CS 6650 Assignment 2

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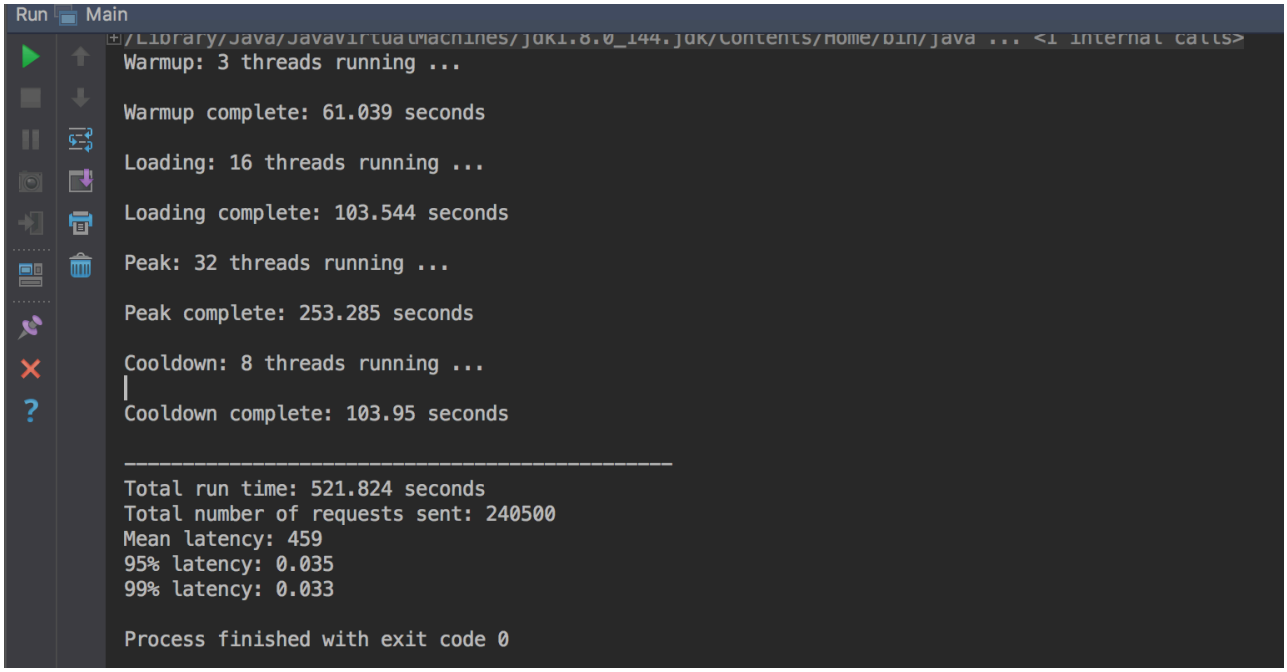
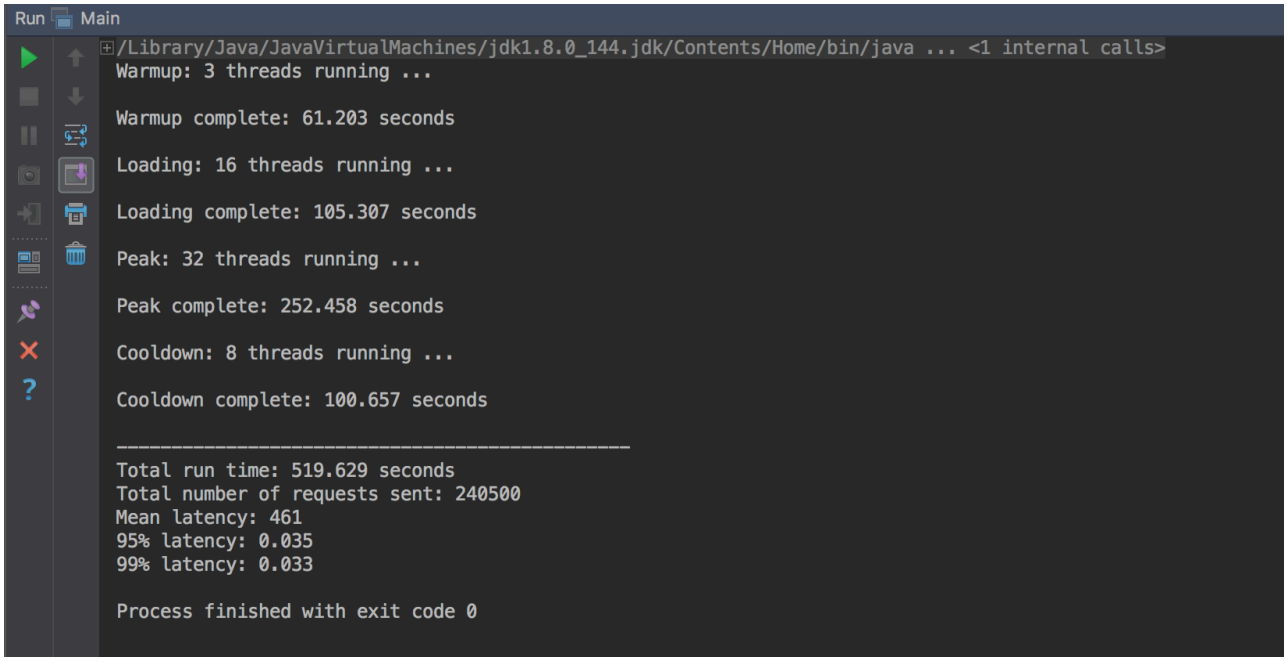
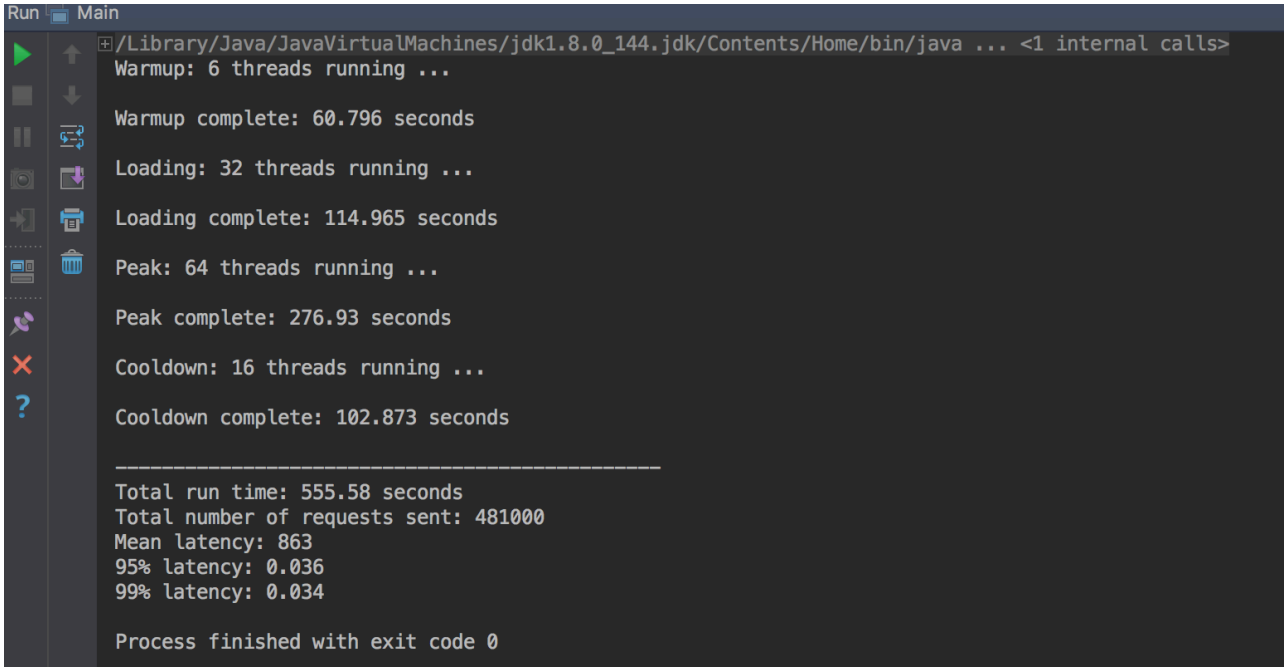
- Assignment 2 codes are available at my github repo: https://github.com/Greatjian/CS_6650_distributed_system

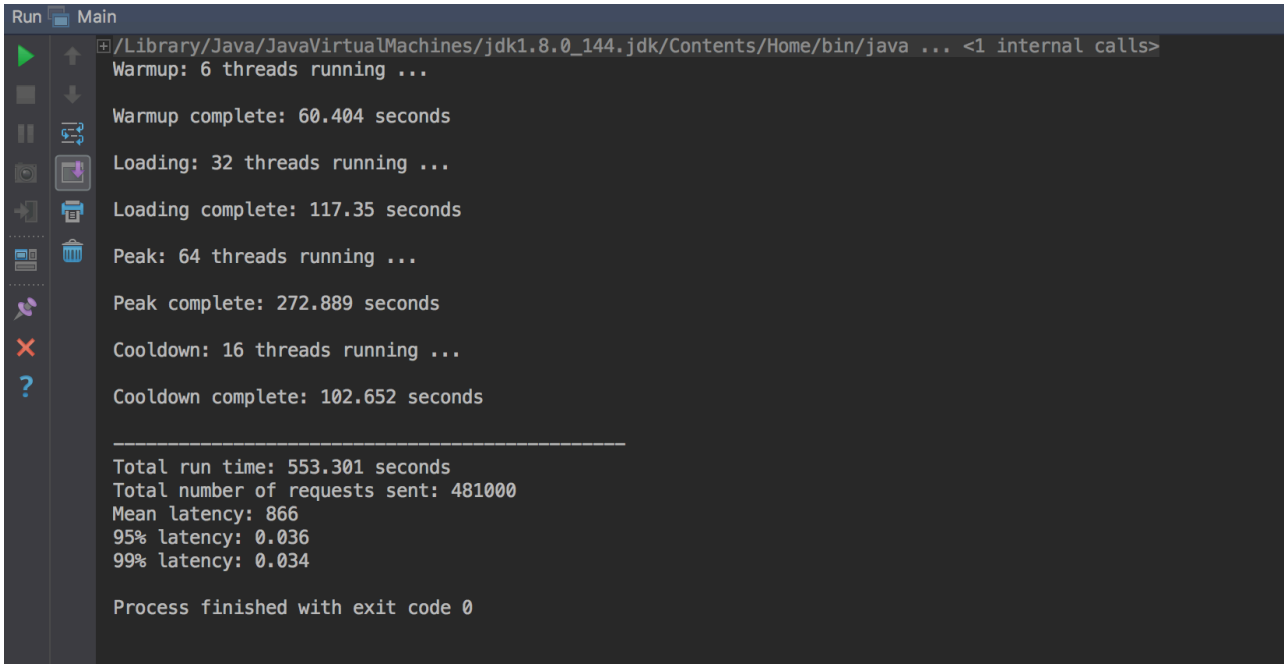
Performance test

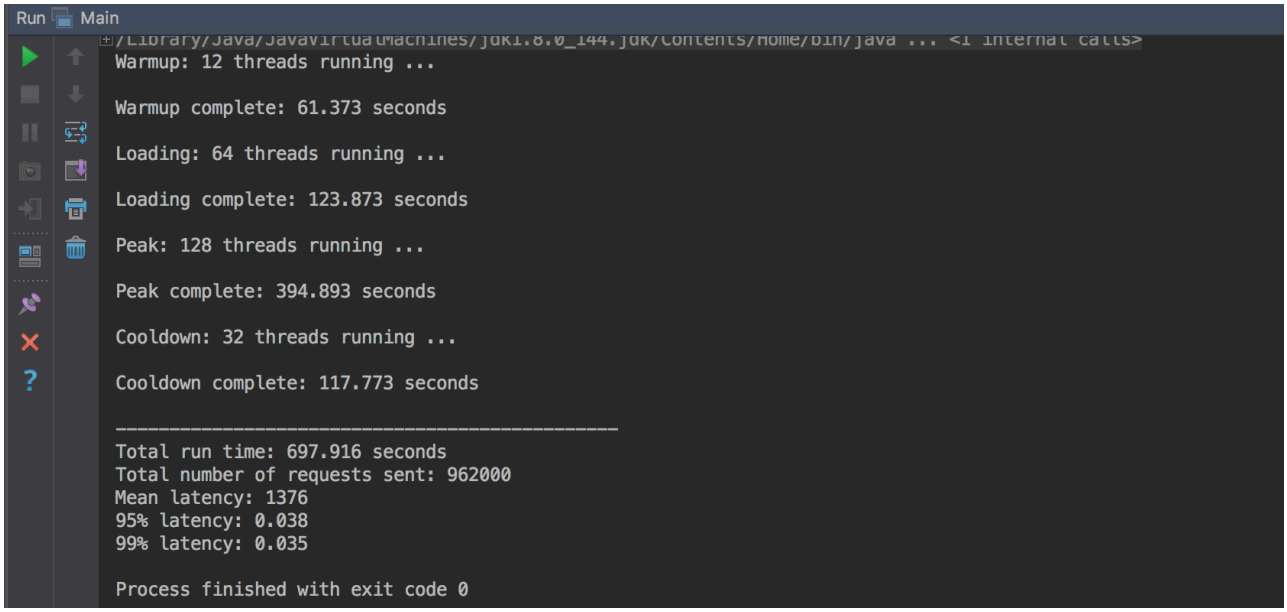
	Warmup	Loading	Peak	Cooldown	Total
regular 32	61.039	103.544	253.285	103.95	521.824
load balancing 32	61.203	105.307	252.458	100.657	519.629
regular 64	60.796	114.965	276.93	102.873	555.58
load balancing 64	60.404	117.35	272.889	102.652	553.301
regular 128	61.373	123.873	394.893	117.773	697.916
load balancing 128	61.479	126.7	390.976	117.489	696.65
regular 256	78.264	165.795	760.424	123.325	1127.815
load balancing 256	78.634	166.142	741.485	125.694	1112.233

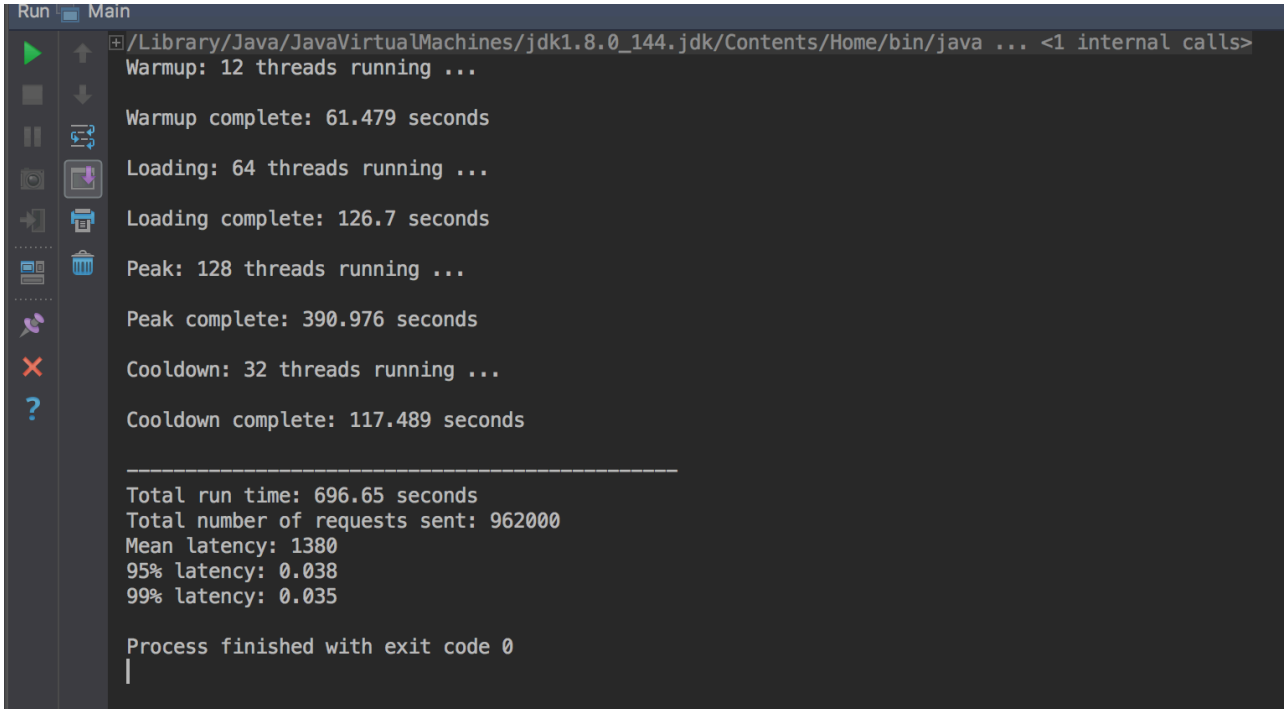


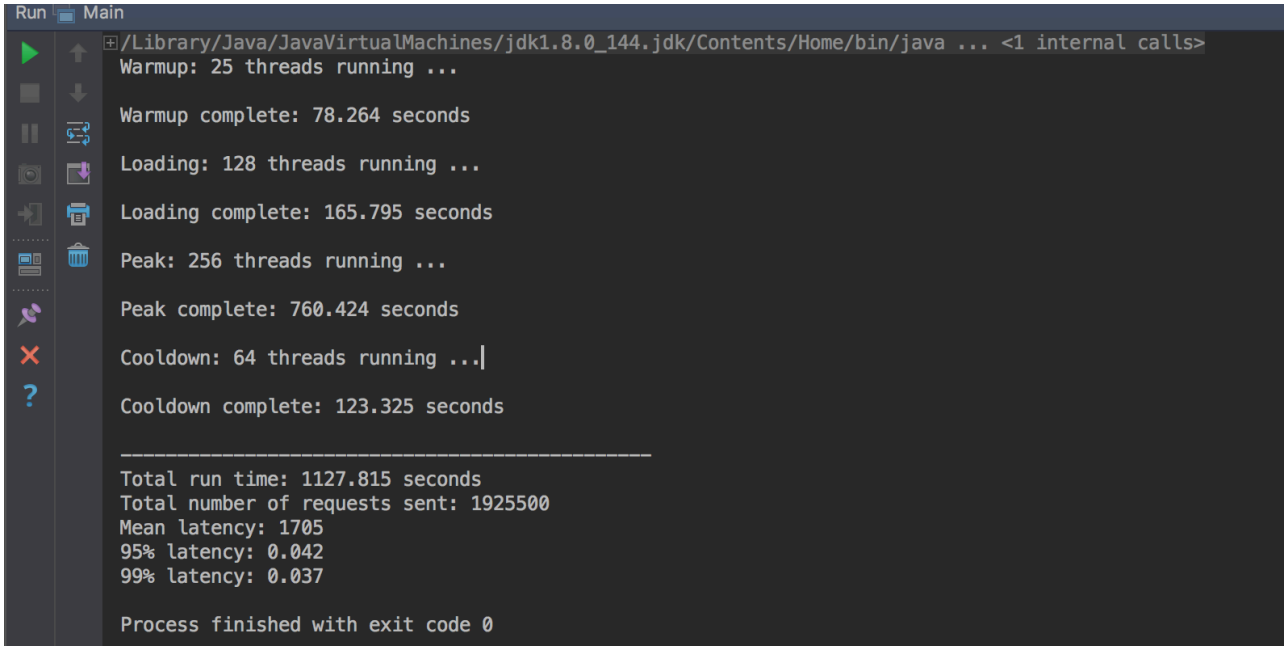

Run
Main
/Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java ... <1 internal calls>
Warmup: 3 threads running ...
Warmup complete: 61.203 seconds
Loading: 16 threads running ...
Loading complete: 105.307 seconds
Peak: 32 threads running ...
Peak complete: 252.458 seconds
Cooldown: 8 threads running ...
Cooldown complete: 100.657 seconds
Total run time: 519.629 seconds
Total number of requests sent: 240500
Mean latency: 461
95% latency: 0.035
99% latency: 0.033
Process finished with exit code 0

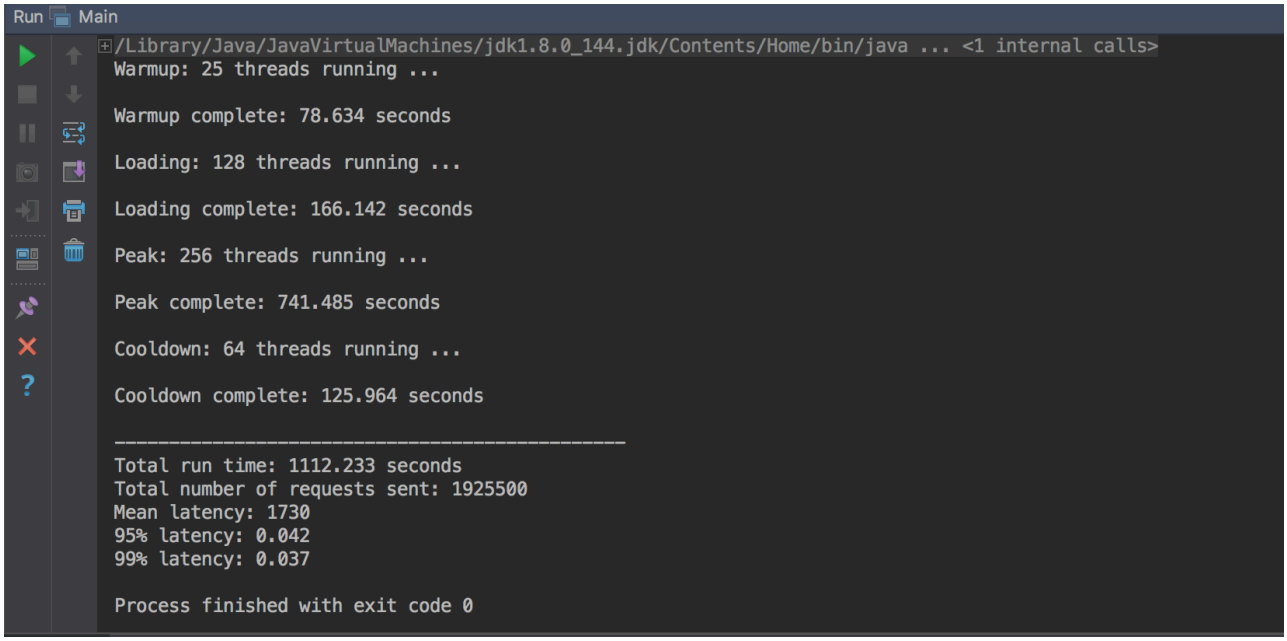

Run
Main
/Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java ... <1 internal calls>
Warmup: 6 threads running ...
Warmup complete: 60.796 seconds
Loading: 32 threads running ...
Loading complete: 114.965 seconds
Peak: 64 threads running ...
Peak complete: 276.93 seconds
Cooldown: 16 threads running ...
Cooldown complete: 102.873 seconds
Total run time: 555.58 seconds
Total number of requests sent: 481000
Mean latency: 863
95% latency: 0.036
99% latency: 0.034
Process finished with exit code 0


Run
Main
/Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java ... <1 internal calls>
Warmup: 6 threads running ...
Warmup complete: 60.404 seconds
Loading: 32 threads running ...
Loading complete: 117.35 seconds
Peak: 64 threads running ...
Peak complete: 272.889 seconds
Cooldown: 16 threads running ...
Cooldown complete: 102.652 seconds
Total run time: 553.301 seconds
Total number of requests sent: 481000
Mean latency: 866
95% latency: 0.036
99% latency: 0.034
Process finished with exit code 0


Run
Main
Warmup: 12 threads running ...
Warmup complete: 61.373 seconds
Loading: 64 threads running ...
Loading complete: 123.873 seconds
Peak: 128 threads running ...
Peak complete: 394.893 seconds
Cooldown: 32 threads running ...
Cooldown complete: 117.773 seconds
Total run time: 697.916 seconds
Total number of requests sent: 962000
Mean latency: 1376
95% latency: 0.038
99% latency: 0.035
Process finished with exit code 0

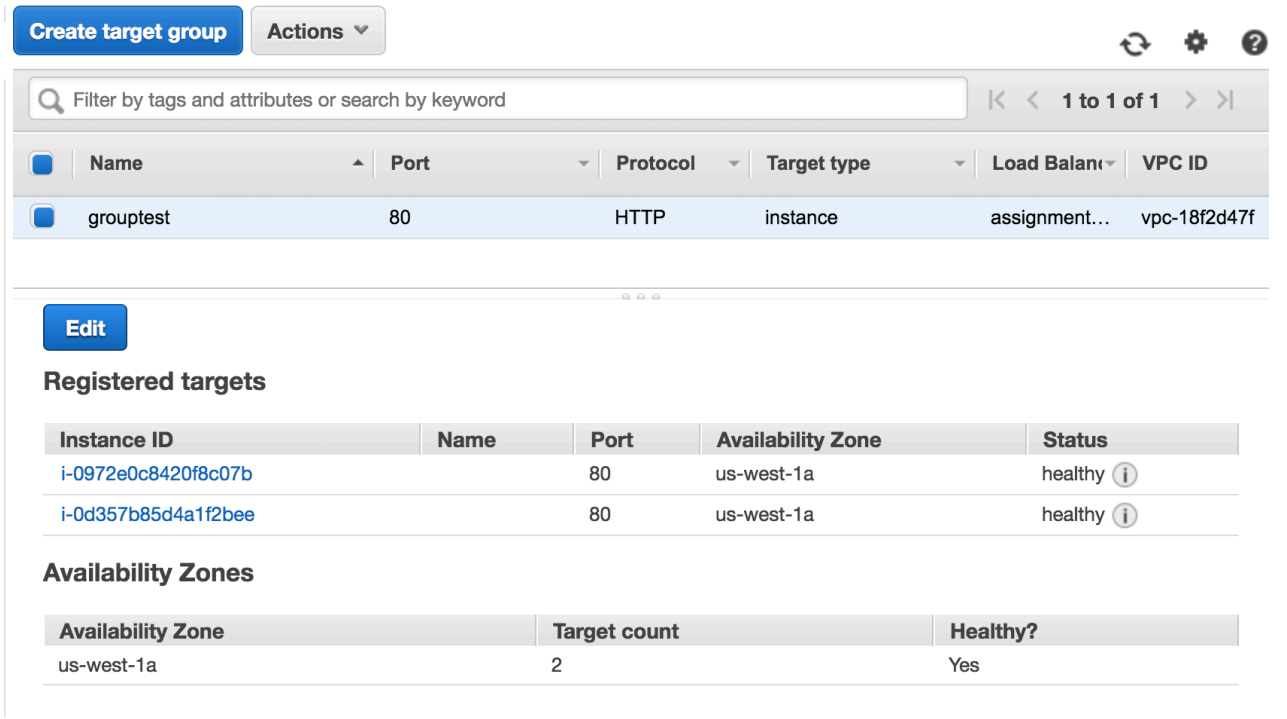

Run
Main
/Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java ... <1 internal calls>
Warmup: 12 threads running ...
Warmup complete: 61.479 seconds
Loading: 64 threads running ...
Loading complete: 126.7 seconds
Peak: 128 threads running ...
Peak complete: 390.976 seconds
Cooldown: 32 threads running ...
Cooldown complete: 117.489 seconds
Total run time: 696.65 seconds
Total number of requests sent: 962000
Mean latency: 1380
95% latency: 0.038
99% latency: 0.035
Process finished with exit code 0


Run
Main
/Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java ... <1 internal calls>
Warmup: 25 threads running ...
Warmup complete: 78.264 seconds
Loading: 128 threads running ...
Loading complete: 165.795 seconds
Peak: 256 threads running ...
Peak complete: 760.424 seconds
Cooldown: 64 threads running ...
Cooldown complete: 123.325 seconds
Total run time: 1127.815 seconds
Total number of requests sent: 1925500
Mean latency: 1705
95% latency: 0.042
99% latency: 0.037
Process finished with exit code 0

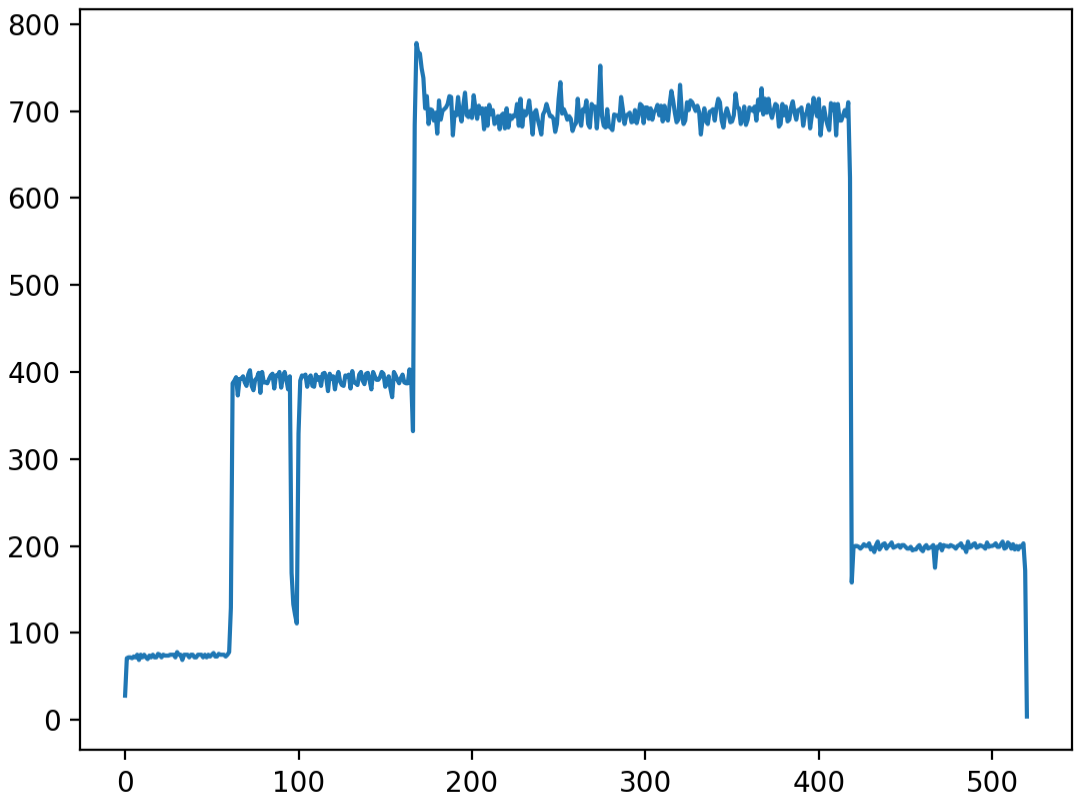


Plot

- load balancing: two instance, improvement is limited
- for 256 threads, both regular and load balancing reach a maximum throughput of 2000 per second, making the loading phase and peak phase in the same level



- regular: 32, 64, 128, 256


800
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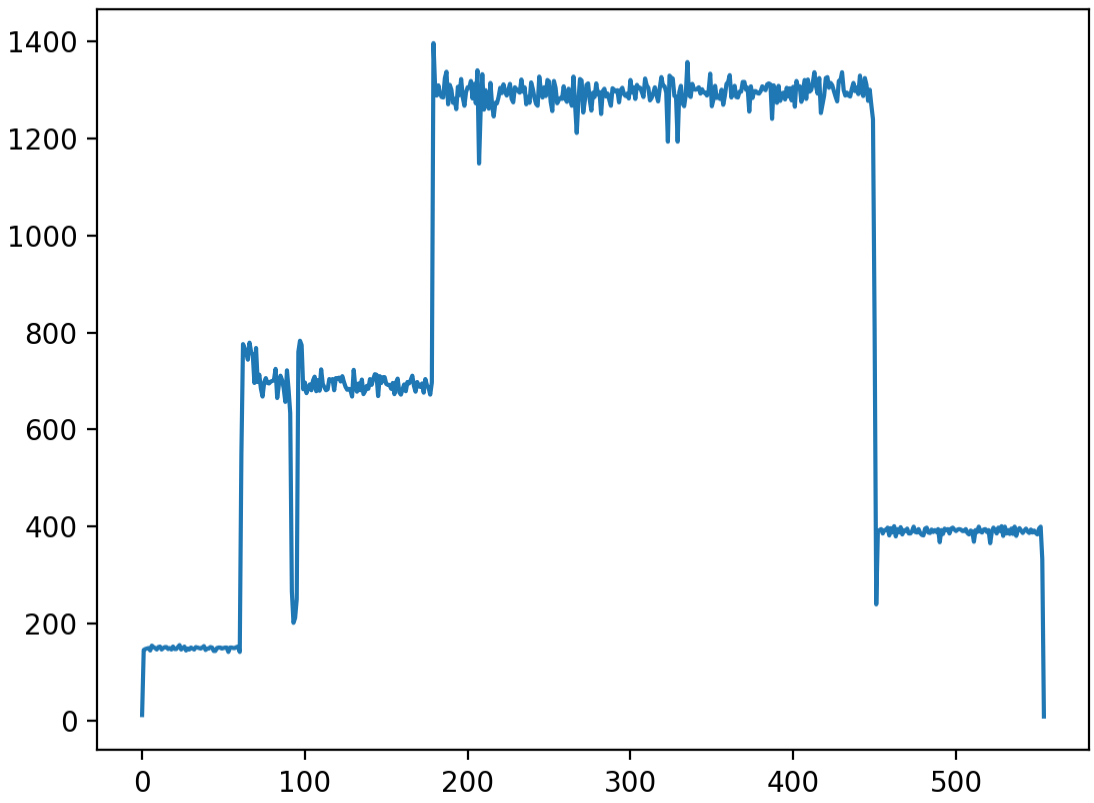
500


1400
1200
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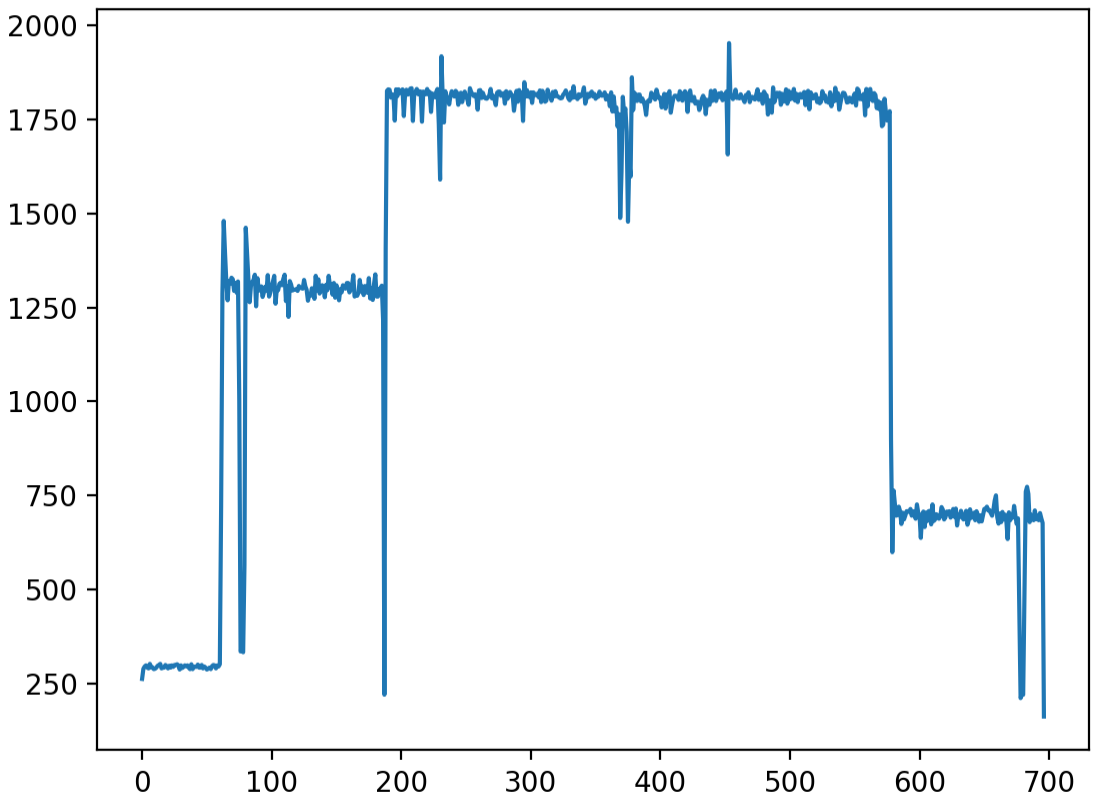
2000
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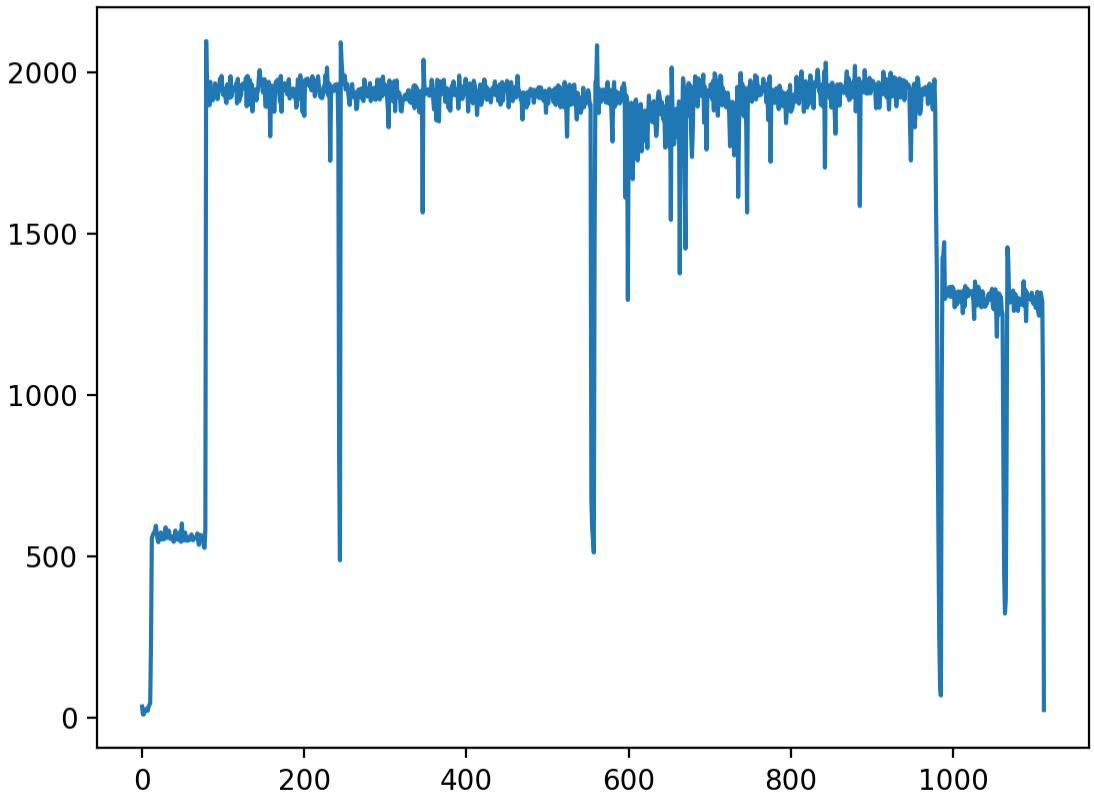
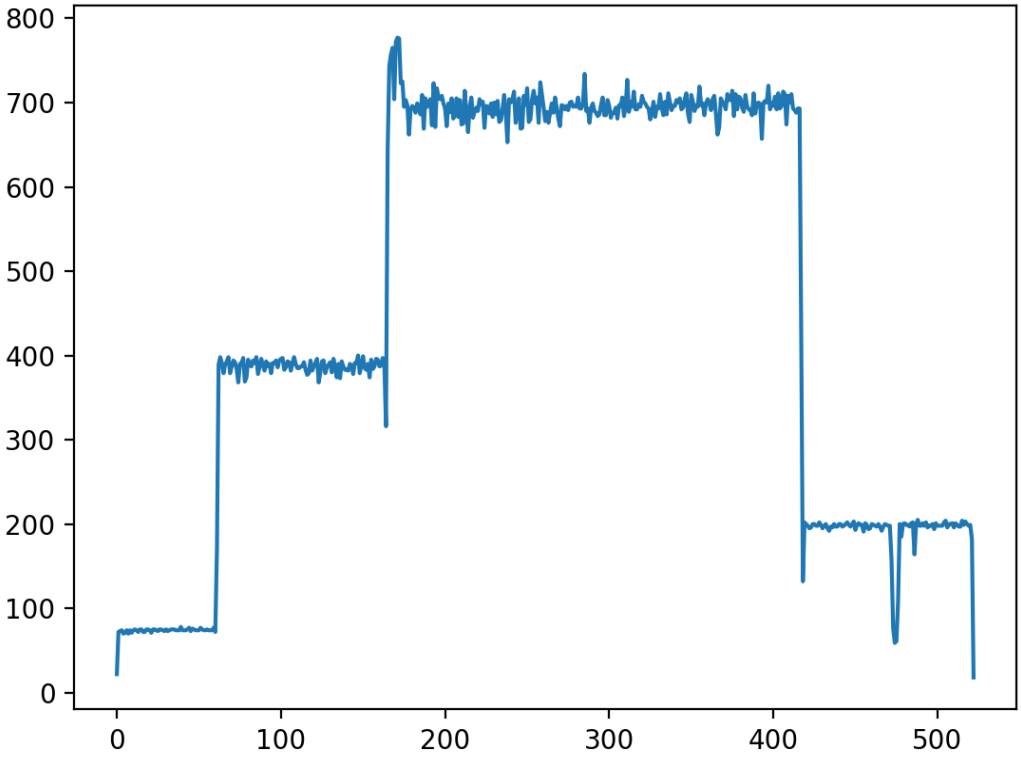


- load balacing: 32, 64, 128, 256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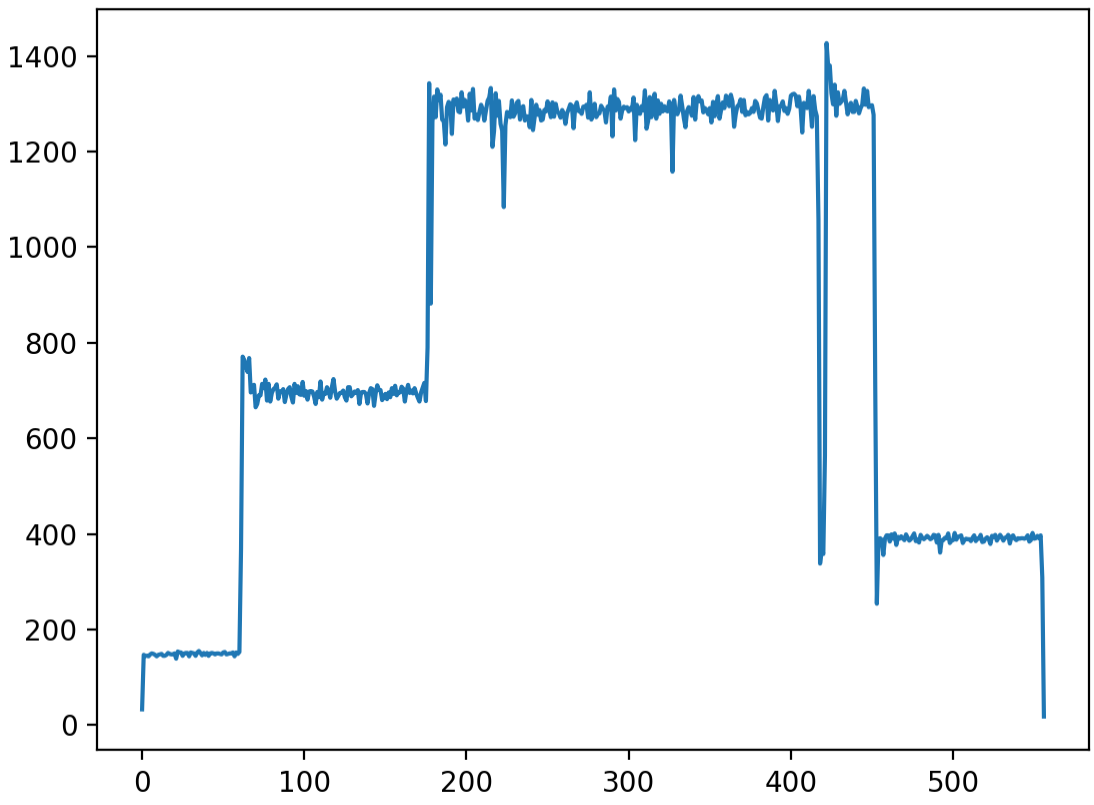
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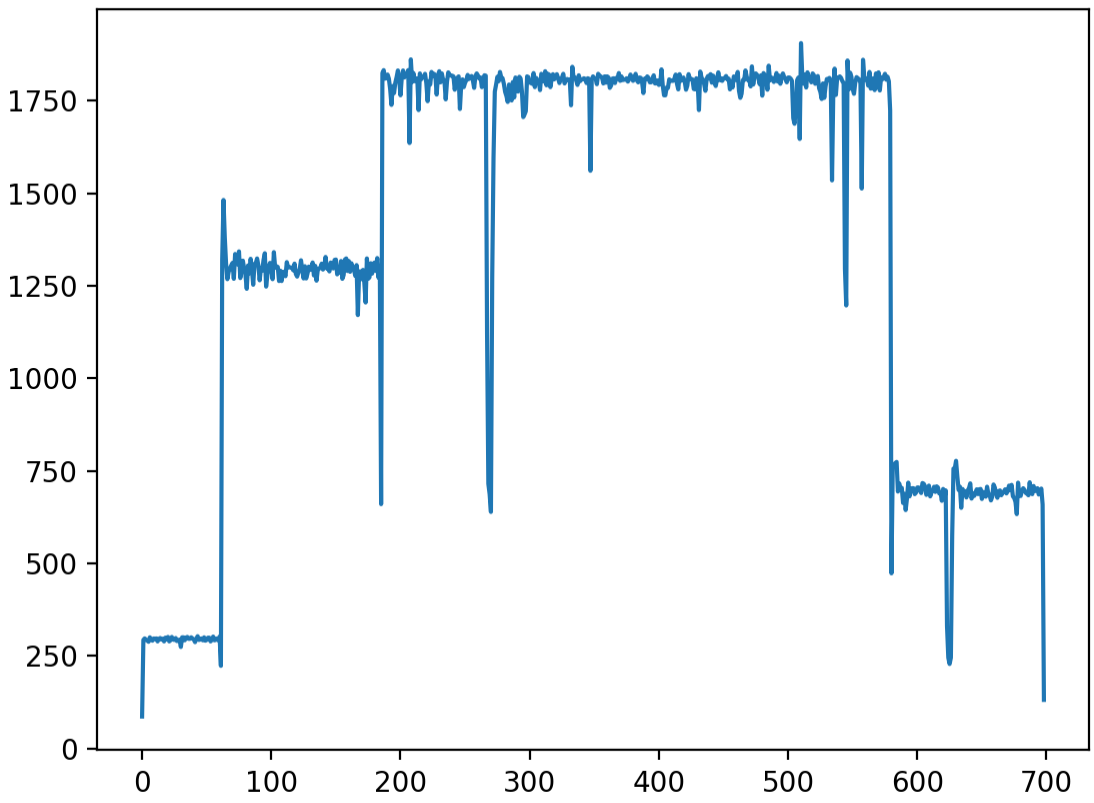
1750
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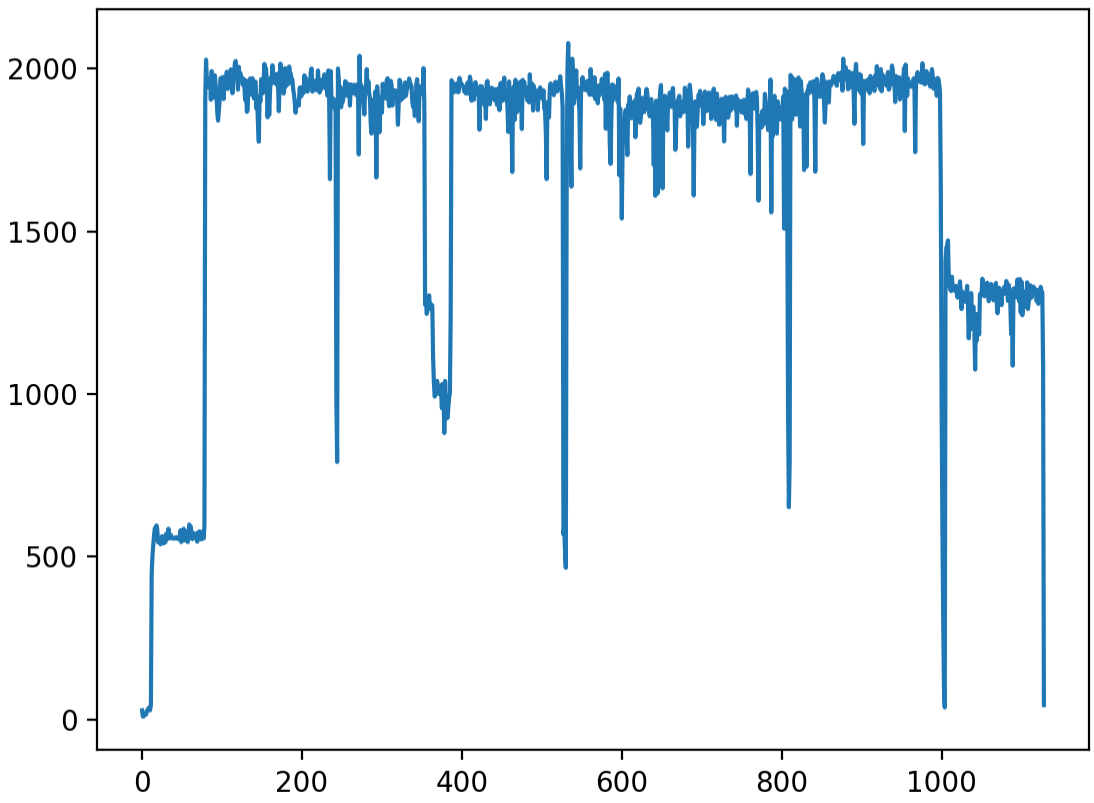
2000
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