1) Files mtx\_mp.cc and mtx\_nomp.cc in folder problem1

|  |  |  |
| --- | --- | --- |
|  | time (seconds) | |
| Threads | parallel | Geoxeon |
| no mp | 0.000128 | 6.80E-05 |
| 1 | 0.000144 | 0.000102 |
| 2 | 0.000221 | 0.000336 |
| 4 | 0.002119 | 0.003041 |
| 8 | 0.003597 | 0.020099 |
| 16 | 0.005399 | 0.048442 |
| 32 | 0.043895 | 0.213559 |
| 64 | 0.002004 | 0.006184 |

2) Files incorrect.cc, atomic.cc, critical.cc, and reduction.cc in folder problem2  
This was all done on parallel.ecse.rpi.edu and took about 40 minutes, so it was not repeated on geoxeon.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Time(seconds) | | | |
| Threads | No synchronizing (incorrect) | atomic | critical | reduction |
| 1 | 0.0067047 | 12.8746 | 16.4019 | 2.83538 |
| 2 | 0.0129511 | 23.1553 | 67.5119 | 2.08989 |
| 4 | 0.0175816 | 59.3065 | 106.822 | 1.14205 |
| 8 | 0.0308512 | 39.905 | 144.288 | 0.666604 |
| 16 | 0.0429889 | 47.0209 | 195.046 | 0.419846 |
| 32 | 0.0543808 | 35.9167 | 930.57 | 0.3000185 |
| 64 | 0.0174563 | 40.7483 | 646.801 | 0.294106 |

3) File tasktime.cc in folder problem3  
Task overhead: 4.21614e-08 seconds (0.0000000421614) on parallel.ecse.rpi.edu

4) File slower.cc in folder problem4

A slower\_trivial.cc was also developed which simply adjusts its number of iterations based off the number of threads available as a sort of tongue-in-cheek solution.