Duration of File Transfer

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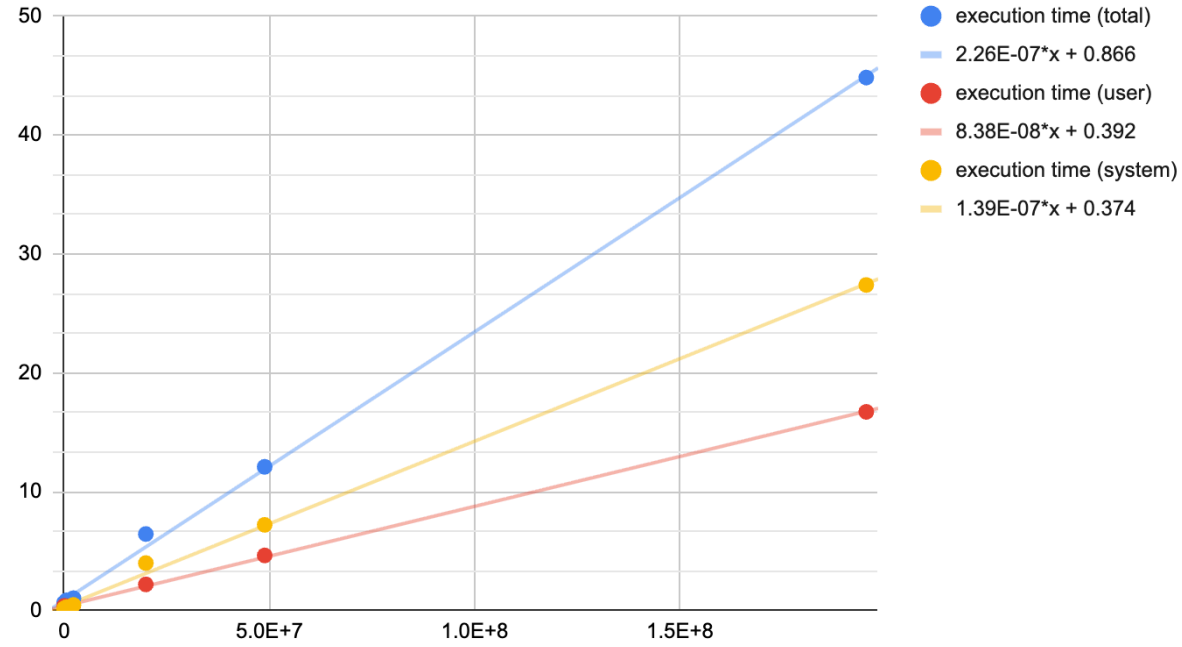

file size	file size (bytes)	execution time (total)	execution time (user)	execution time (system)
0 bytes	0	0.666	0.401	0.193
13 bytes	13	0.383	0.289	0.086
568.758 KB	568,758	0.872	0.38	0.296
2.275 MB	2,275,032	1.053	0.48	0.486
19.907 MB	19,906,530	6.448	2.21	4.004
48.849 MB	48,848,944	12.101	4.646	7.22
195.396 MB	195,395,776	44.837	16.72	27.393

The primary bottleneck appears to lie within the system operations. Execution time increases in a manner that appears to be linear, with the system operations taking more time and increasing at a higher rate than the user operations. In the data, we can see that system and user time have small differences for the smaller files, but system execution takes twice as long for the larger files, meaning some kind of bottleneck is present in the system for files that surpass a few megabytes. The system calls involved with implementing the pipes required to communicate between the client and the server are likely the culprit (kernel referee-ing), and I suspect that it's the server writing to the client that takes up the most time for larger files, since that's when there are potentially millions of bytes being sent through the pipe.

Github repo: https://github.com/silverforestry/csce-313-lab-2

(I know this isn't lab 3, I misnamed it and never bothered to fix it)