Parallel Coursework 1

Testing Document

**Correctness Testing** – Manual vs Sequential vs Parallel

Value set 1: valSet1.txt – dimension: 4x4, precision: 0.1, parallel threads: 2

Value set 2: valSet2.txt – dimension: 6x6, precision: 1, parallel threads: 4

REMEMBER TO FILL THIS BIT IN IN VALSET2.TXT!! THE STEPS!! 3 steps only

|  |  |  |
| --- | --- | --- |
|  | **Value Set 1**  **(Pass for result identical to manual)** | **Value set 2**  **(Pass for result identical to manual)** |
| **Manual** | - | - |
| **Sequential** | Pass | Pass |
| **Parallel T:1** | Pass | Pass |
| **Parallel T:2** | Pass | Pass |
| **Parallel T:4** | Pass | Pass |
| **Parallel T:8** | Pass | Pass |

This shows that both the Sequential and the Parallel code compute the correct answer, and that the Parallel code computes it correctly irrespective of number of threads used.

**Thread Count Tests:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Threads** | **Array Dimensions** | **Precision** | **Average Completion Time**  **over 3 Attempts** |
| **Sequential** | 500x500 | 0.1 |  |
| **1** | 500x500 | 0.1 | 0.656575107s |
| **2** | 500x500 | 0.1 | 0.368874173s |
| **4** | 500x500 | 0.1 | 0.226523595s |
| **8** | 500x500 | 0.1 | 0.156137479s |
| **16** | 500x500 | 0.1 | 0.161631392s |
| **32** | 500x500 | 0.1 | 0.158631929s |
| **64** | 500x500 | 0.1 | 0.195477202s |

**Dimension Tests:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Threads** | **Array Dimensions** | **Precision** | **Average Completion Time**  **over 3 Attempts** |
| **16** | 10x10 | 0.1 | 0.004739820s |
| **16** | 100x100 | 0.1 | 0.013273339s |
| **16** | 1000x1000 | 0.1 | 0.452362829s |
| **16** | 10000x10000 | 0.1 | Balena force closed after 15m every time |

**Precision Tests:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Threads** | **Array Dimensions** | **Precision** | **Average Completion Time**  **over 3 Attempts** |
| **16** | 500x500 | 1 | 0.083644602s |
| **16** | 500x500 | 0.1 | 0.139587870s |
| **16** | 500x500 | 0.001 | 33.199836617s |
| **16** | 500x500 | 0.00001 | 148.644991221s |