

Distributed Systems Report

Describe your proposed protocol using text, explaining your rationale behind each design decision and command.

My program starts by assigning each user their ID, either user 1 or 2. This is automatically assigned based on which user starts the program first becomes user 1 and user 2 the one who joins second. The program checks if the user ID exists and if not it will assign it. There program also only lets two users at once and if a third runs the program it will check that both IDs are allocated and will end the program for the third user.

User 1 is prompted for input first whilst user 2 waits. User 1 then enters their message which will be sent to the server, as well as another key with the value 'True', to indicate that it has sent the message. This signal is what user 2 will look out for and when it gets True from the server it will mean they can receive the message. It then gets the message from the server and decodes it printing it to the receiving user. The signal is then reset to 'False' on the server, and user " now has input. The process repeats itself for user 2 whilst user 1 waits.

Give one example of a limitation of this system architecture, and one example of one way by which this limitation could be overcome, towards the realisation of a more realistic messaging system.

One limitation of this system is that there is one central server relied on by both users. This will be a single point of failure, as if the server fails, or becomes slow, the protocol will fail to work as intended. Therefore both users will not be able to send each other messages or may be waiting for a reply. To over come this a peer to peer architecture maybe more suitable as both nodes will be able to play equal roles, therefore reducing the likely hood of a single point of failure. This can also lead to both users to potentially being able to send messages to each other without waiting on a reply, as they will no longer have to wait on receiving the message from the server, instead they communicate directly. Therefore this can create a more realistic messaging system where users can communicate simultaneously.