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**Logarithm array**

**Environment:**

VirtualBox, Windows 10, 2 vCPU, 4GB vRAM, Visual Studio Community 2017

**Serial version:**

Tested with 5 rounds.

|  |  |
| --- | --- |
| **Round of testing** | **Time** |
| 1 | 4308 |
| 2 | 4687 |
| 3 | 4761 |
| 4 | 4781 |
| 5 | 4615 |
|  | **4630.4** |

**Parallel version:**

Tested with 2, 4, 6, 8, and 10 threads setting.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Round of testing | | | | |  |
| **Number of threads** | **1** | **2** | **3** | **4** | **5** | **Average** |
| 2 | 1413 | 1433 | 1371 | 1360 | 1568 | 1429 |
| 4 | 1553 | 1414 | 1554 | 1612 | 1414 | 1509.4 |
| 6 | 1396 | 1508 | 1496 | 1502 | 1461 | 1472.6 |
| 8 | 1540 | 1526 | 1494 | 1480 | 1659 | 1539.8 |
| 10 | 1328 | 1632 | 1629 | 1476 | 1604 | 1533.8 |
|  | | | | | | **1496.92** |

With the above result, it clearly said the parallel version had performed much faster (almost **4 times**) than the serial version as it divided the large array into smaller arrays and executed them at the same time. And the environment is in a virtual machine, hence, in the physical machine, the parallel version will outperform the serial one.

One more thing is that we cannot increase more threads than the number of the available cores of the machine.

**Merge 2 sorted lists**

**Environment:**

Acer Laptop, Windows 10, 4 CPU cores, 12GB RAM, Visual Studio Community 2017

**Serial version:**

|  |  |
| --- | --- |
| Round of testing |  |
| 1 | 8157 |
| 2 | 6857 |
| 3 | 6387 |
| 4 | 7309 |
| 5 | 8378 |
|  | **7417.6** |

**Parallel version:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Round of testing | | | | |  |
| Number of threads | 1 | 2 | 3 | 4 | 5 |  |
| 2 | 1429 | 1805 | 1792 | 1628 | 1719 | **1674.6** |
| 4 | 1456 | 1635 | 1625 | 1621 | 1537 | **1574.8** |

I can see the results determine parallel version had outperformed the serial version.