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CSCE 313-503

PA3 Report

**Demo Video (Sorry, I \*had\* to keep it on Zoom and not upload it to YouTube because it was too long for a YouTube basic account and they took it down):** <https://tamu.zoom.us/rec/share/V-CQxkpT5AfnJ48mDs5SqQj-JvBEyslh-kQvh443c0Tg0LgkNrOPzcWqWbmJJZyP.b5JEZYVu2HhuCRb9?startTime=1616381218000>

**Description:**

My specific design for this programming assignment involved using Object-Oriented Programming to have all the different IPC methods be in their own .cpp and .h files. They overriding the Request Channel class, so that all their common functions and variables were contained in that parent class. This overall allowed the code to be more easily followed and debugged. The client ran server within it, so that only one command line was needed for IPC. Within the client, multiple channels (the number being specified by the user) were created using a for-loop, in which all of those channels including the first control channel were deleted to ensure clean up.

The constructors of each IPC method in their own respective .cpp file made sure to create their own objects. Each side of the IPC object, depending on if it were the server or client side, would then call their own open\_ipc() with a specific permission to establish the IPC. The destructors of each IPC method would then make sure to close the IPC descriptors used and unlink/close/delete any specific implementation objects in order to destroy all IPC objects created.

**Data Collection:**

Time to collect 1K data points for c=5 (p=3):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Trial 1 Time (sec) | Trial 2 Time (sec) | Trial 3 Time (sec) | AVERAGE of 3 (sec) |
| FIFO | 19.7099 | 19.5407 | 19.3941 | 19.5482 |
| MQ | 14.1783 | 14.1821 | 14.1302 | 14.1635 |
| SHM | 14.1972 | 14.1524 | 14.1246 | 14.1581 |

Time to transfer file for c=5 (3.csv):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Trial 1 Time (sec) | Trial 2 Time (sec) | Trial 3 Time (sec) | AVERAGE of 3 (sec) |
| FIFO | 0.0848 | 0.0948 | 0.0689 | 0.0828 |
| MQ | 0.2640 | 0.2723 | 0.2698 | 0.2687 |
| SHM | 0.2664 | 0.2633 | 0.2719 | 0.2672 |

**Conclusion from Experiment:**

There is a difference in runtime. In both experiments, by average the FIFO IPC method took noticeably longer than MQ and SHM. MQ and SHM had almost the exact tame runtimes. For collecting 1K data points, FIFO took an average of ~5.4 seconds longer than MQ and SHM. For transferring files, FIFO took ~1.8 seconds longer than MQ and SHM.