

# 598 DHP: MP1 Report

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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
<b>16000</b>	<b>14.60</b>	<b>7757.97</b>	<b>82.61</b>	<b>531.37</b>	<b>5.66</b>	<b>93.91</b>

## Conclusion

- C Version is faster than both the Matlab versions.
- The parallelized and vectorized Matlab version “Matlab vec” is way faster than the non-vectorized Matlab version with speedup  $\sim 93$  for  $N=16000$ .
- Even if the SSE instructions are removed from C version, the C version timing got slightly increased, but they are still better than both the Matlab versions.

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