High Performance Scientific Computing
Assignment Results

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Results

Table 1: Results obtained

Method	NP	Matrix Size		
		100	1000	4000
Serial	1	0.015811	9.953883	942.824617
OpenMP	2	0.011148	5.549039	630.521049
	4	0.014142	5.452055	593.671016
	8	0.013193	5.513008	743.228705
	16	0.013232	5.548083	698.820082
MPI	2	**0.003194**	5.535810	**532.905690**
	4	0.005791	**5.373600**	754.417009
	8	0.006241	5.507608	751.221100
	16	0.027094	5.921839	1250.199082

Specification of system used : Intel Core i5 - 3317U (2 cores capable of 4 threads at a time) with a clockspeed 1.7 GHz and 4 GB Ram (1600 MHz).
Programming language : C

Time (seconds) taken for three different matrix dimensions for serial, OpenMP and MPI code is tabulated in table 1. Highlighted time indicates the fastest performance in the lot for particular matrix size. When the number of processors used go beyond the maximum threads available in the system at a particular time, here 4, as expected the results shows increase in time for calculations. The effect of parallel computing is visible only when the problem size goes beyond a limit, since initialization and run of OpenMP or MPI has its own effective weightage on the total run time, but nullified when the problem size is large enough. Scalability appears to be on the lower side for both OpenMP and MPI implementation.