

# DISYS - Chitty Chat

*IT University of Copenhagen*

*Lecturer: Marco Carbone and Agata Przybyszewska*

*GitHub repo: <https://github.com/goose-alt/chitty-chat>*

Albert Rise Nielsen (albn)

Amalie Bøgild Sørensen (abso)

Andreas Nicolaj Tietgen (anti)

Asger Brødslev Mathiasen (asgm)

We know less and less the more we know

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## 1 Describe your system architecture - do you have a server-client architecture, peer to peer, or something else?

The architecture of our chitty chat system is a server-client architecture. We chose this architecture because we wanted something to maintain the connections and to distribute the messages to all clients.

## 2 Describe what RPC methods are implemented: Publish(), Broadcast(), any other ?

Our proto definition contains a single method called Chat, which is a bidirectional stream that allows communication between the client and server. Due to the implementation of the stream, it is easy to register when a client connects and disconnects, due to timeouts.

The Chat stream sends a type of Message each way, which contain the message content, information about the client such as id and username, as well as the vector timestamp, identified by the id's from client info.

## 3 Describe how you have implemented calculation of the Lamport timestamps

In our project we implemented both, but we only use the Vector timestamp. All the code related to this question is contained in the ./internal/time folder.

The vector implementation is a struct type with a map which has the clientId as a key and an int as the associated value. The *VectorTimestamp* contains two important methods. The first method is *Sync()* which loops through the incoming map and compares all values with the internal map. The other method is *Increment()* which increments the value which is associated to the clientId.

- 4 Provide a diagram, that traces a sequence of RPC calls together with the Lamport timestamps, that corresponds to a chosen sequence of interactions: Client X joins, Client X Publishes, ..., Client X leaves. Include documentation (system logs) in your appendix.

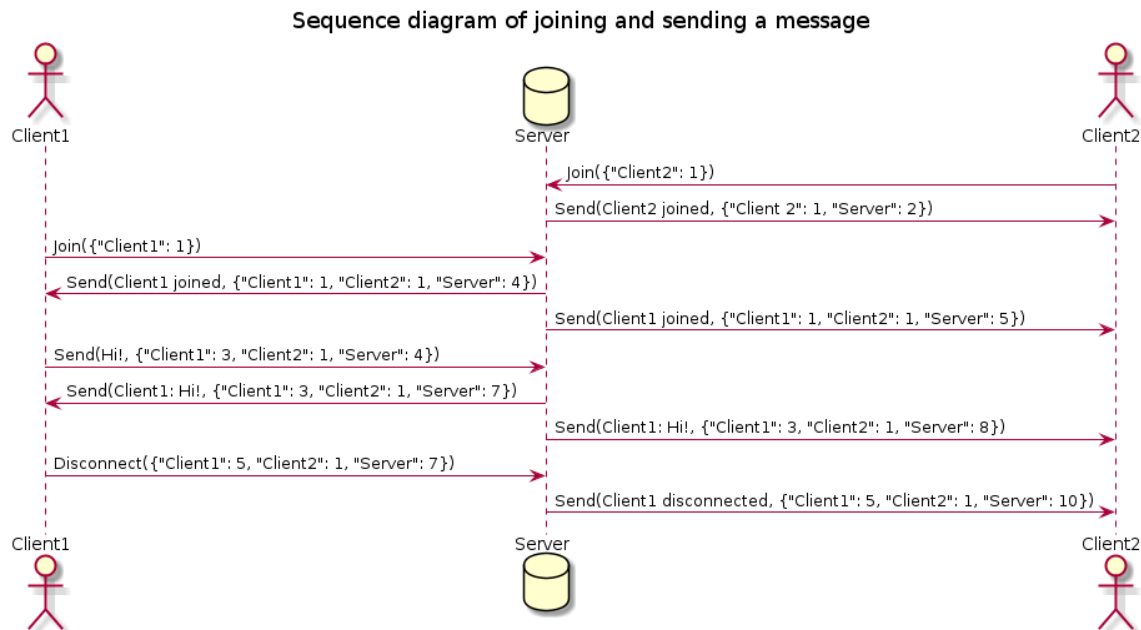


Figure 1: Sequence diagram of joining and sending a message

- 5 Provide a link to a Git repo with your source code in the report

<https://github.com/goose-alt/chitty-chat>

- 6 Include system logs, that document the requirements are met, in the appendix of your report

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client_10 | [26-10-2021 10:45:43 +0000 - INFO] Received message: Random number: 90, from: 3ca37046a64, at: 2313
server_1 | [26-10-2021 10:45:43 +0000 - INFO] Sending message: timestamp:{clients:{key:"11111111-1111-1111-1111-1111-111111111111" value:1200} clients:1200} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:113} clients:{key:"744bbdef-8560-4b16-89fa-ec1662061dac" value:123} clients:{key:"8bd14b86-9e63-4bbb-a0d2-598ab309200f" value:102} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:106} clients:{key:"aad9f81c-4ffe-447c-8480-b3e7823edc69" value:104} clients:{key:"b2e57e94-8f41-4859-8f12-1845883f2ca6" value:121} clients:{key:"be5dd446-b37f-4c95-b360-a9b71af279e9" value:108} clients:{key:"c4265e5a-eeeb-4d77-abc7-c0d89f1df4fa" value:123} clients:{key:"d669ac36-3a58-48d8-9fe3-b32304874404" value:106} clients:{key:"f0e966be-cb64-42a6-b1a0-ad92e7eb656a" value:99}} info:{uuid:"c4265e5a-eeeb-4d77-abc7-c0d89f1df4fa" name:"3ca37046a64" content:"Random number: 90"
client_8 | [26-10-2021 10:45:43 +0000 - INFO] Received message: Random number: 90, from: 3ca37046a64, at: 2313
server_3 | [26-10-2021 10:45:43 +0000 - INFO] Sending message: timestamp:{clients:{key:"11111111-1111-1111-1111-1111-111111111111" value:1201} clients:1201} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:113} clients:{key:"744bbdef-8560-4b16-89fa-ec1662061dac" value:123} clients:{key:"8bd14b86-9e63-4bbb-a0d2-598ab309200f" value:102} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:106} clients:{key:"aad9f81c-4ffe-447c-8480-b3e7823edc69" value:104} clients:{key:"b2e57e94-8f41-4859-8f12-1845883f2ca6" value:121} clients:{key:"be5dd446-b37f-4c95-b360-a9b71af279e9" value:108} clients:{key:"c4265e5a-eeeb-4d77-abc7-c0d89f1df4fa" name:"3ca37046a64" content:"Random number: 90"
client_2 | [26-10-2021 10:45:43 +0000 - INFO] Received message: Random number: 90, from: 3ca37046a64, at: 2317
server_5 | [26-10-2021 10:45:43 +0000 - INFO] Sending message: timestamp:{clients:{key:"11111111-1111-1111-1111-1111-111111111111" value:1202} clients:1202} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:106} clients:{key:"744bbdef-8560-4b16-89fa-ec1662061dac" value:123} clients:{key:"8bd14b86-9e63-4bbb-a0d2-598ab309200f" value:102} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:108} clients:{key:"aad9f81c-4ffe-447c-8480-b3e7823edc69" value:104} clients:{key:"b2e57e94-8f41-4859-8f12-1845883f2ca6" value:121} clients:{key:"be5dd446-b37f-4c95-b360-a9b71af279e9" value:99}} info:{uuid:"c4265e5a-eeeb-4d77-abc7-c0d89f1df4fa" name:"3ca37046a64" content:"Random number: 90"
client_6 | [26-10-2021 10:45:43 +0000 - INFO] Received message: Random number: 90, from: 3ca37046a64, at: 2315
server_1 | [26-10-2021 10:45:43 +0000 - INFO] Sending message: timestamp:{clients:{key:"11111111-1111-1111-1111-1111-111111111111" value:1203} clients:1203} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:113} clients:{key:"744bbdef-8560-4b16-89fa-ec1662061dac" value:123} clients:{key:"8bd14b86-9e63-4bbb-a0d2-598ab309200f" value:102} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:106} clients:{key:"aad9f81c-4ffe-447c-8480-b3e7823edc69" value:104} clients:{key:"b2e57e94-8f41-4859-8f12-1845883f2ca6" value:121} clients:{key:"be5dd446-b37f-4c95-b360-a9b71af279e9" value:108} clients:{key:"c4265e5a-eeeb-4d77-abc7-c0d89f1df4fa" name:"3ca37046a64" content:"Random number: 90"
client_1 | [26-10-2021 10:45:43 +0000 - INFO] Received message: Random number: 90, from: 3ca37046a64, at: 2319
server_1 | [26-10-2021 10:45:43 +0000 - INFO] Sending message: timestamp:{clients:{key:"11111111-1111-1111-1111-1111-111111111111" value:1203} clients:1203} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:113} clients:{key:"744bbdef-8560-4b16-89fa-ec1662061dac" value:123} clients:{key:"8bd14b86-9e63-4bbb-a0d2-598ab309200f" value:102} clients:{key:"90c6b6b9-b695-48b0-ac7e-4b5535a2c385" value:106} clients:{key:"aad9f81c-4ffe-447c-8480-b3e7823edc69" value:104} clients:{key:"b2e57e94-8f41-4859-8f12-1845883f2ca6" value:121} clients:{key:"be5dd446-b37f-4c95-b360-a9b71af279e9" value:108} clients:{key:"c4265e5a-eeeb-4d77-abc7-c0d89f1df4fa" name:"3ca37046a64" content:"Random number: 90"

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Figure 2: Caption