Sieve of Eratosthenes
CS 450

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***Abstract*—Results and analysis of runtime of the sieve of Eratosthenes on machines with 4, 8 and 32 cores.**

I. Introduction

Although the problem only called for testing on Alpha, it was decided that comparing results across machines with different numbers of cores would be interesting. The three machines choosen for the comparison were a workstation with an Intel i5 2500k processor, a server with two Intel Xeon E5410 processors, and Alpha with two AMD Opteron 6272 processors.

II. Results on the i5

The graph detailing the results for the i5 can be found in figure 1. In figure 1, and all figures, the horizontal axis is pool size and the vertical axis is chunk size.

III. Results on the Xeon

Results can be found in Figure 2.

IV. Results on the Opteron

Results can be found in Figure 3.

V. Discussion of Results

Generally across all machines, perfomance increased as chunk size increased. This can be explained by larger chunk size reducing the time spent switching between chunks. Increasing poolsize helped performance until there were more processes in the pool than there were on the processor. Adding processes after "saturating" the processor only added switching overhead and slowed down processing.

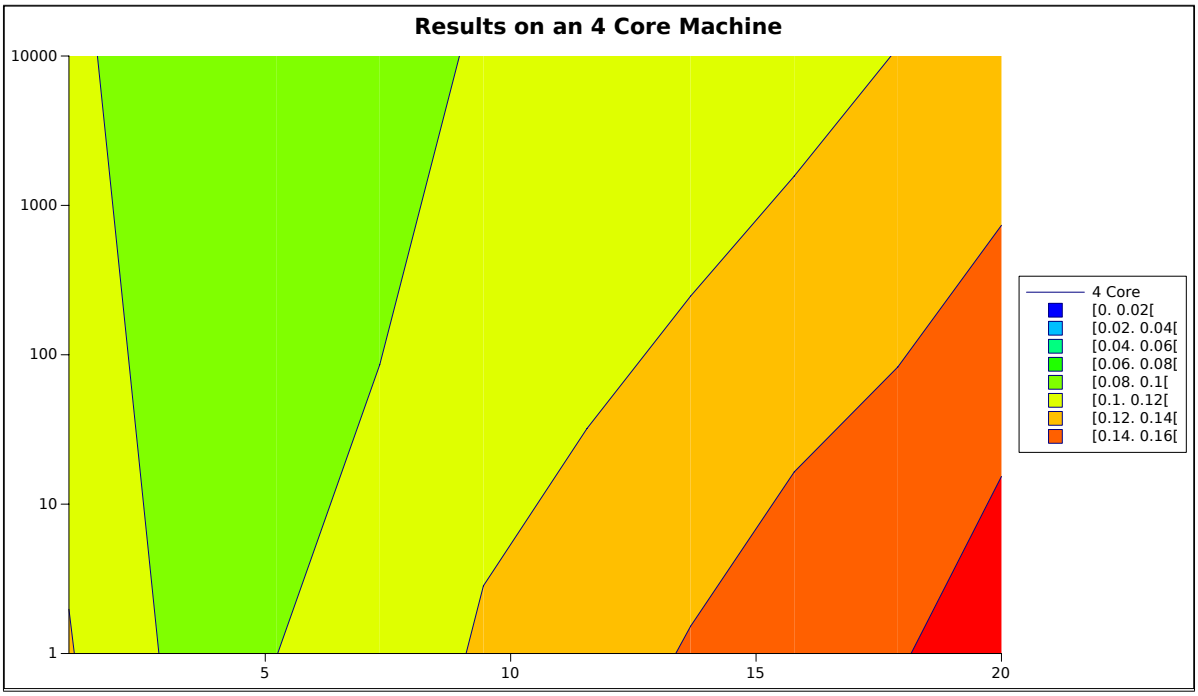

Fig. 1. Results on the 4 core i5

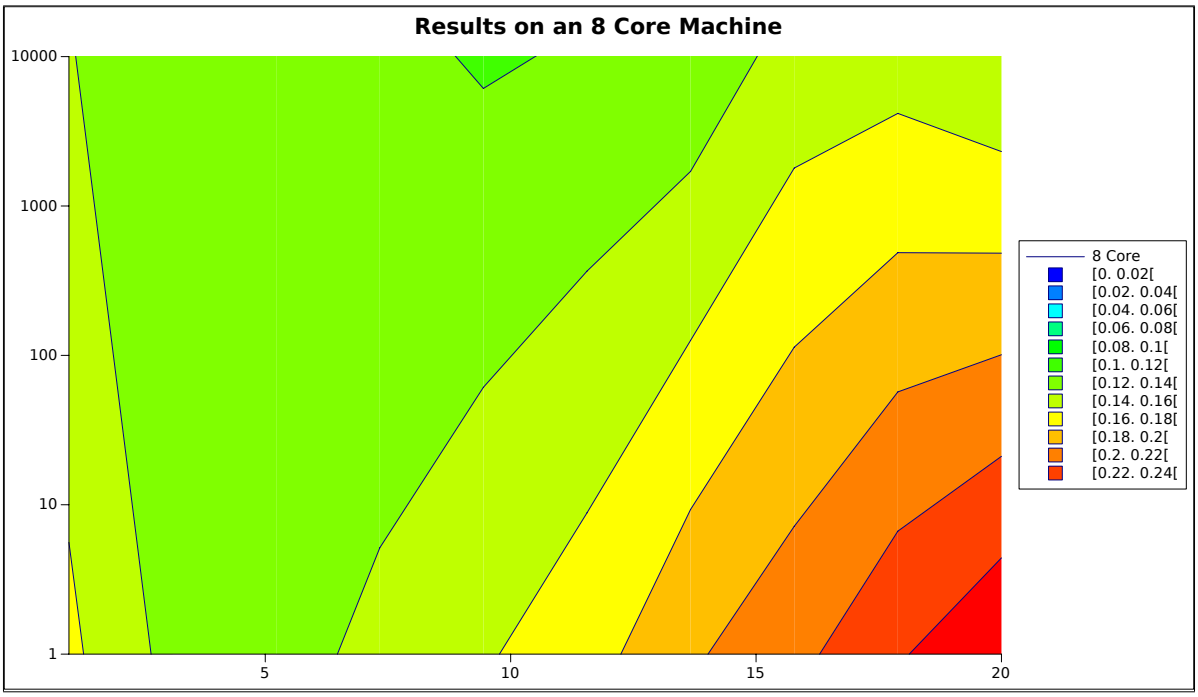

Fig. 2. Results on the 8 core Xeon

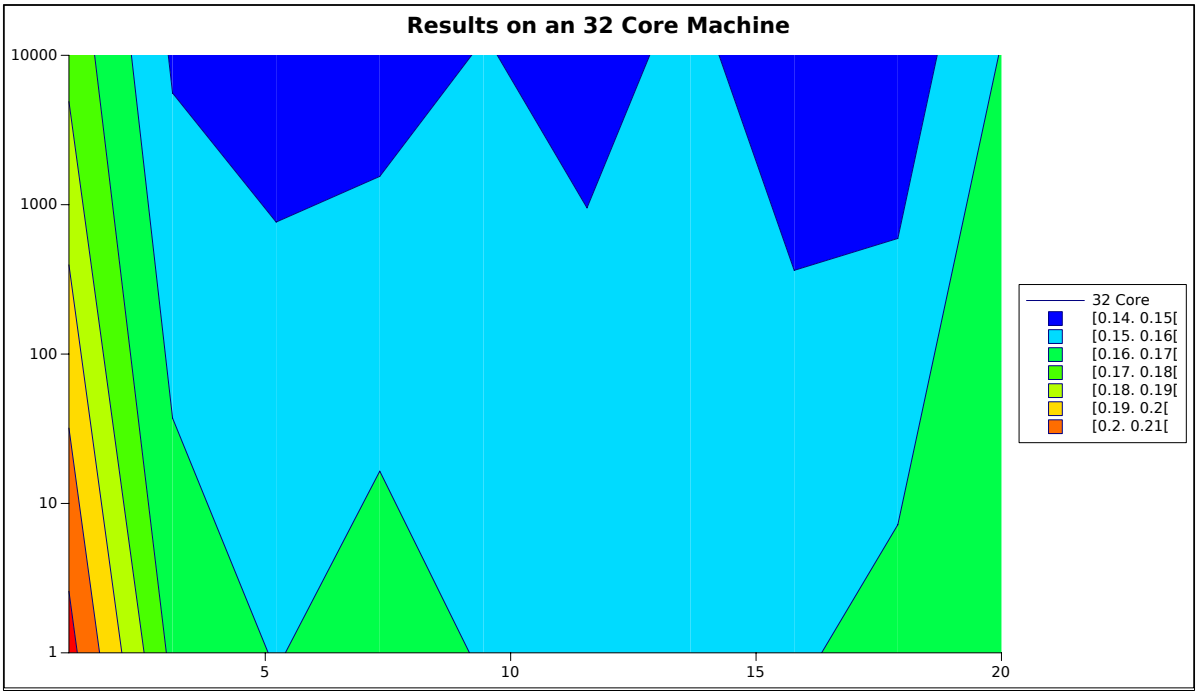

Fig. 3. Results on the 32 core Xeon