Concurrent Data Structures for Multi-Core Systems

PROGRAMMING ASSIGNMENT 2

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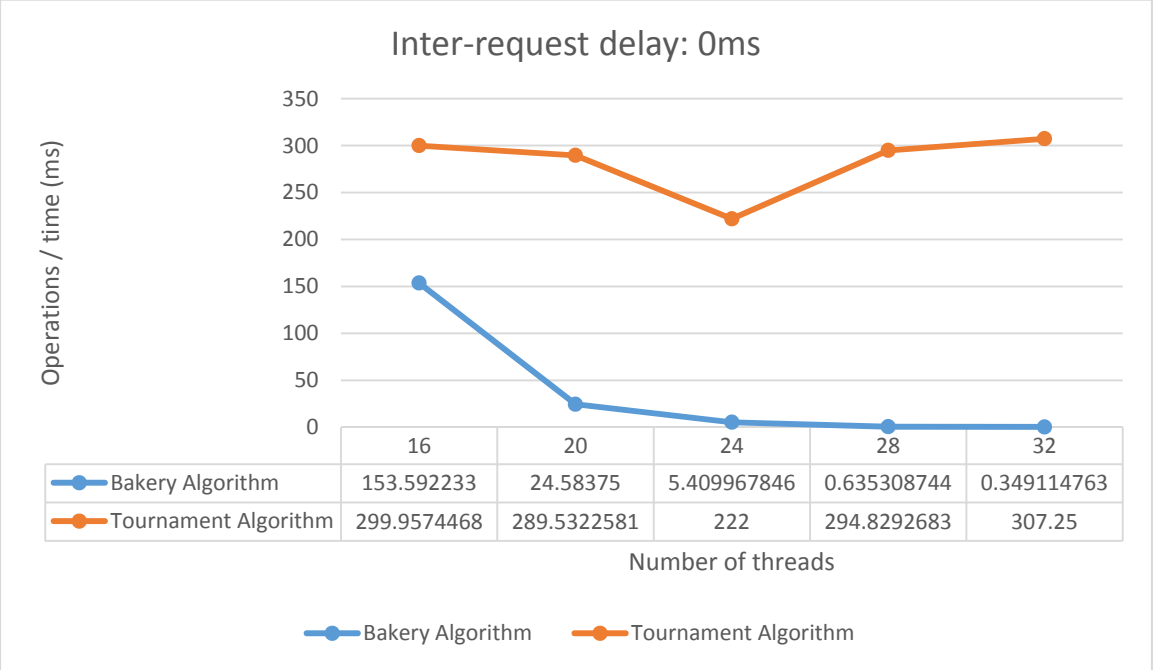
Experiment:

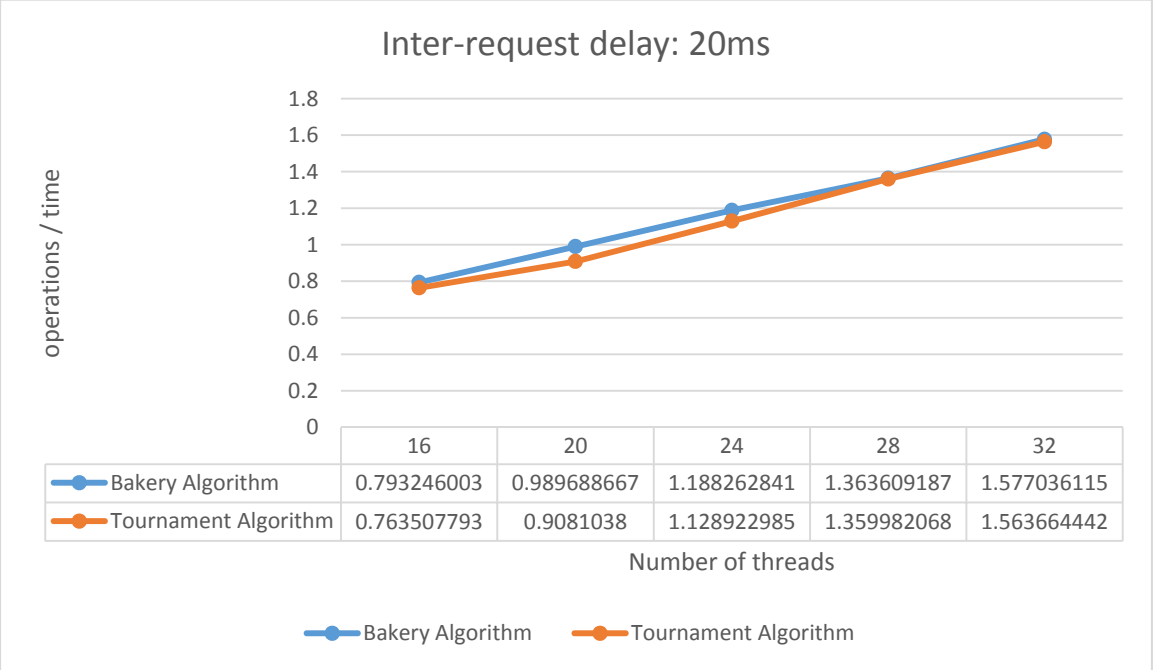
- Inter-request delay: 0ms
- Number of threads: 16, 20, 24, 28, 32



The above graph displays the throughput vs number of threads. Experiment was carried out without any inter-request delay and we notice that the throughput of Bakery algorithm decreases with twice the number of threads (in accordance to the cores in the system). Whereas, the tournament algorithm performs much better than the Bakery algorithm without any inter-request delays.

Experiment:

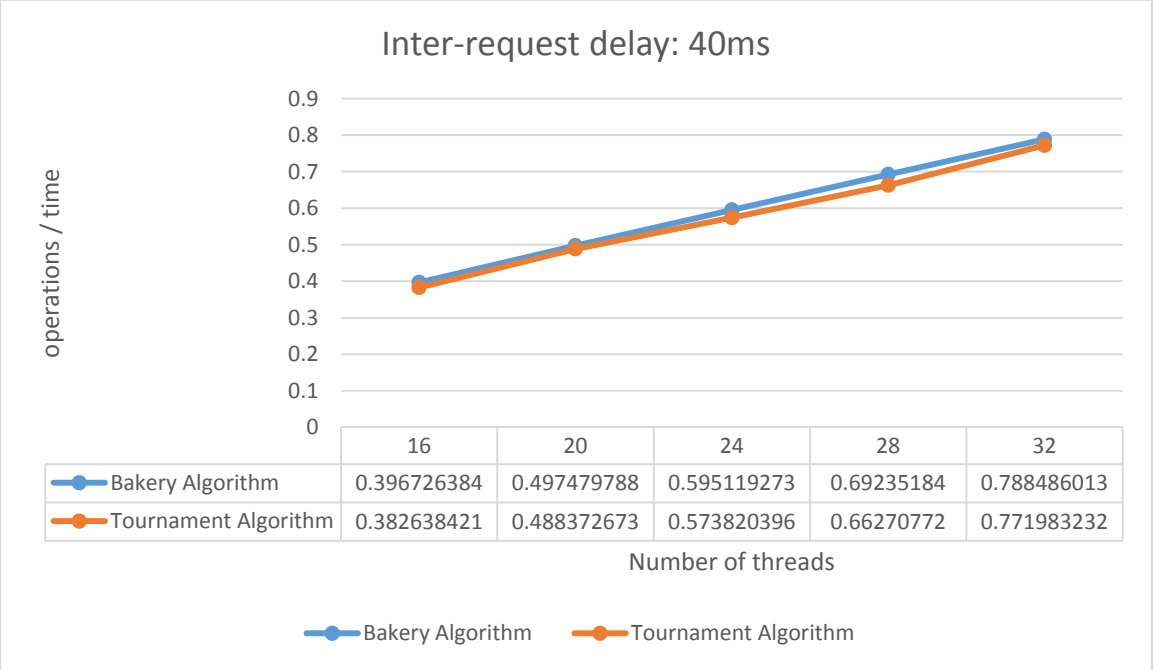
- Inter-request delay: 20ms
- Number of threads: 16, 20, 24, 28, 32



The above graph is for the experiment with an inter-request delay of 20ms between two critical section requests. For a fixed amount of time, the system has performed more operations (entering critical section) as the number of threads have increased; thereby increasing the throughput with the number of threads. Also, bakery algorithm and the tournament algorithm's performance remains almost constant with the delays.

Experiment:

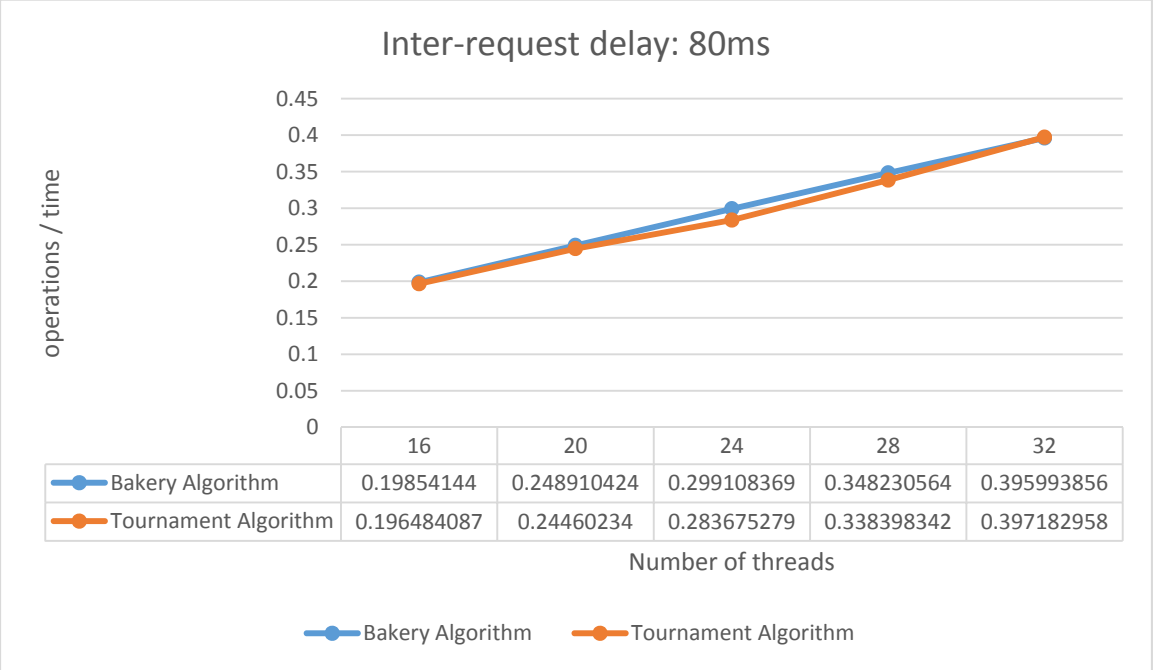
- Inter-request delay: 40ms
- Number of threads: 16, 20, 24, 28, 32



The above graph is for the experiment with an inter-request delay of 40ms between two critical section requests. For a fixed amount of time, the system has performed more operations (entering critical section) as the number of threads have increased; thereby increasing the throughput with the number of threads. Also, bakery algorithm and the tournament algorithm's performance remains almost constant with the delays.

Experiment:

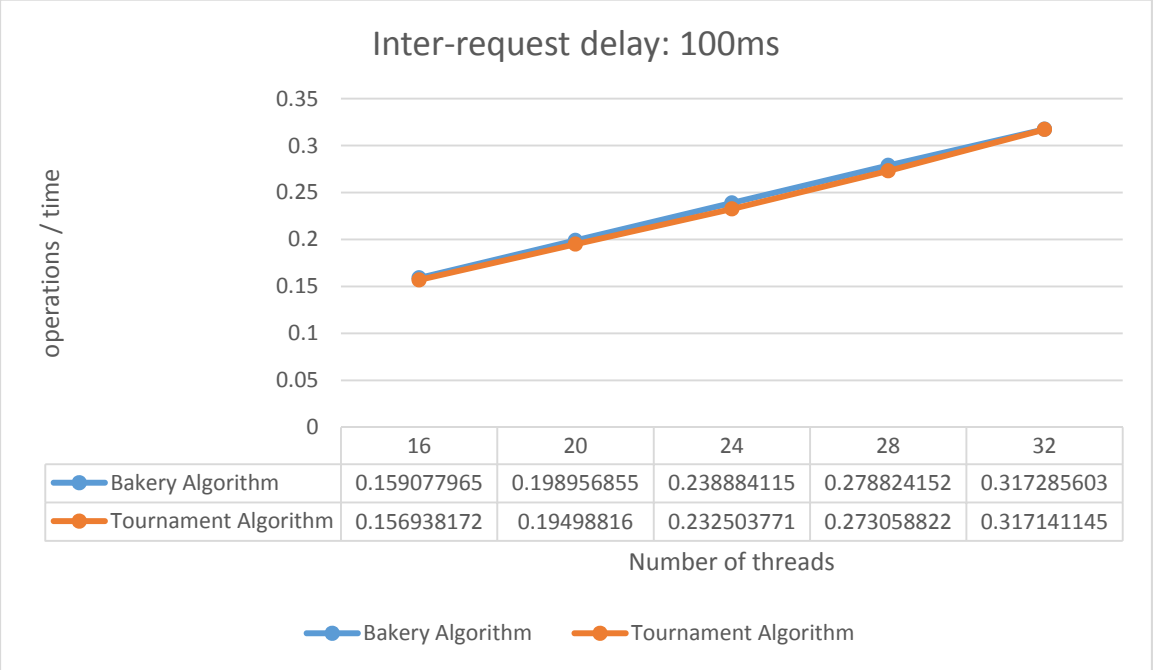
- Inter-request delay: 80ms
- Number of threads: 16, 20, 24, 28, 32



The above graph is for the experiment with an inter-request delay of 80ms between two critical section requests. For a fixed amount of time, the system has performed more operations (entering critical section) as the number of threads have increased; thereby increasing the throughput with the number of threads. Also, bakery algorithm and the tournament algorithm's performance remains almost constant with the delays.

Experiment:

- Inter-request delay: 100ms
- Number of threads: 16, 20, 24, 28, 32



The above graph is for the experiment with an inter-request delay of 100ms between two critical section requests. For a fixed amount of time, the system has performed more operations (entering critical section) as the number of threads have increased; thereby increasing the throughput with the number of threads. Also, bakery algorithm and the tournament algorithm's performance remains almost constant with the delays.

Conclusion:

As the inter-request delay increases in the intervals of 20ms [0,100] inclusive, the throughput vs number of thread gradually decreases.