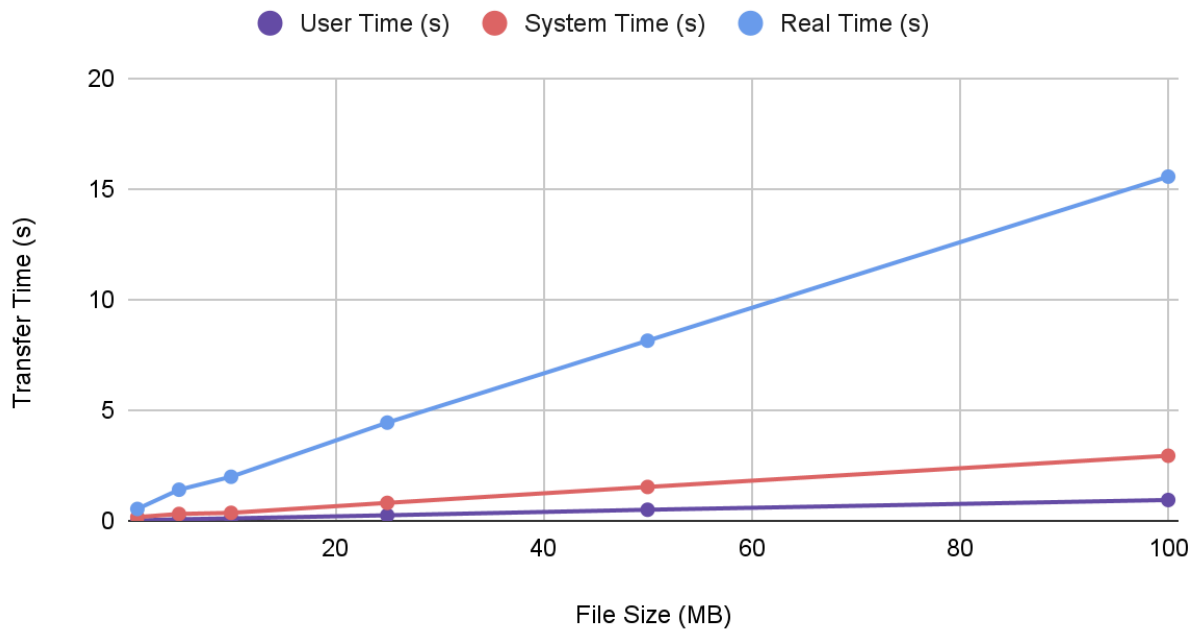


File Size vs. Transfer Time for PA1



The chart shows three types of times for each file: user, system, and total (real) time. For all file sizes, the total time is noticeably higher than the sum of user and system times, which shows that most of the time is spent waiting for I/O operations rather than actual computation. User time is very low across all files, ranging from 0.02 s to 0.94 s, and system time is higher but still much smaller than total time, ranging from 0.17 s to 2.94 s. As file size increases, all three times increase, but the increase in total time dominates, reflecting the extra time needed to move and write larger amounts of data.

The main bottleneck in the transfer process is I/O speed, including both network transfer and disk write operations. CPU usage is low compared to total time, so the program spends most of its time waiting for data to be read or written. This explains why larger files take much longer even though the user and system times remain small.