Lab 4 Report – Shoesei and James

Matmul with Subroutines, size 64

Performance counter stats for './mm':

6,432.69 msec task-clock:u # 0.999 CPUs utilized
0 context-switches:u # 0.000 K/sec
0 cpu-migrations:u # 0.000 K/sec
27 page-faults:u # 0.004 K/sec
12,858,000,403 cycles:u # 1.999 GHz
7,610,490,389 instructions:u # 0.59 insn per cycle
2,532,589,142 branches:u # 393.706 M/sec
107,202,250 branch-misses:u # 4.23% of all branches

6.439945046 seconds time elapsed

6.433618000 seconds user
0.000000000 seconds sys

Matmul with Arm, size 64

Performance counter stats for './mm':

9.60 msec task-clock:u # 0.447 CPUs utilized
0 context-switches:u # 0.000 K/sec
0 cpu-migrations:u # 0.000 K/sec
27 page-faults:u # 0.003 M/sec
17,568,824 cycles:u # 1.830 GHz
8,537,887 instructions:u # 0.49 insn per cycle
698,989 branches:u # 72.795 M/sec
26,696 branch-misses:u # 3.82% of all branches

0.021493560 seconds time elapsed

0.010628000 seconds user
0.000000000 seconds sys

Matmul with Arm, size 1024

Performance counter stats for './mm':

45,019.91 msec task-clock:u # 0.998 CPUs utilized
0 context-switches:u # 0.000 K/sec
0 cpu-migrations:u # 0.000 K/sec
221 page-faults:u # 0.005 K/sec
89,953,271,713 cycles:u # 1.998 GHz
21,291,450,021 instructions:u # 0.24 insn per cycle
1,184,753,993 branches:u # 26.316 M/sec
8,945,668 branch-misses:u # 0.76% of all branches

45.093623629 seconds time elapsed
45.018960000 seconds user
0.000000000 seconds sys

Size 64 Matrices

Expected time for Matmul with Subroutines

- $\frac{7610490389}{.59*1999000000}$ = 6.4527

Percent difference

- $\frac{6.49399945046}{6.452794524}$ = .199% difference

Expected time for Matmul with Arm

- $\frac{8537887}{.49*1.830*10^9}$ = 0.0095231

Percent difference

- $\frac{6.49399945046}{6.452794524}$ = 3.4899 % difference

Size 1024 Matrices

Expected time for Matmul with Arm

- $\frac{21291450021}{.24*1.998*10^9}$ = 44.402

Percent difference

- 44.402/45.09 = 2.22% difference