598 DHP: MP1 Report

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September 12, 2015

Implemented the following versions of the Mandelbrot's C code.

C Version

C version WITHOUT any parallelization, but it uses SSE2 instructions.
File: mandelbrot_C_gcc.c

Matlab non-vec

Matlab version WITHOUT any parallelization and vectorization.
File: mandelbrot_non_vectorized.m

Matlab vec

Matlab version WITH parallelization and vectorization.
File: mandelbrot_with_parfor_n_vectorization.m

Table 1: My caption

Input N	C version T1 (secs)	Matlab non-vec T2 (secs)	Matlab vec T3 (secs)	C vs Matlab non-vec T2/T1	C vs Matlab vec T3/T1	Matlab non-vec vs Matlab vec T2/T3
1000	0.06	31.09	0.66	518.16	11.00	47.12
4000	0.92	486.49	5.84	528.79	6.35	83.30
16000	14.60	7757.97	82.61	531.37	5.66	93.91

Conclusion

- C Verison is faster that both the Matlab versions.
- The parallelized and vectorized Matlab version "Matlab vec" is way faster than the non-vectorized Matlab version with speedup ~ 93 for N=16000.
- Even if the SSE instructions are removed from C version, then also the C version timing are slightly increased, but they are still better than both the Matlab versions.

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