|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SUM** | Threads | 1 | 4 | 8 | 10 | 100 | 200 | 300 | 400 |
| Elements |  |  |  |  |  |  |  |  |  |
| 100 |  | 1)0.00000  2)0.00000  3)0.000279 | 1)0.00000  2)0.000999  3)0.000407 | 1)0.000000  2)0.001999  3)0.000897 | 1)0.000999  2)0.000999  3)0.000936 | 1)0.003999  2)0.012998  3)0.011304 | 1)  2)  3) | 1)  2)  3) | 1)  2)  3) |
| 200 |  | 1)0.000999  2)0.000000  3)0.000280 | 1)0.00000  2)0.000999  3)0.000436 | 1)0.000999  2)0.000999  3)0.000899 | 1)0.000999  2)0.000999  3)0.000995 | 1)0.004999  2)0.010998  3)0.010661 | 1)0.006998  2)0.019996  3)0.016686 | 1)  2)  3) | 1)  2)  3) |
| 300 |  | 1)0.00000  2)0.000999  3)0.000291 | 1)0.0000  2)0.000999  3)0.000474 | 1)0.001999  2)0.00000  3)0.000836 | 1)0.0000  2)0.001999  3)0.001177 | 1)0.005999  2)0.011998  3)0.010779 | 1)0.008998  2)0.017997  3)0.017076 | 1)0.009998  2)0.035994  3)0.028921 | 1)  2)  3) |
| 500 |  | 1)0.0000  2)0.0000  3)0.000331 | 1)0.001999  2)0.0000  3)0.000486 | 1)0.000999  2)0.000999  3)0.000833 | 1)0.000999  2)0.000999  3)0.000997 | 1)0.000999  2)0.014997  3)0.009927 | 1)0.001999  2)0.031995  3)0.022014 | 1)0.003999  2)0.051992  3)0.035773 | 1)0.008998  2)0.058991  3)0.043906 |
| 1000 |  | 1)0.0000  2)0.000999  3)0.000333 | 1)0.0000  2)0.000999  3)0.000514 | 1)0.000999  2)0.000999  3)0.001040 | 1)0.001999  2)0.000999  3)0.001029 | 1)0.001999  2)0.011998  3)0.008735 | 1)0.005999  2)0.021996  3)0.018486 | 1)0.005999  2)0.037994  3)0.027896 | 1)0.011998  2)0.045993  3)0.036146 |

1. User Time
2. System Time
3. Wall Time

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Max** | Threads | 1 | 4 | 8 | 10 | 100 | 200 | 300 | 400 |
| Elements |  |  |  |  |  |  |  |  |  |
| 100 |  | 1)0.0000  2)0.0000  3)0.000264 | 1)0.000  2)0.000999  3)0.000513 | 1)0.000999  2)0.000999  3)0.000824 | 1)0.0000  2)0.001000  3)0.000877 | 1)0.001999  2)0.012998  3)0.009419 | 1)  2)  3) | 1)  2)  3) | 1)  2)  3) |
| 200 |  | 1)0.000999  2)0.0000  3)0.000286 | 1)0.0000  2)0.000999  3)0.000518 | 1)0.000999  2)0.000999  3)0.000932 | 1)0.0000  2)0.001999  3)0.000904 | 1)0.003999  2)0.009998  3)0.009510 | 1)0.010998  2)0.017997  3)0.017967 | 1)  2)  3) | 1)  2)  3) |
| 300 |  | 1)0.0000  2)0.000999  3)0.000358 | 1)0.000999  2)0.0000  3)0.000551 | 1)0.000999  2)0.000999  3)0.000917 | 1)0.0000  2)0.001999  3)0.001070 | 1)0.001999  2)0.013997  3)0.009857 | 1)0.003999  2)0.021996  3)0.016892 | 1)0.010998  2)0.034995  3)0.030237 | 1)  2)  3) |
| 500 |  | 1)0.0000  2)0.000999  3)0.000336 | 1)0.000999  2)0.00000  3)0.000564 | 1)0.000999  2)0.000999  3)0.001001 | 1)0.001999  2)0.000999  3)0.001248 | 1)0.002999  2)0.011998  3)0.009649 | 1)0.004999  2)0.026995  3)0.019412 | 1)0.008998  2)0.054991  3)0.040450 | 1)0.007998  2)0.048992  3)0.037722 |
| 1000 |  | 1)0.0000  2)0.000999  3)0.000398 | 1)0.0000  2)0.001999  3)0.000668 | 1)0.000999  2)0.000999  3)0.000818 | 1)0.000  2)0.002999  3)0.001141 | 1)0.002999  2)0.012998  3)0.009315 | 1)0.004999  2)0.022996  3) | 1)0.006998  2)0.035994  3)0.028048 | 1)0.009998  2)0.046992  3)0.036971 |

To determine the most efficient amount of threads, we experimented with a gradually increasing number of threads to perform both the “sum” and “max” functions on a gradually increasing number of elements. When experimenting with the “sum” function, a general trend of a logarithmic increase is present in the user time when the number of threads is increased. There are slightly linear increases in both system and wall time taken when the number of threads is increased. Comparatively, a larger number of threads used is more efficient for a large number of elements: this is explicitly shown in the logarithmic increase in user time. Unfortunately, for the “max” function our data showed no correlation between user time took and the amount of threads used. However, there was a slight linear increase in both the system and wall time taken as number of threads increased. With this, we can conclude that once again more threads are the most efficient way of computing a large number of elements.