CPSC 457 Assignment 3: Concurrency and Synchronization

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## Part 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Run | 1 | 2 | 3 | 4 | 5 | Average |
| 5 chopsticks (s) | 3.27 | 3.53 | 3.67 | 3.60 | 3.53 | 3.52 |
| 6 chopsticks (s) | 0.67 | 0.73 | 0.60 | 0.87 | 0.80 | 0.73 |
| 7 chopsticks (s) | 0.67 | 0.60 | 0.80 | 0.80 | 0.67 | 0.71 |
| 8 chopsticks (s) | 0.40 | 0.20 | 0.22 | 0.13 | 0.33 | 0.26 |
| 9 chopsticks (s) | 0.20 | 0.33 | 0.27 | 0.20 | 0.07 | 0.21 |
| 10 chopsticks (s) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## Part 2 Results where num\_of\_elems = 100,000,000 and elem\_max = 10,000

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| num\_threads | num\_of\_composite | Composite (%) | Real time (s) | User time (s) | System time (s) |
| 1 | 87694289 | 87 | 7.117 | 6.719 | 0.389 |
| 2 | 87692044 | 87 | 5.419 | 8.600 | 0.383 |
| 4 | 87686099 | 87 | 4.221 | 9.689 | 0.512 |
| 8 | 87693370 | 87 | 3.735 | 13.554 | 0.579 |
| 16 | 87688764 | 87 | 2.955 | 13.579 | 0.458 |

With increasing number of multithreading, we expect computation time to decrease since the multiple CPUs/ cores are working simultaneously. The work to check whether the set of elements are composite numbers is as equally distributed as possible between *n* threads and thus computation time should decrease when using additional threads.