Assignment 2 Part B Report

* The best implementation for append() was by far the Java standard StringBuilder. It was significantly faster than String, but was much closer to MyStringBuilder. It actually decreased as N increased.
* The best implementation for delete(0,1) was actually with MyStringBuilder. Every time it handily beat out both StringBuilder and String by many factors. It actually barely changed at all as N increased.
* The best implementation for insert() was again MyStringBuilder. It also handily beat out bother StringBuilder and String by a large margin. Also, it barely changed as N increased.
* The overall best implementation I think would be MyStringBuilder. It is the best performer in both delete() and insert() and comes in a close second in append().

Below, I have showed all my data as the graphs may be hard to read with String skewing the data so much.

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| --- | --- | --- | --- | --- |
| N = 10000 | Method | Total Time (ns) | Average Time (ns) | |
| StringBuilder | Append | 468870 | 46.887 | |
| Delete | 1569392 | 156.9392 | |
| Insert | 1867130 | 186.713 | |
| MyStringBuilder | Append | 1179362 | 117.9362 | |
| Delete | 632116 | 63.2116 | |
| Insert | 640000 | 64.0 | |
| String | Append | 24266667 | 2426.6667 | |
| Delete | 47330319 | 4733.0319 | |
| Insert | 60025507 | 6002.5507 | |
| N = 20000 | Method | Total Time (ns) | Average Time (ns) | |
| StringBuilder | Append | 549101 | 27.45505 | |
| Delete | 3899362 | 194.9681 | |
| Insert | 3119768 | 155.9884 | |
| MyStringBuilder | Append | 1609276 | 80.4638 | |
| Delete | 1502609 | 75.13045 | |
| Insert | 1508174 | 75.4087 | |
| String | Append | 95376696 | 4768.8348 | |
| Delete | 46756173 | 2337.80865 | |
| Insert | 158667131 | 7933.35655 | |
| N = 40000 | Method | Total Time (ns) | Average Time (ns) | |
| StringBuilder | Append | 1062029 | 26.550725 | |
| Delete | 14042435 | 351.060875 | |
| Insert | 14624928 | 365.6232 | |
| MyStringBuilder | Append | 4894145 | 122.353625 | |
| Delete | 2777043 | 69.426075 | |
| Insert | 2799304 | 69.9826 | |
| String | Append | 146097623 | 3652.440575 | |
| Delete | 189720579 | 4743.014475 | |
| Insert | 532446609 | 13311.165225 | |
| N = 80000 | Method | Total Time (ns) | | Average Time (ns) | |
| StringBuilder | Append | 2111536 | | 26.3942 | |
| Delete | 56122435 | | 701.5304375 | |
| Insert | 32269913 | | 403.3739125 | |
| MyStringBuilder | Append | 4345971 | | 54.3246375 | |
| Delete | 5911652 | | 73.89565 | |
| Insert | 4150261 | | 51.8782625 | |
| String | Append | 453720580 | | 5671.50725 | |
| Delete | 809776696 | | 10122.2087 | |
| Insert | 1670827130 | | 20885.339125 | |
| N = 160000 | Method | Total Time (ns) | | Average Time (ns) | |
| StringBuilder | Append | 4202203 | | 26.26376875 | |
| Delete | 224188290 | | 1401.1768125 | |
| Insert | 117111652 | | 731.947825 | |
| MyStringBuilder | Append | 7746319 | | 48.41449375 | |
| Delete | 12092753 | | 75.57970625 | |
| Insert | 7827942 | | 48.9246375 | |
| String | Append | 1420904348 | | 8880.652175 | |
| Delete | 2243200000 | | 14020.0 | |
| Insert | 6931815420 | | 43323.846375 | |