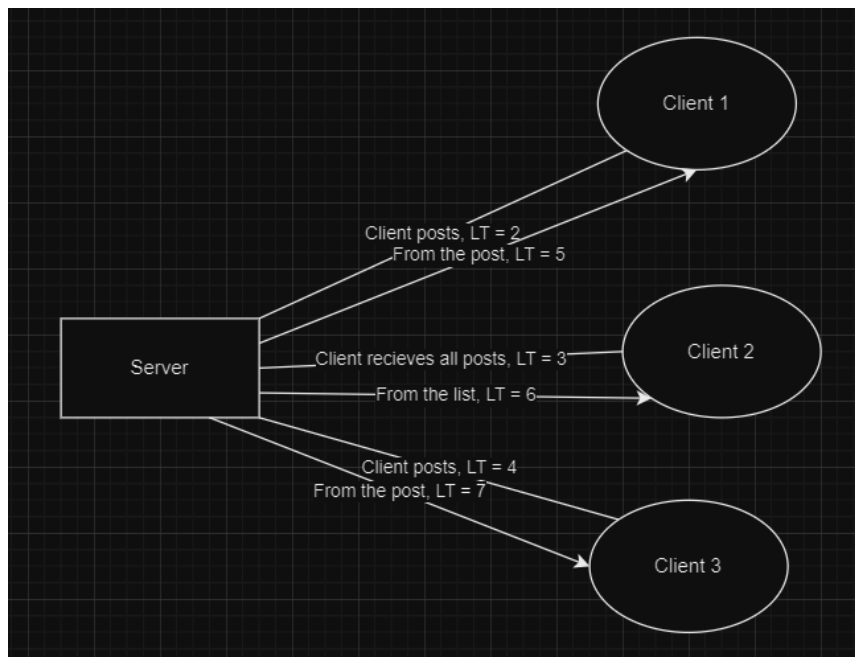
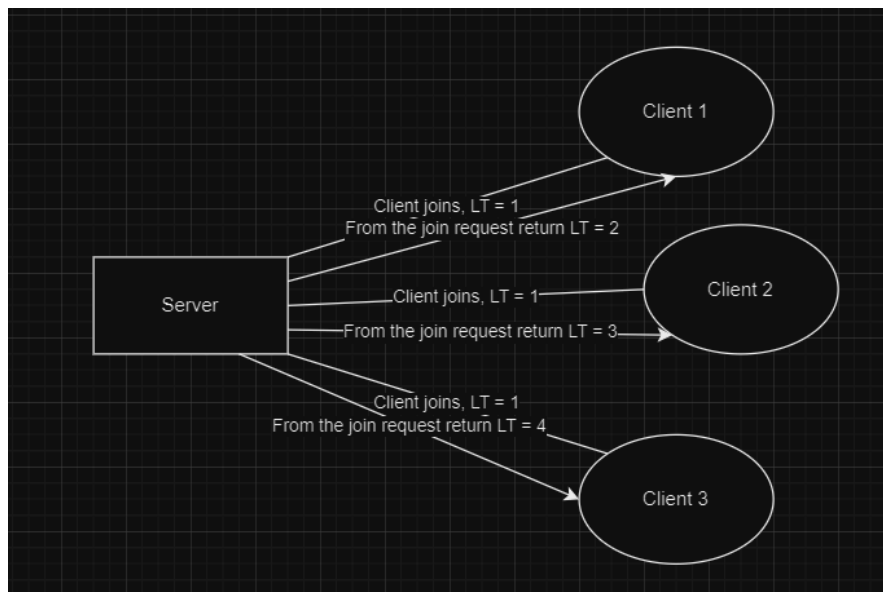
Disconnect

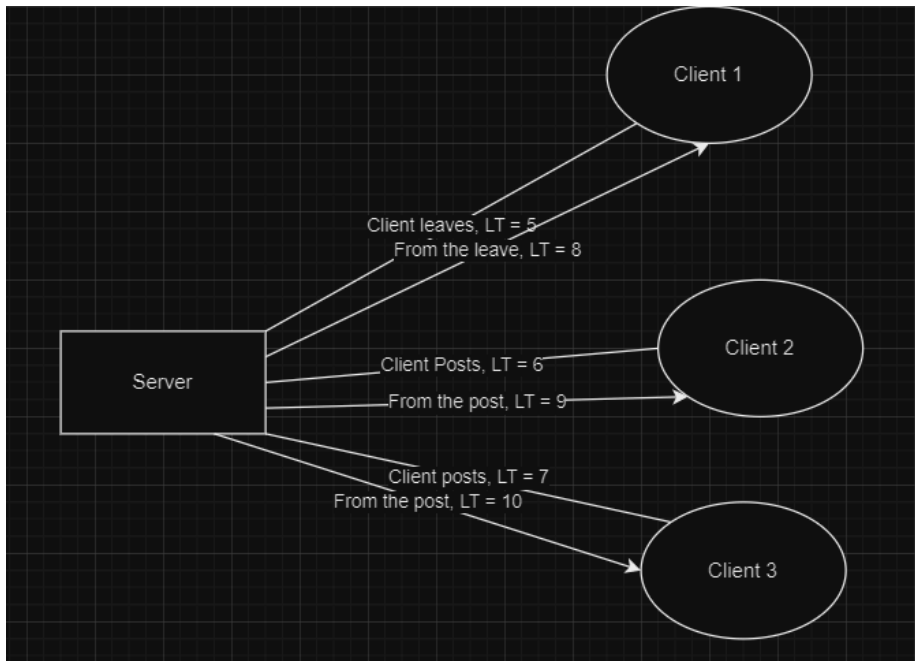
The last method is Disconnect that takes ClientInfo and returns nothing

Lamport time implementation

All communication between server and client is done with a lamport time. When a post is send to the server it also has a lamport time included, the server will then calculate the appropriate lamport time when comparing its own and the clients current.

In this program's case, since we have multiple clients and they can only communicate to the server, then the server will always have the most recent lamport time, which the clients will then update their own lamport time to also. An example of this can be seen in the following pictures.





Appendix

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Messages recieved by client: 2
- We have begun
- The following client connected: 1 Lamport time: (2, 1)
- The following client connected: 3 Lamport time: (3, 3)
- The following client connected: 2 Lamport time: (4, 2)
- I miss spontaneous road trips! 🚗 , sent by clientNr: 3, Lamport time: (5, 3)
- I just love autumn. The colors are so beautiful! 🍁🍁 , sent by clientNr: 2, Lamport time: (6, 2)
- Working from home in pajamas is the best! 🏠 #RemoteLife, sent by clientNr: 1, Lamport time: (7, 1)
- Anyone else obsessed with this new song? 🎵 #NowPlaying, sent by clientNr: 1, Lamport time: (11, 1)
- I miss spontaneous road trips! 🚗 , sent by clientNr: 2, Lamport time: (12, 2)
- Coffee first, adulting second. ☕🍷, sent by clientNr: 3, Lamport time: (15, 3)
- Just finished a great book! Highly recommend it. 📖 , sent by clientNr: 2, Lamport time: (17, 2)
- Can't believe it's almost the end of the year! 🗓 , sent by clientNr: 3, Lamport time: (19, 3)
- Just finished a great book! Highly recommend it. 📖 , sent by clientNr: 1, Lamport time: (21, 1)
- Can't wait to travel again! 🌍 #Wanderlust, sent by clientNr: 2, Lamport time: (23, 2)
- Loving this new podcast. So insightful! 🎧 #PodcastRecommendation, sent by clientNr: 3, Lamport time: (25, 3)
- The following client disconnected: 3 Lamport time: (27, 3)
- The sunset today was absolutely stunning! 🌅 , sent by clientNr: 1, Lamport time: (28, 1)
- Let's make kindness go viral. Be good to each other! 🌟 , sent by clientNr: 2, Lamport time: (30, 2)
- Can't believe it's almost the end of the year! 🗓 , sent by clientNr: 1, Lamport time: (32, 1)
- The following client connected: 3 Lamport time: (34, 3)
- Grabbing brunch with friends this weekend. Can't wait! 🥞🍷 , sent by clientNr: 2, Lamport time: (35, 2)

Messages recieved by client: 1
- We have begun
- The following client connected: 1 Lamport time: (2, 1)
- The following client connected: 3 Lamport time: (3, 3)
- The following client connected: 2 Lamport time: (4, 2)
- I miss spontaneous road trips! 🚗 , sent by clientNr: 3, Lamport time: (5, 3)
- I just love autumn. The colors are so beautiful! 🍁🍁 , sent by clientNr: 2, Lamport time: (6, 2)
- Working from home in pajamas is the best! 🏠 #RemoteLife, sent by clientNr: 1, Lamport time: (7, 1)
- Anyone else obsessed with this new song? 🎵 #NowPlaying, sent by clientNr: 1, Lamport time: (11, 1)
- I miss spontaneous road trips! 🚗 , sent by clientNr: 2, Lamport time: (12, 2)
- Coffee first, adulting second. ☕🍷, sent by clientNr: 3, Lamport time: (15, 3)
- Just finished a great book! Highly recommend it. 📖 , sent by clientNr: 2, Lamport time: (17, 2)
- Can't believe it's almost the end of the year! 🗓 , sent by clientNr: 3, Lamport time: (19, 3)
- Just finished a great book! Highly recommend it. 📖 , sent by clientNr: 1, Lamport time: (21, 1)
- Can't wait to travel again! 🌍 #Wanderlust, sent by clientNr: 2, Lamport time: (23, 2)
- Loving this new podcast. So insightful! 🎧 #PodcastRecommendation, sent by clientNr: 3, Lamport time: (25, 3)
- The following client disconnected: 3 Lamport time: (27, 3)
- The sunset today was absolutely stunning! 🌅 , sent by clientNr: 1, Lamport time: (28, 1)
- Let's make kindness go viral. Be good to each other! 🌟 , sent by clientNr: 2, Lamport time: (30, 2)
- Can't believe it's almost the end of the year! 🗓 , sent by clientNr: 1, Lamport time: (32, 1)
- The following client connected: 3 Lamport time: (34, 3)
- Grabbing brunch with friends this weekend. Can't wait! 🥞🍷 , sent by clientNr: 2, Lamport time: (35, 2)
- Just ran my first 5K! Feeling amazing! 🏃‍♀️💪 , sent by clientNr: 1, Lamport time: (37, 1)

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