**Table 1: Vary the number of mpi processes (On Suny Cluster)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number Of Node** | **Number Of Thread** | **MatrixSize** | **Serial Execution time** | |  | | --- | | **Distributed Execution time (On UAlbany Cluster)** | | **Speed UP** |
| 2 | 2 | 512 | 745933 | 506849 | 1.471707 |
| 3 | 2 | 512 | 745933 | 438788 | 1.699985 |
| 4 | 2 | 512 | 745933 | 400720 | 1.861482 |
| 5 | 2 | 512 | 745933 | 375908 | 1.98435 |
| **7** | **2** | **512** | **745933** | **339081** | **2.199867** |

**Table 2: Increase N (generate a bigger matrix) and if required vary the number of mpi processes (On Amazon EC2)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number Of Node** | **Number Of Thread** | **MatrixSize** | **Serial Execution time** | |  | | --- | | **Distributed Execution time (on Amazon EC2)** | | **Speed UP** |
| 10 | 2 | 100 | 5695 | 25456 | 0.22371936 |
| 10 | 2 | 200 | 44502 | 281742 | 0.15795302 |
| 10 | 2 | 500 | 691348 | 560979 | 1.23239551 |
| 10 | 2 | 1000 | 5677572 | 1625592 | 3.49261807 |
| 8 | 2 | 2000 | 45400503 | 8414087 | 5.39577295 |
| **10** | **2** | **4000** | **365157100** | **43045249** | **8.4830988** |
| 10 | 2 | 5000 | 713258716 | 89856509 | 7.93775236 |
| **10** | **2** | **6000** |  | **145612830** |  |
| **10** | **2** | **7000** |  | **254425799** |  |

**Table 3: Increase N (generate a bigger matrix) and if required vary the number of mpi processes (On UAlbany Cluster)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number Of Node** | **Number Of Thread** | **MatrixSize** | **Serial Execution time** | |  | | --- | | **Distributed Execution time (On UAlbany Cluster)** | | **Speed UP** |
| 10 | 2 | 100 | 5695 | 78129 | 0.072892268 |
| 10 | 2 | 200 | 44502 | 77605 | 0.573442433 |
| 10 | 2 | 500 | 691348 | 402119 | 1.719262208 |
| 10 | 2 | 1000 | 5677572 | 1718583 | 3.303635611 |
| 10 | 2 | 2000 | 45400503 | 8156882 | 5.565913912 |
| 10 | 2 | 4000 | 365157100 | 77788717 | 4.694216772 |
| 10 | 2 | 4500 | 521370632 | 92747191 | 5.621416955 |
| **10** | **2** | **5000** | **713258716** | **106265219** | **6.712061789** |
|  |  |  |  |  |  |

**Steps to Run the program:**

root@master:/home/ubuntu/Homework\_6# make clean

rm -f \*.o output\*.txt \*.out

root@master:/home/ubuntu/Homework

root@master:/home/ubuntu/Homework\_6# ./generateInputMatrixFile.out 2048

root@master:/home/ubuntu/Homework\_6# mpirun -np 10 ./ part\_2\_parallel.out.out 2048 2