CS240B Homework Two Report

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1 Results

Program	Run Time (s)	Mflops/s	Mflops
simple	163	13.2	2150
blas3	2.92	502	1460
submatrix004	99.5	28.5	2830
submatrix008	29.9	78.4	2340
submatrix016	12.1	183	2230
submatrix032	6.34	322	2180
submatrix064	4.77	454	2160
submatrix128	5.13	398	2150

Note: Run Time and Mflops/s are averaged across several executions, but Flops values are taken from a single test.

2 Analysis

Since these executions have similar Mflops values, it is expected that faster programs will execute more Mflops/s. This is shown clearly in the results tabulated above. This means that as runtime decreases, the program is making more effective use of the processor. We see that the blas3 implementation is the most efficient (i.e. has the lowest runtime). This is expected since it calls the `ESSL` routine `DGEMMS`, which is highly optimized for these applications.

The time for submatrix size 128 is interesting because it is higher than that of the 64-size submatrix. I tried submatrix sizes of 256 and 512, and they are faster than the value for 128, but not as fast as 64. This could be explained by the increased number of page faults that the higher block sizes suffer from, or other factors such as activity on the CPU which competes with the test program for time.