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PA2 Report

Design:

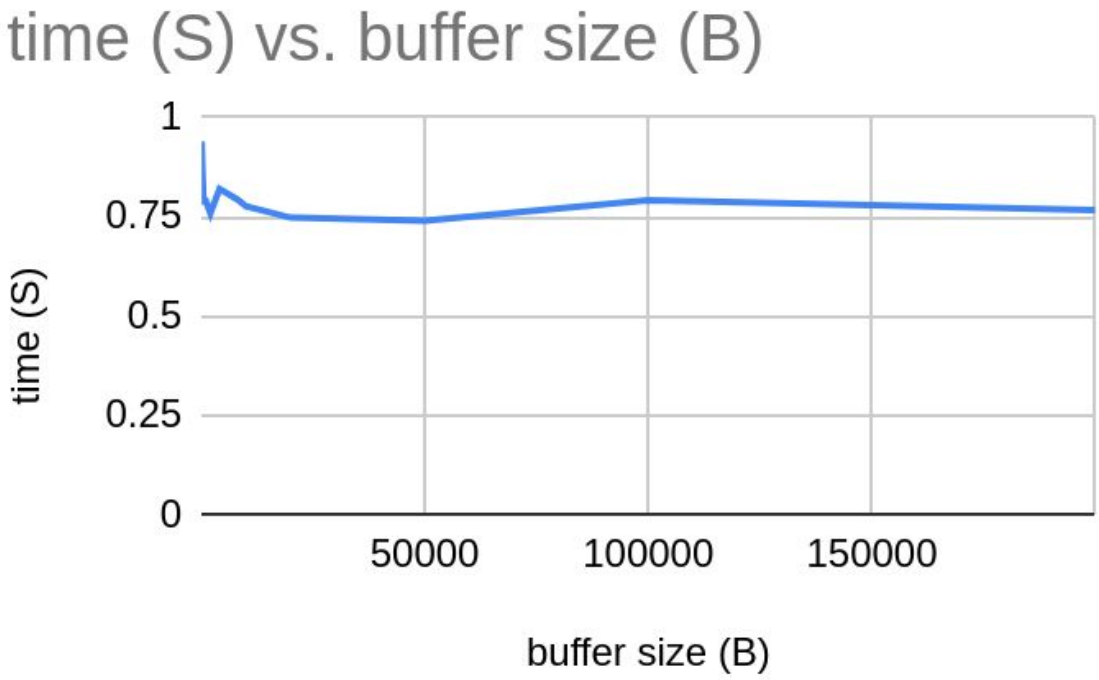
The client's functionality was all implemented within the main function of client.cpp.

- First, the program uses fork() and execvp() to start the server as a child process of the client and pass on the client's command line arguments to the server. This is done so that the additional -m argument can be processed by both server and client.
- If fork() returns a number greater than 0 (indicating parent process), it goes on to use getopt() to process the command line arguments.
    - If the -p, -t, and -e flags are active, the program requests a single data point by opening a channel, writing a request to a point for it, collecting the server's output in a buffer, dereferencing it, and outputting it.
    - If only the -p flag is active, it does the same thing, but for the entire file. This is more or less as described before, just using a loop.
    - If the -f flag is active, request an entire file. This is done by treating the file as a binary, requesting a chunk of the file the size of the buffer, storing it in a pointer, and writing it to the destination file.
    - -c flag opens a new channel by writing a request for a channel name to the existing channel. It then uses the name returned by the server to open a new channel, request a data point as described above, and then quit the client.
    - -m argument simply changes the size of the buffer.

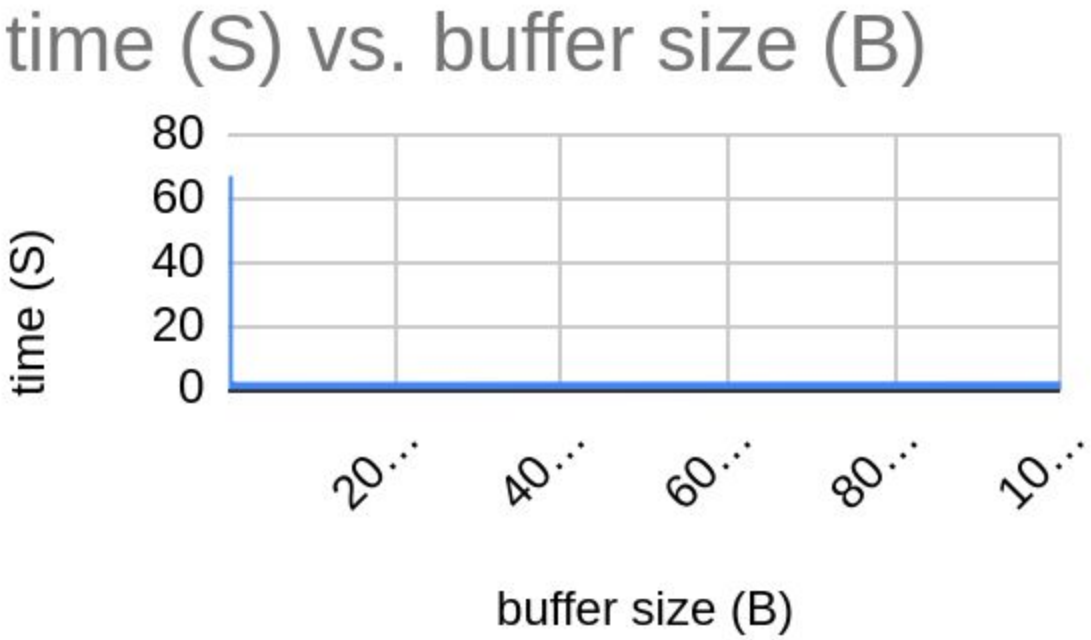
Data

Requesting a file as a collection of datapoints took me about 100 seconds on average, depending on the rest of the load my computer was handling at the time.

Text files



Binary files



The main bottleneck was buffer size. There was a sharp decrease in transfer time as the buffer size increased for both text and binary files, but after a few

increases, the larger buffer size didn’t really make a difference, probably since having a larger buffer size puts more load on the processor and IO. As for the time to transfer binary and text files, there was not really a pronounced difference, as everything was being treated as a binary file.