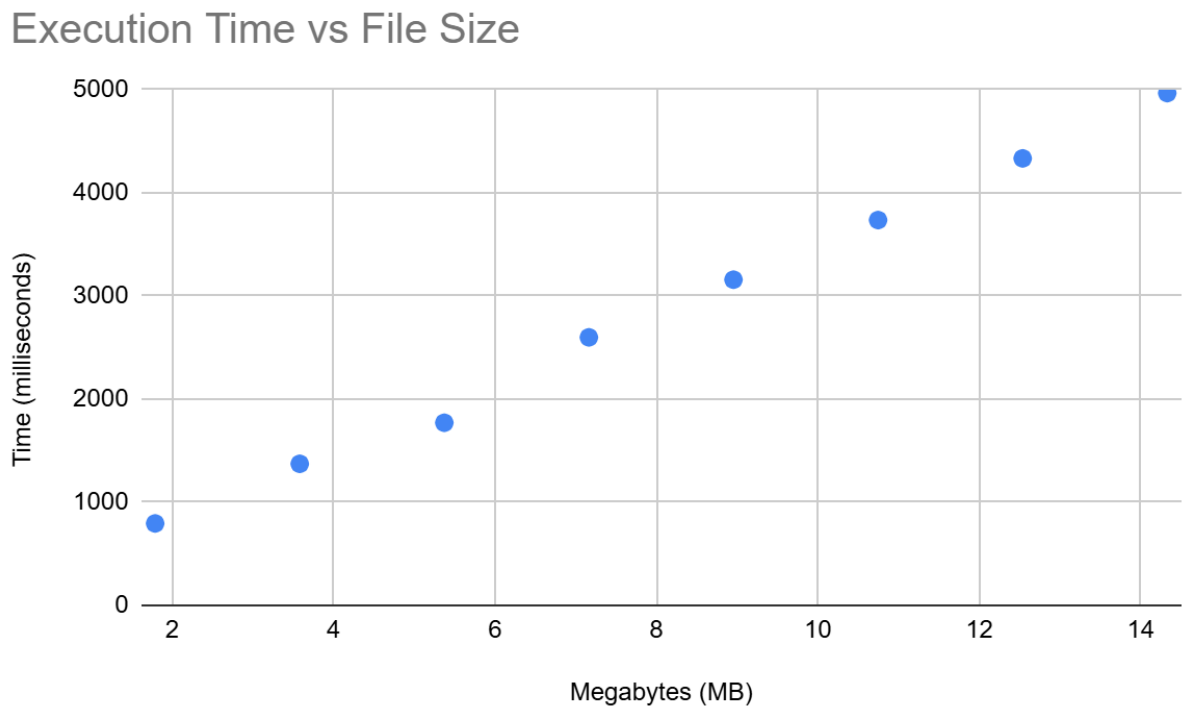
PA1 CSCE-313

Question 1

I created 8 files of varying sizes and recorded the time it took to execute a file transfer for each file. The results of this are shown in the table and graph below.

MB	1.791099	3.582199	5.373299	7.164399	8.955499	10.746599	12.537699	14.328799
Time (ms)	794	1372	1770	2598	3157	3735	4333	4966



This data suggests a linear relationship between the size of a file and its execution time. This makes logical sense because when you transfer a file, there is a maximum capacity (m) that a buffer can hold. This means that we must transfer the file in chunks of size m in a loop until the file is completely transferred. Thus, we must perform more loops for larger files, leading to a linear relationship.

Question 2

The main bottleneck is the maximum buffer capacity; this forces us to read from and write to files in chunks of constant size, which means we must loop through larger files more so that we can retrieve the entire file. Every time we read and write through the piping, there is a slight delay from the communication through the pipes, which, over time, slows down the program.