

Table 1 - Partition size for all matrix sizes and thread counts.

Matrix Size		Partition Size (N / \sqrt{P})				
N	N*N	1 Thread	4 Threads	9 Threads	16 Threads	25 Threads
60	3600	60	30	20	15	12
120	14400	120	60	40	30	24
180	32400	180	90	60	45	36
240	57600	240	120	80	60	48
300	90000	300	150	100	75	60
480	230400	480	240	160	120	96
960	921600	960	480	320	240	192

Tables 2 to 6 - Individual and average execution times across 5 runs for each problem size and each thread count.

Matrix Size	Execution Time for 1 Thread (ms)					
N	Run 1	Run 2	Run 3	Run 4	Run 5	Average
60	2.791	3.377	1.517	3.373	2.49	2.7096
120	18.092	14.431	13.761	12.4	12.678	14.2724
180	38.224	39.237	41.156	38.991	41.434	39.8084
240	87.053	92.606	89.412	87.163	89.488	89.1444
300	171.614	171.384	168.294	170.109	170.232	170.3266
480	717.065	715.328	717.672	714.066	719.842	716.7946
960	6466.011	6436.08	5975.901	6058.652	6006.279	6188.5846

Matrix Size	Execution Time for 4 Thread (ms)					
N	Run 1	Run 2	Run 3	Run 4	Run 5	Average
60	0.976	0.952	1.388	0.793	1.702	1.1622
120	6.369	6.503	6.353	4.402	5.776	5.8806
180	16.607	13.623	11.093	14.588	11.723	13.5268
240	24.842	27.002	25.844	26.768	25.196	25.9304
300	45.671	50.388	51.371	48.502	45.915	48.3694
480	198.661	232.268	200.144	279.139	316.138	245.27
960	1609.941	1926.982	1723.596	1611.138	1850.601	1744.4516

Matrix Size	Execution Time for 9 Thread (ms)					
N	Run 1	Run 2	Run 3	Run 4	Run 5	Average
60	1.187	0.893	1.212	0.6	1.185	1.0154
120	8.441	6.111	5.889	4.52	5.366	6.0654
180	15.422	12.792	12.564	13.606	13.378	13.5524
240	25.402	25.495	26.829	25.618	25.3	25.7288
300	50.345	54.08	50.158	50.246	49.875	50.9408
480	209.293	219.032	194.469	202.649	209.094	206.9074
960	1677.356	1739.828	1731.778	1753.615	1700.968	1720.709

Matrix Size	Execution Time for 16 Thread (ms)					
N	Run 1	Run 2	Run 3	Run 4	Run 5	Average
60	1.141	1.058	0.889	1.099	0.659	0.9692

120	2.98	5.004	5.064	2.975	6.48	4.5006
180	12.889	9.696	9.606	9.69	9.709	10.318
240	23.77	22.702	24.344	23.687	22.894	23.4794
300	44.927	46.913	48.494	44.733	44.927	45.9988
480	189.3	205.652	206.339	189.007	187.525	195.5646
960	1652.937	1672.096	1807.024	1623.407	1720.743	1695.2414

Matrix Size	Execution Time for 25 Thread (ms)					
N	Run 1	Run 2	Run 3	Run 4	Run 5	Average
60	0.996	0.827	0.626	1.257	0.749	0.891
120	7.433	6.299	5.676	5.992	7.21	6.522
180	10.661	11.553	10.843	11.353	10.651	11.0122
240	25.524	24.658	25.838	25.507	24.4	25.1854
300	46.942	48.117	47.478	48.745	48.761	48.0086
480	196.006	193.116	198.857	196.656	197.653	196.4576
960	1719.195	1702.483	1671.597	1700.891	1831.653	1725.1638

Tables 7 to 13: Speedup and Efficiency figures for each problem size.

Performance Summary for N = 60			
Thread Count	Avg Time (ms)	Speedup	Efficiency
1	2.7096		
4	1.1622	2.33	0.583
9	1.0154	2.67	0.297
16	0.9692	2.80	0.175
25	0.891	3.04	0.122

Performance Summary for N = 120			
Thread Count	Avg Time (ms)	Speedup	Efficiency
1	14.2724		
4	5.8806	2.43	0.607
9	6.0654	2.35	0.261
16	4.5006	3.17	0.198
25	6.522	2.19	0.088

Performance Summary for N = 180			
Thread Count	Avg Time (ms)	Speedup	Efficiency
1	39.8084		
4	13.5268	2.94	0.736
9	13.5524	2.94	0.326
16	10.318	3.86	0.241
25	11.0122	3.61	0.145

Performance Summary for N = 240			
Thread Count	Avg Time (ms)	Speedup	Efficiency
1	89.1444		
4	25.9304	3.44	0.859

9	25.7288	3.46	0.385
16	23.4794	3.80	0.237
25	25.1854	3.54	0.142

Performance Summary for N = 300			
Thread Count	Avg Time (ms)	Speedup	Efficiency
1	170.3266		
4	48.3694	3.52	0.880
9	50.9408	3.34	0.372
16	45.9988	3.70	0.231
25	48.0086	3.55	0.142

Performance Summary for N = 480			
Thread Count	Avg Time (ms)	Speedup	Efficiency
1	716.7946		
4	245.27	2.92	0.731
9	206.9074	3.46	0.385
16	195.5646	3.67	0.229
25	196.4576	3.65	0.146

Performance Summary for N = 960			
Thread Count	Avg Time (ms)	Speedup	Efficiency
1	6188.5846		
4	1744.4516	3.55	0.887
9	1720.709	3.60	0.400
16	1695.2414	3.65	0.228
25	1725.1638	3.59	0.143