

# Indian Institute of Information Technology Allahabad



**Distributed Systems - Semester 6**

**Assignment 2**

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**Submitted by :**

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Write programs to implement

1) matrix multiplication of matrices with dimensions 1024\*1024

a) sequential C/C++ version

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)
1	30.045455
2	28.390789
3	28.658908
4	26.952755
5	27.952755

b) using pthread

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads used	Speedup
1	17.457069	4	1.721105359
2	18.559949	4	1.529680335
3	16.824894	4	1.703363361
4	14.912576	4	1.807384251
5	15.923543	4	1.755435646

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads used	Speedup
1	11.439060	16	1.721105359
2	18.559949	16	1.529680335
3	16.824894	16	1.703363361
4	14.912576	16	1.807384251
5	15.923543	16	1.755435646

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads used	Speedup
1	14.889159	64	2.017941712
2	13.163257	64	2.156820991
3	13.187382	64	2.173206782
4	14.827635	64	1.81773796
5	14.889173	64	1.877388019

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads used	Speedup
1	13.775599	128	2.181063415
2	11.800702	128	2.40585594
3	12.027005	128	2.382879861
4	12.633611	128	2.133416566
5	11.691683	128	2.390823887

c) using openmp

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads	Speedup
1	11.375971	4	2.641133227
2	11.191192	4	2.536886955
3	13.381528	4	2.141676795
4	13.365321	4	2.016618606
5	12.723587	4	2.196924107

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads	Speedup
1	10.012574	16	3.000772329
2	12.151101	16	2.336478727
3	11.147385	16	2.570908603
4	11.256059	16	2.394510814
5	10.723587	16	2.606660906

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads	Speedup
1	10.446503	64	2.876125628
2	11.167382	64	2.542295858
3	10.237651	64	2.799363643
4	11.082361	64	2.43204088
5	10.326588	64	2.706872299

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	Threads	Speedup
1	11.375971	128	2.641133227

2	11.975220	128	2.370794775
3	13.381528	128	2.141676795
4	13.897856	128	1.939346256
5	11.723587	128	2.384317615

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2) prefix sum of 4096 elements  
a) sequential C/C++ version

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)
1	0.001995
2	0.002339
3	0.000996
4	0.000998
5	0.001736

b) using pthread

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
1	0.001993	4	1.001003512
2	0.002992	4	0.7817513371
3	0.001988	4	0.5010060362
4	0.001238	4	0.8061389337
5	0.001163	4	0.9999994328

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
1	0.007970	16	0.2503136763
2	0.003989	16	0.5863624968
3	0.003988	16	0.2497492478
4	0.003988	16	0.2502507523
5	0.003988	16	0.4353059178

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
1	0.014965	64	0.1333110591
2	0.013930	64	0.1679109835
3	0.012931	64	0.07702420538
4	0.021941	64	0.04548562053
5	0.01124	64	0.1544483986

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
1	0.023645	128	0.08437301752
2	0.027352	128	0.06921756628
3	0.011627	128	0.08566268168
4	0.022763	128	0.04384307869
5	0.012736	128	0.1363065327



c) using openmp

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
1	0.028922	4	0.06897863217
2	0.016475	4	0.1419726859
3	0.022636	4	0.04400070684
4	0.018763	4	0.05318978842
5	0.028928	4	0.06001106195

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
1	0.961940	16	0.002073933925
2	0.874171	16	0.002675677871
3	0.921535	16	0.001080805395
4	0.579470	16	0.001722263448
5	0.521299	16	0.003330142586

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
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1	0.765548	64	0.002605976373
2	0.862532	64	0.002711783447
3	0.691154	64	0.001441068127
4	0.774093	64	0.001289250775
5	1.331171	64	0.001304114948

CURRENT NUMBER OF RUN OF PROGRAM	TIME TAKEN (SECONDS)	THREADS USED	SPEEDUP
1	0.823719	128	0.002421942434
2	0.671670	128	0.003482364852
3	1.058609	128	0.0009408572946
4	1.052719	128	0.0009480212671
5	0.162532	128	0.01068097359