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10/12/2021

Timing Report

Lab 2

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Running Tests

	Mutex(Semaphore)	Synchronised	Atomic Integer
	4.356 s	4.052 s	4.071 s
	4.275 s	4.436 s	4.041 s
	4.106 s	3.977 s	4.170 s
	4.047 s	3.924 s	4.206 s
	3.991 s	3.988 s	4.131 s
Avg:	4.155	4.0754	4.1238

Average(Avg), Fastest, Slowest

Comparing the tests

In this case, the Synchronised version seems fastest by looking at the average, but less stable as it has the biggest worst-case and largest best-case scenario.

Researched benchmarks also show that synchronization is the worst would be the worst case the more threads we add.[1]

We can see that Atomic Integer is faster than the Mutex even doo they are quite similar since the mutex loading each thread between memory whereas Atomic Integer uses a busy waiting mechanism(Test-and-Set).

References

[1] Baptiste Wicht, 2010-09-01, Java Synchronization (Mutual Exclusion) Benchmark,

<https://baptiste-wicht.com/posts/2010/09/java-synchronization-mutual-exclusion-benchmark.html>