Code Report

Design

The task consisted in improving the previously developed server to make use of TCP sockets instead of local pipes.
The previous version contained good abstraction practices, and changing it from such design into TCP consisted mostly of changing the interface names and updating the parameters.

Compared to when using pipes, creating a TCP connection automatically to the server automatically creates a new channel of communication. This removes the need to send “create” channel messages, as well as remove the need to name them.

TCP can, however, have problems, as a call to “write” or “read” is not guaranteed to read the specified number of bytes. Thus, new functions that guarantee that the specified number of bytes were read or written was implemented, thus achieving correct delivery of the data, and performing correctly. When using pipes, since the connections are local, there is no need to do such a thing.

The sockets can also be easily initialised using the specified interface, only requiring a difference between the server (*bind* + *listen*) and client (*connect*).

For testing, an M1 Macbook Air was used, which contains an ARM architecture with 4 high-performance cores and 4 high-efficiency cores.