

Lab 4

Operating System

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Part B:

Output:

Matrix A (10*10); Matrix B (10*10); Matrix C (10*10)

```
[revai@fedora Lab4]$ ./a.out -a a_matrix_file.txt -b b_matrix_file.txt -t 3
Multi Threaded Matrix Multiplication Time:0.000204
Single Threaded Matrix Multiplication Time:0.000002
# Row 0
0.135840
0.090605
0.236708
0.458106
0.319755
0.212863
0.096671
0.400272
0.181469
0.326914
# Row 1
0.038570
0.025726
0.067210
0.130074
0.090790
0.060440
0.027449
0.113652
0.051526
0.092823
# Row 2
0.222997
0.148738
0.388583
0.752032
0.524913
0.349438
0.158696
0.657092
0.297902
0.536666
# Row 3
0.139340
0.092939
0.242806
0.469908
0.327993
0.218347
0.099162
0.410585
0.186145
0.335337
# Row 4
0.049380
0.032936
0.086047
0.166529
0.116236
0.077379
```

Matrix A(100*100); Matrix B(100*100); Matrix C(100*100)
No of Threads: 3

```
Multi Threaded Matrix Multiplication Time:0.000740
Single Threaded Matrix Multiplication Time:0.001960
# Row 0
0.039538 100 100
0.138028 # Row 0
0.118536 # Row 0
0.115776
0.086310 0.241620
0.070579
0.111604 0.202904
0.079436 0.522293
0.125854
0.007201 0.769870
0.008593
0.065826 0.746322
0.077227
0.156427 0.688781
0.091982 0.259101
0.145637
0.010214 0.488055
0.081943
0.101146 0.324067
0.095173
0.127279 0.101018
0.058406 0.505123
0.162117
0.054323 0.959549
0.008971
0.101259 0.245962
0.072634 0.058132
0.138416
0.132184 0.211136
0.059117
0.151230 0.052148
0.156973
0.140222 0.108118
0.067641 0.903869
0.083084
0.095251 0.316298
0.029503
0.127828 0.411829
0.006086 0.037238
0.025479
0.130608 0.511003
0.110533
0.066255 0.362806
0.039557
0.091721 0.722710
0.066284 0.027578
0.150567
0.041552 0.844846
0.057964
0.036517 0.176294
.
```

When the matrix to be multiplied are small creating threads to solve multiplication actually takes more time as OS has to create and manage threads. But on scaling the problem 10 times we can see that multithreading has much better advantage.