

Ethan Chen and Genevieve Silverman - HW7: Profiling

Computer: Intel Core i7

Benchmarks:

Small: Midmark

Medium: Adventure with partial solution from spec

Large: Sandmark

All tests piped into /dev/null

Benchmark	Time (user)	Instructions	Rel to Start	Rel to Prev	Improvement
-Small -Medium -Large	-5.65 -49.18 -145.41	-50.84x10 ⁹ ----- -----	-1.000 -1.000 -1.000	-1.000 -1.000 -1.000	None (starting point)
-Small -Medium -Large	-5.48 -47.04 -138.81	-49.18x10 ⁹ ----- -----	-0.970 -0.974 -0.955	-0.970 -0.956 -0.955	Optimized with O1 compiler setting linked against -lcii40-O1
-Small -Medium -Large	-5.35 -46.92 -142.68	-48.85x10 ⁹ ----- -----	-0.976 -0.978 -0.981	-0.947 -0.997 -0.981	Optimized with O2 compiler setting linked against -lcii40-O2
-Small -Medium -Large	-4.48 -39.01 -111.21	-40.33x10 ⁹ ----- -----	-0.793 -0.793 -0.765	-0.837 -0.831 -0.779	Moving all functions into the same file and doing bitpack manually
-Small -Medium -Large	-4.29 -36.74 -106.45	-37.11x10 ⁹ ----- -----	-0.759 -0.747 -0.732	-0.958 -0.942 -0.957	Removed all assert statements
-Small -Medium -Large	-3.82 -32.76 -96.53	-33.96x10 ⁹ ----- -----	-0.676 -0.666 -0.664	-0.890 -0.892 -0.907	Changed register data structure from UArray to c-array
-Small -Medium -Large	-3.45 -29.77 -85.85	-31.13x10 ⁹ ----- -----	-0.611 -0.605 -0.590	-0.903 -0.909 -0.889	Changed the memory segments from UArrays to c-arrays
-Small -Medium -Large	-0.33 -2.71 -8.33	-4.105x10 ⁹ ----- -----	-0.058 -0.058 -0.057	-0.096 -0.091 -0.097	Got rid of the Hanson Sequence for the Memory Segments wrapper data structure

-Small -Medium -Large	-0.32 -2.60 -7.63	-3.766x10 ⁹ ----- -----	-0.057 -0.053 -0.052	-0.970 -0.959 -0.916	Got rid of the Hanson Sequence for the unmapped indices wrapper data structure
-Small -Medium -Large	-0.28 -2.46 -6.96	-3.846x10 ⁹ ----- -----	-0.050 -0.050 -0.048	-0.875 -0.946 -0.912	Used Realloc and Calloc when possible instead of Malloc
-Small -Medium -Large	-0.28 -2.19 -6.63	-2.693x10 ⁹ ----- -----	-0.050 -0.045 -0.046	-1.000 -0.890 -0.953	Removed a bunch of conditionals and added a switch statement instead
-Small -Medium -Large	-0.26 -2.12 -6.65	-2.694x10 ⁹ ----- -----	-0.046 -0.043 -0.046	-0.929 -0.968 -1.003	Reduced pointer indirection with local variables
-Small -Medium -Large	-0.26 -2.12 -6.52	-2.694x10 ⁹ ----- -----	-0.046 -0.043 -0.045	-1.000 -1.000 -0.980	Inlined all static functions
-Small -Medium -Large	-0.29 -2.15 -6.64	-2.786x10 ⁹ ----- -----	-0.051 -0.044 -0.046	-1.115 -1.014 -1.018	We added asserts after calloc and realloc calls to make sure that memory allocation did not fail