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Operating Systems Project 1

CopyCat

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How is the speed with which the data is written related to the size of the buffer used?

Raw Data (average

over 16 trials):

The plot shows that for a larger buffer size, there’s a larger speed of data write. This shouldn’t be surprising as it has to do fewer calls to read, even if the file stays open. It also has fewer writes as the number of writes is equal to the number of reads (assuming not a partial write). So there’s significantly less work done for each bit added to the length of the buffer.

|  |  |
| --- | --- |
| 64 | 0.379711688 |
| 128 | 0.204222 |
| 256 | 0.111560125 |
| 512 | 0.066361563 |
| 1024 | 0.039310688 |
| 2048 | 0.026468875 |
| 4096 | 0.021477375 |
| 8192 | 0.015328125 |
| 16384 | 0.011141875 |
| 32768 | 0.010699875 |
| 65536 | 0.00960475 |
| 131072 | 0.009723063 |
| 262144 | 0.010291375 |

Each point on this plot is the average of 16 trial runs. So there should be a smaller variance of the points on this graph than had it been of 1 trial run (there was a fair amount of variability in the raw data of 1 trial run).

Note the trend back down near the end. The most probable reason for the trend to stay reasonably flat around 2^14 is restrictions by my hardware. I had many programs running, etc. At that point, it no longer mattered that I was halving the number of read or write commands. They were filling buffers so large that the reading in time was so long it became irrelevant that there were fewer buffers.

The hardware this was tested on: Macbook Air 13-inch, 2014. 1.4 GHz Intel Core i5 with 4GB 1600 MHz DDR3. Running intel HD Graphics 5000 1536MB.