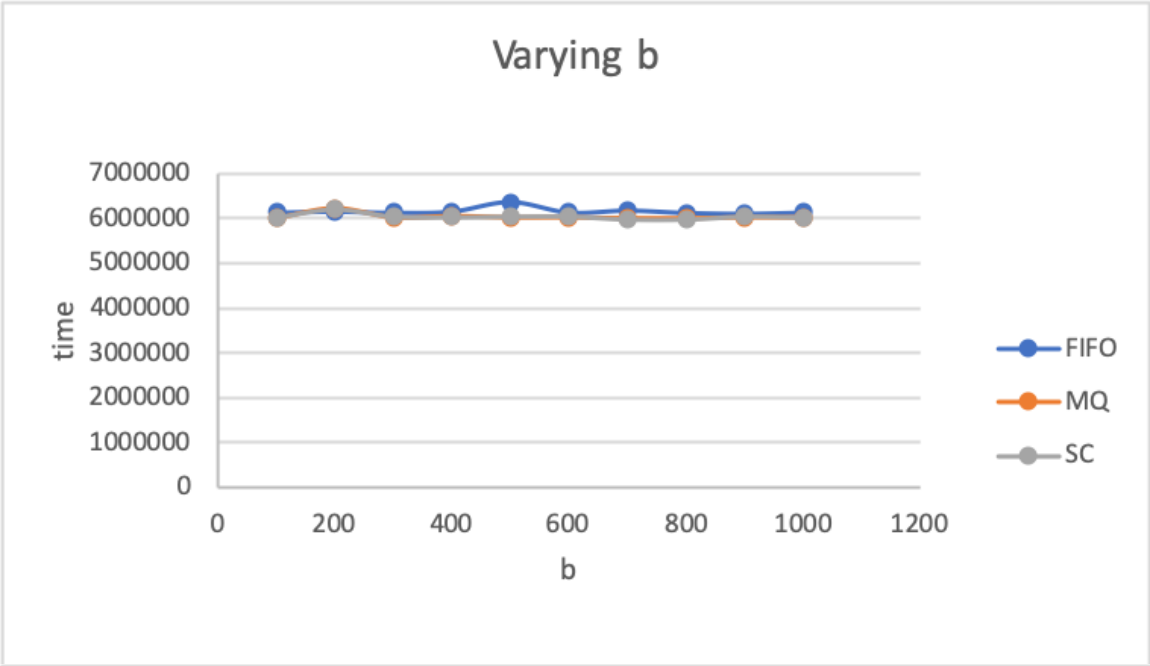
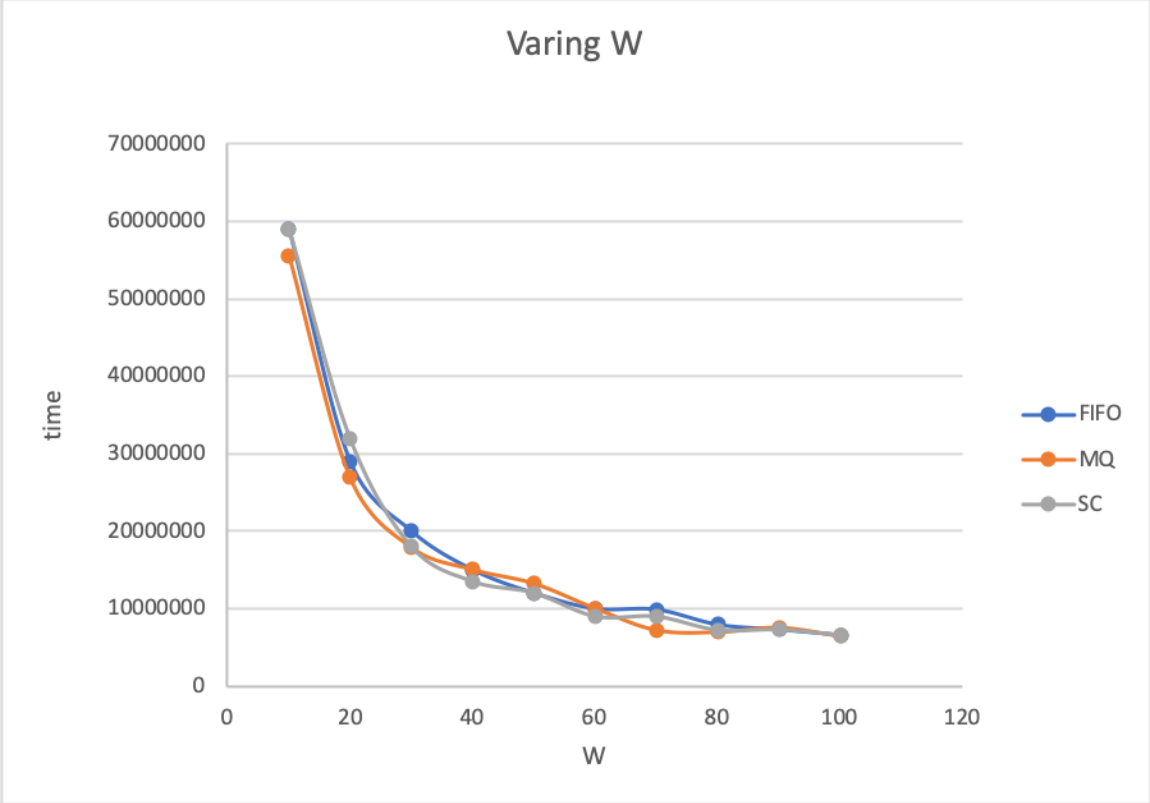
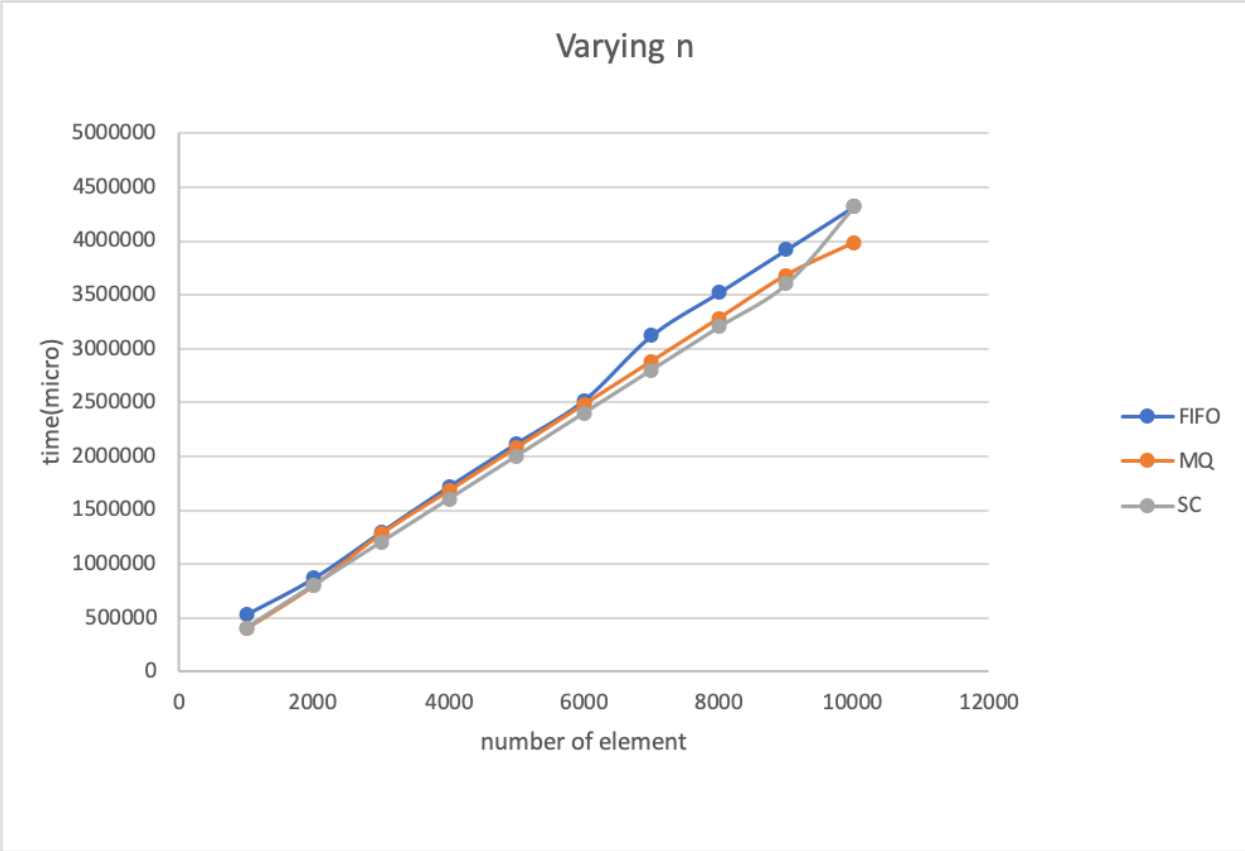
Data Point Transfer:







Conclusion:

Varying B: B has no effect on the performance of the program.

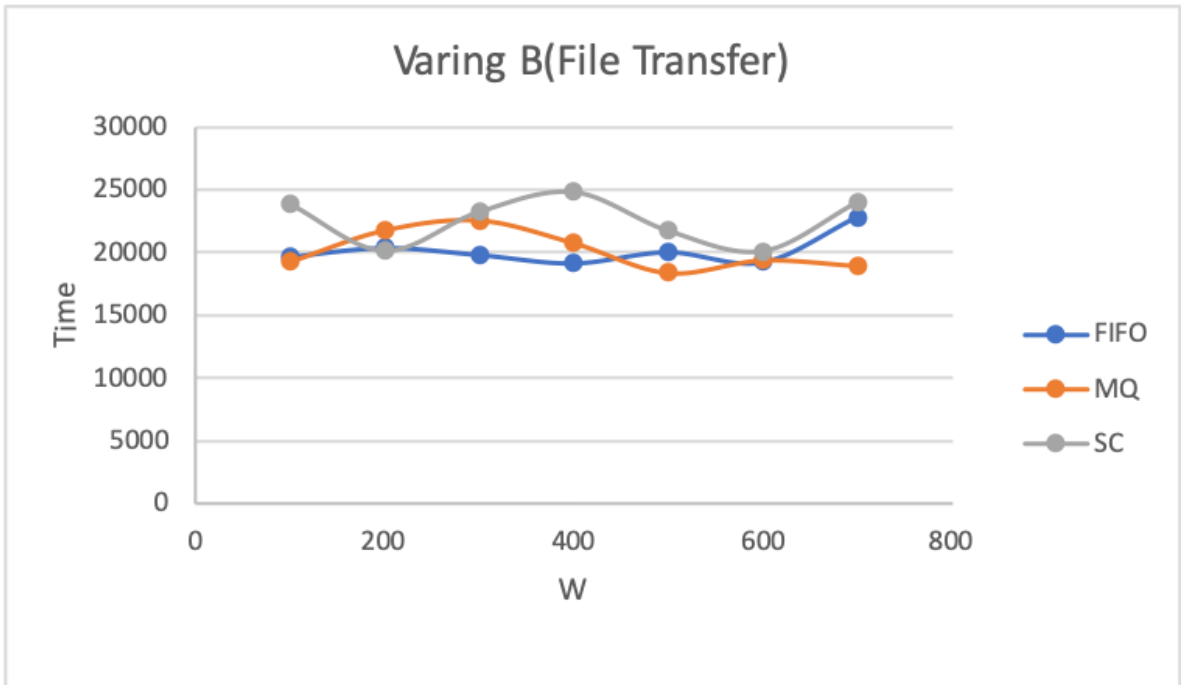
Varying N: it is obvious that more data points will take more time to process, MQ has a small increase in performance compare to FIFO.

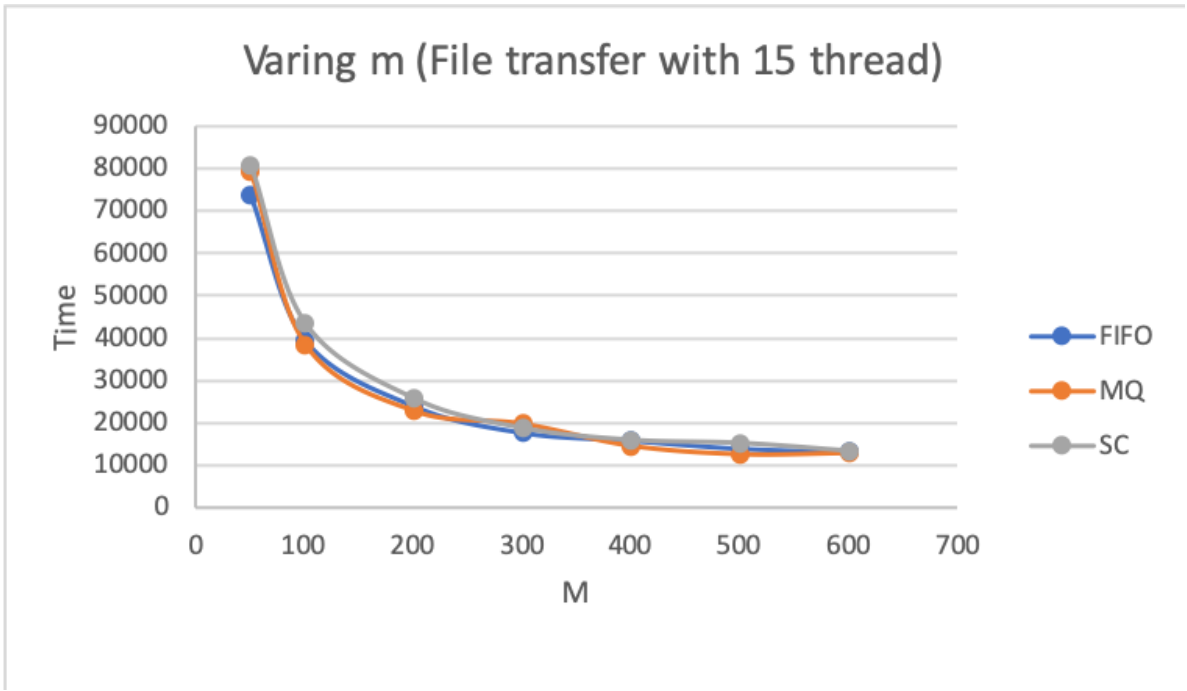
Varying W: More worker thread increases the performance of the program, however when the number of worker thread reaches some threshold, it's incremental value decreases.

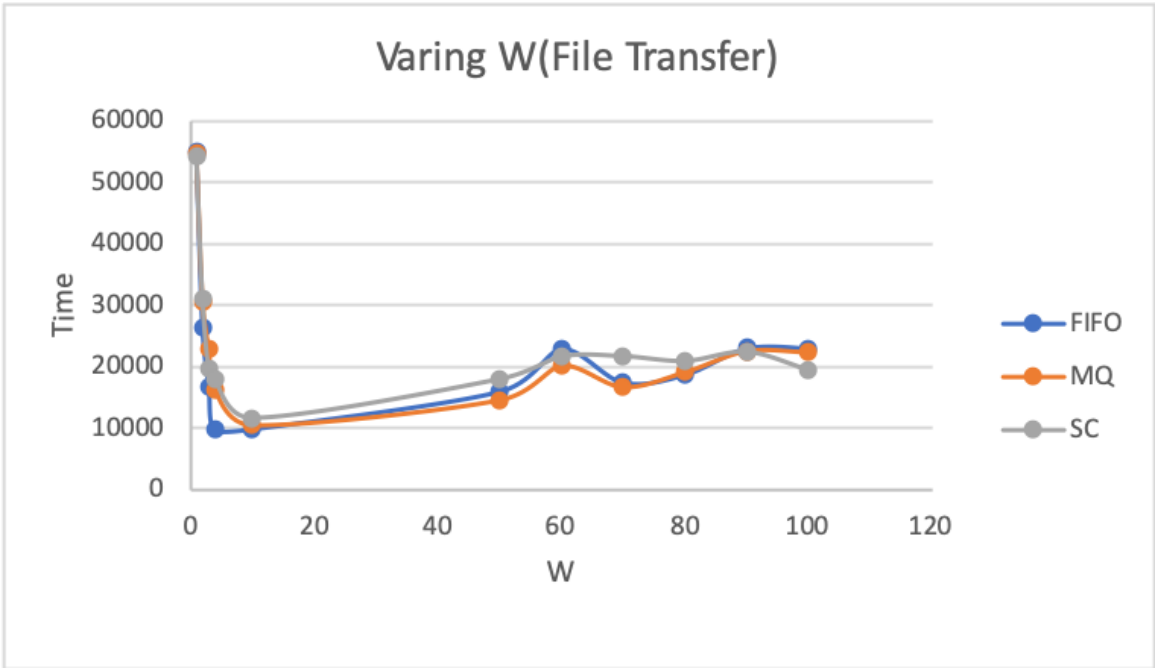
Varying M: Should not have any effect on the performance because a single data point is not large.

Base on the graph, it is obvious that MQ and FIFO and Shared Memeory has almost same performance , with MQ a little bit faster than the FIFO. However , it is a really small difference,thus cannot conclude that MQ has performance advantage over FIFO.

File Transfer:







Varying B: B has no effect on the performance of the program.
Varying M: More M means less communication among the client and server, which will increase the performance of the program
Varying W: Since it is not a lot of work load, a single thread can finish much faster than more threads, thus initializing more thread will have overhead when every thread is trying to compete for CPU time.

Base on the graph, it is obvious that MQ and FIFO has almost same performance , with MQ a little bit faster than the FIFO. However , it is a really small difference,thus cannot conclude that MQ has performance advantage over FIFO.

Maximum W for FIFO:It really depends on the system's limit. I can go up to 700 with the system command ulimit -n 10000

Maximum W for MQ: It is also depends on the system's limit. With the default system setting I can go up to -127

Maximum W for SC: It is also depends on the system's limit. With the default system setting I can go up to 500

System Limit:

For Fifo, when you have too man worker thread open, once it exceed the system's limit , it will encounter "Too many open file " message and stop functioning properl. It can be solve by

using command u limit -n xxxxxx. Although if the number is too big, it might not functioning properly.

For MQ, It can only be set to 127 with the default system. I am sure that it can be higher by adjusting the maxMessageQueue variable in the system.

For SC, It can only be set to 500 with the default system. I am sure that it can be higher by adjusting the Some of the system variable in the system.

Clean Up:

I deleted all the MQ/FIFO channels in both Client and Server side. Also I ensured that the QUIT_MSG is sent from the client side to the server side. I checked with address sanitizer to ensure there is no memory leak in my program.