**Amdahl’s Law Speedup**

Speedup <= 1/((1-PctPar)+(PctPar/p))

Where PctPar is the percentage of the program that can be parallelized and p is the number of cores

PctPar = 1 (100%)

The program is just a bunch of loops so all of it can theoretically be parallelized

P = 4

Start with 4 threads

Speedup <= 1/((1-1)+(¼)) = 4

Speedup <= 4

**Pre parallelization time:**

|  |  |
| --- | --- |
| **Execution number** | **Execution time taken(microseconds)** |
| 1 | 8234168 |
| 2 | 8309310 |
| 3 | 8193036 |
| 4 | 8340502 |
| 5 | 8181587 |
| 6 | 8380356 |
| 7 | 8480554 |
| 8 | 8460210 |
| 9 | 9248920 |
| 10 | 8420785 |
| average | 8424942.8 |

**Post parallelization time: (trial 1 on 1 thread)**

|  |  |
| --- | --- |
| **Execution number** | **Execution time taken(microseconds)** |
| 1 | 10832745 |
| 2 | 10815973 |
| 3 | 10761339 |
| 4 | 10830461 |
| 5 | 10842695 |
| 6 | 10743900 |
| 7 | 10482348 |
| 8 | 10800048 |
| 9 | 10850038 |
| 10 | 10801025 |
| average | 10776057.2 |

**Post parallelization time: (trial 1 on 2 threads)**

|  |  |
| --- | --- |
| **Execution number** | **Execution time taken(microseconds)** |
| 1 | 5425150 |
| 2 | 5461601 |
| 3 | 5466629 |
| 4 | 5457893 |
| 5 | 5447502 |
| 6 | 5478341 |
| 7 | 5476762 |
| 8 | 5510805 |
| 9 | 5472817 |
| 10 | 5472911 |
| average | 5467041.1 |

**Post parallelization time: (trial 1 on 4 threads)**

|  |  |
| --- | --- |
| **Execution number** | **Execution time taken(microseconds)** |
| 1 | 2751982 |
| 2 | 2774502 |
| 3 | 2763139 |
| 4 | 2776530 |
| 5 | 2791786 |
| 6 | 2788191 |
| 7 | 2761448 |
| 8 | 2755919 |
| 9 | 2739563 |
| 10 | 2741852 |
| average | 2764491.2 |

**Post parallelization time: (trial 1 on 8 threads)**

|  |  |
| --- | --- |
| **Execution number** | **Execution time taken(microseconds)** |
| 1 | 2738391 |
| 2 | 2729493 |
| 3 | 2726619 |
| 4 | 2744935 |
| 5 | 2728588 |
| 6 | 2730632 |
| 7 | 2745252 |
| 8 | 2698786 |
| 9 | 2550805 |
| 10 | 2748418 |
| average | 2714191.9 |

**Post parallelization time: (trial 1 on 16 threads)**

|  |  |
| --- | --- |
| **Execution number** | **Execution time taken(microseconds)** |
| 1 | 2706037 |
| 2 | 2724487 |
| 3 | 2684487 |
| 4 | 2695091 |
| 5 | 2701373 |
| 6 | 2709305 |
| 7 | 2719829 |
| 8 | 2711085 |
| 9 | 2700626 |
| 10 | 2713015 |
| average | 2706533.5 |