

MA513

Parallel Computing

Assignment-7 Report

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Problem Statement :-

Perform **Polynomial Multiplication** using a shared memory model while observing the speedup for different values of PEs as well as the precision involved.

System Specifications :-

All the experiments have been performed on **Dell Inspiron 5559** laptop with **Intel i5-6200U dual core processor** and **8 GB RAM**. Each core has **2 threads**. Also, it was made insured that no other applications were running in the background during each experiment which could have incurred biased readings.

Experiments :-

The value of N is varied from **$2^{10}(1024)$** upto **$2^{17}(131072)$** .

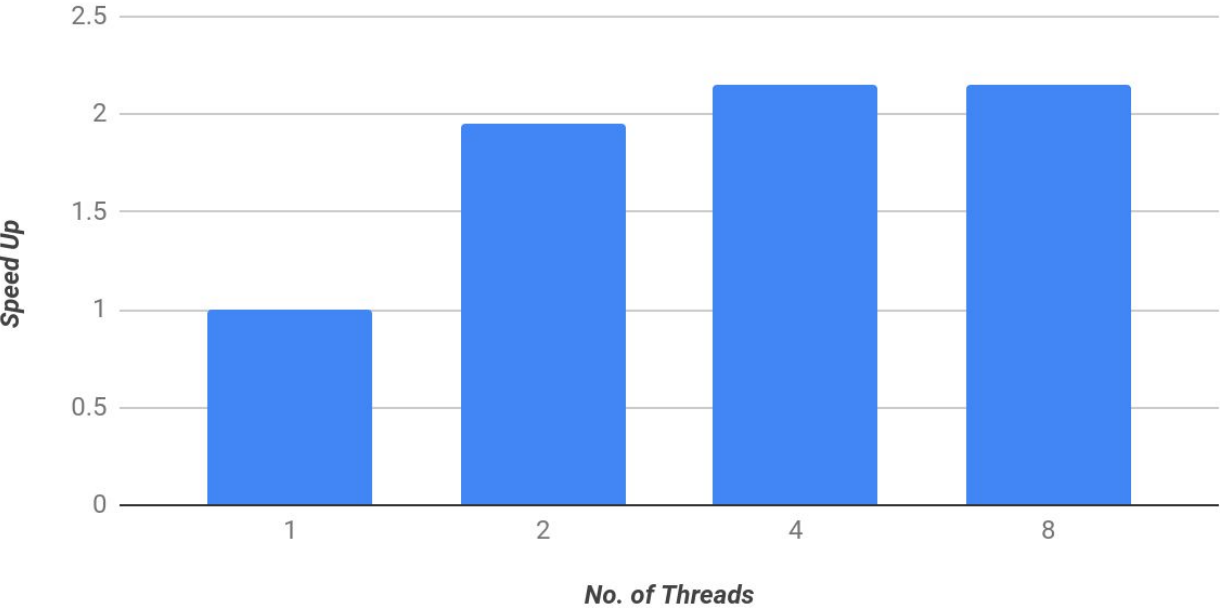
The results are shown in the tables and graphs below.

1. Varying No. of Threads and taking N=131072 :

No. of Threads	School Method (Speed Up)
1	1
2	1.94897584107865
4	2.14770170902152
8	2.15011839137792

Comparison of SpeedUp

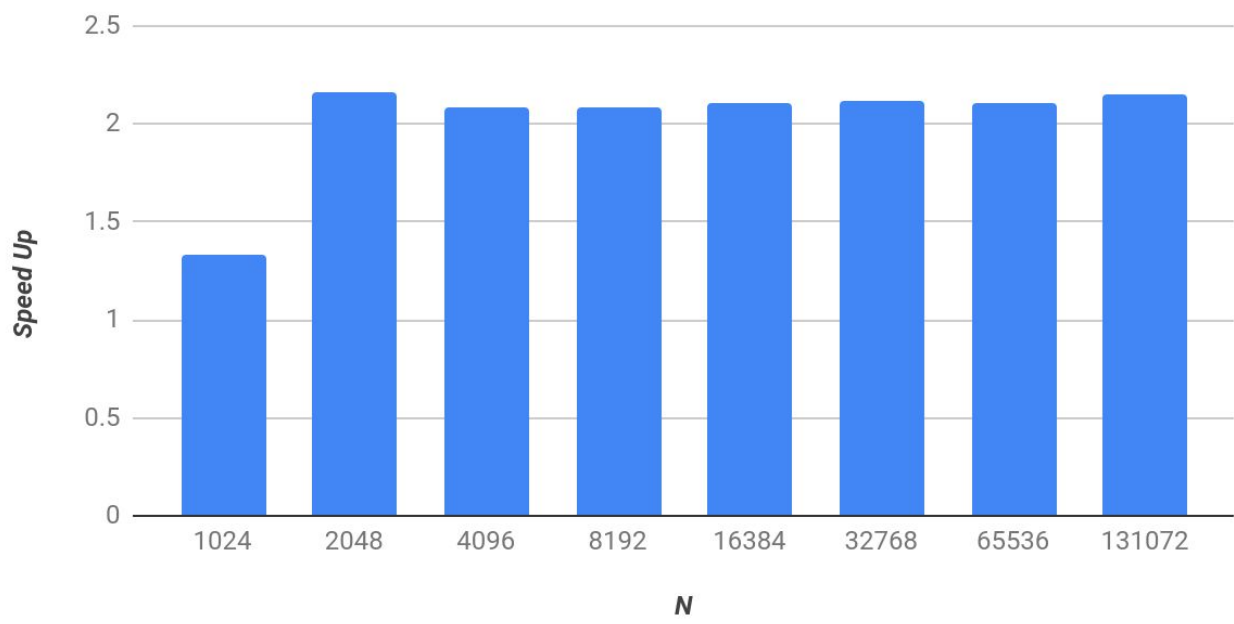
By varying Threads and taking N=131072



2. Varying N and taking 4 Threads :

N	School Method (Speed Up)
1024	1.33542074363992
2048	2.15918909936856
4096	2.08855195774023
8192	2.08057315362048
16384	2.10832808461655
32768	2.11523886794254
65536	2.10849084905431
131072	2.14770170902152

Comparison of SpeedUp
By varying N and taking Threads=4



Observations :-

- From Graph-1, it is clear that the Speed Up increases upto 4 Threads and then it becomes nearly constant. This may be because the system contains a total of 4 threads.
- Graph-2 points out that the Speed Up increases upto $N=2048$ and then it becomes nearly constant.