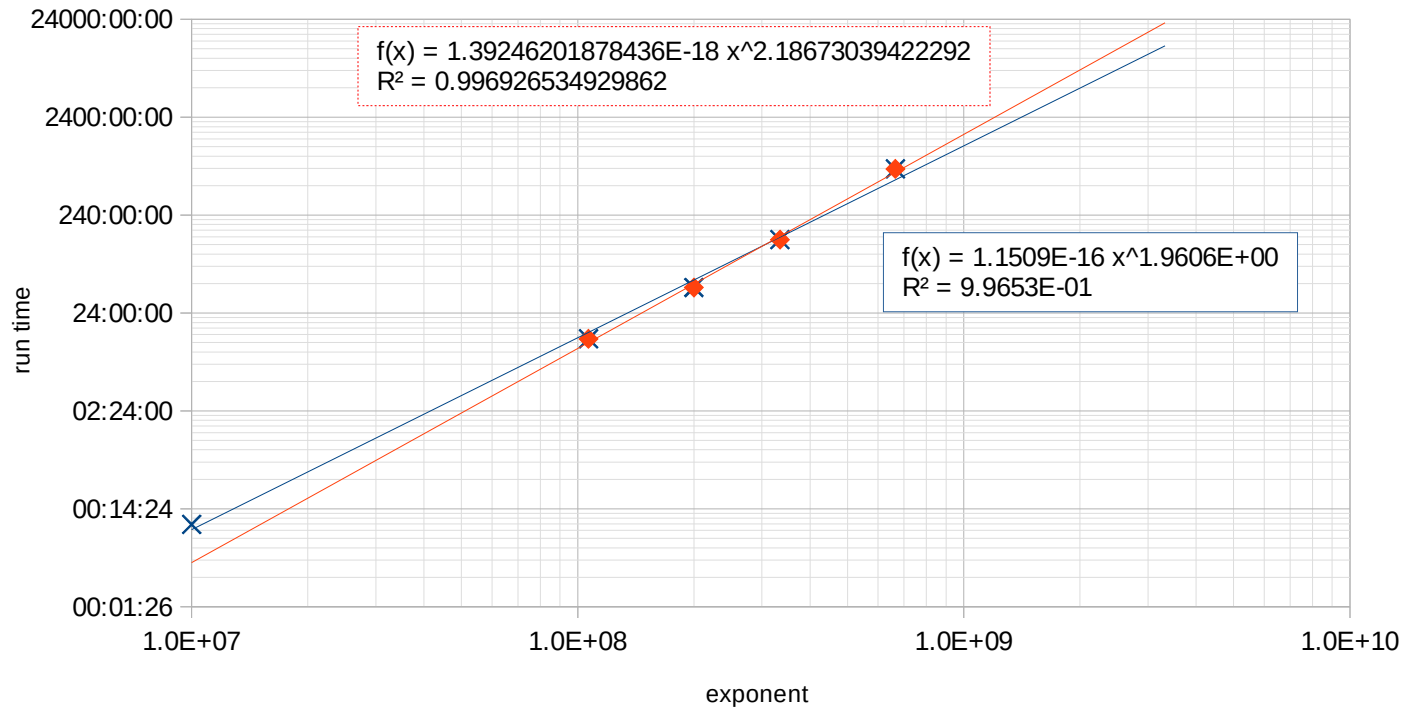


Mlucas V20.1 P-1 run time scaling Test system roa dual 12-core&HT Xeon e5-2697v2, 128 GiB ram, Win10 pro x64, WSL1, Ubuntu 18.04.2 LTS  
 Prime95 two 12-core workers, and 8 single-core Mfactor processes, Windows remote desktop also running on the system during most scaling measurements.

Exponent	B1	B2	Stage 1 time	gcd1 time	Stage 2 time	gcd2 time	total time	s2/s1	notes	factor if found
10000831	65000	1500000	00:05:27.39	00:00:05.23	00:04:19.62	00:00:05.14	00:09:57.38	0.796	1	646560662529991467527
106653697	700000	26000000	04:45:26.46	00:00:51.85	08:15:15.08	00:01:38.29	13:03:11.68	1.736	2	none
200001259	1200000	45000000	18:59:40.58	00:03:33.86	24:33:50.30	00:03:33.83	43:40:38.56	1.292	3	none
334192907	2000000	80000000	51:13:07.13	00:06:26.57	83:02:54.78	00:06:28.88	134:28:57.36	1.620		none
665070407	3600000	180000000	269:29:14.84	00:15:50.56	440:11:51.19	00:16:18.53	710:13:15.11	1.633	4	Stage 2 segfault after 200M
3321928171	17000000	1000000000								

1 stage 2 crashed with -cpu 0:23 and no -maxalloc. Was able to run it with -cpu 0:7 and -maxalloc 26 or below but not 27 or above. Rerun -cpu 0:15?  
 2 began stage 1 with -cpu 0:7 -maxalloc 5. Stopped after 100K iterations & savefiles, resumed with -cpu 0:15 -maxalloc 50. s2 ran with maxalloc 29 or lower  
 3 launched with ./Mlucas -cpu 0:15 -maxalloc 26  
 4 relaunched with ./Mlucas -cpu 0:15 -maxalloc 25

Mlucas 20.1 P-1 run time scaling on WSL1 16 cores e5-2697v2



Extrapolate to gigadigit

T=a p<sup>b</sup>  
 a 1.15E-16  
 b 1.9606  
 p 3321928171  
 T 535.0  
 (days)

T=a p<sup>b</sup>  
 a 1.39E-18  
 b 2.1867304  
 p 3321928171  
 T 921.5  
 (days)

Above extrapolations =  
 1.47  
 2.52  
 years

One year =  
 365 days  
 8760 hours  
 3.65 times 2400 hours

Usage in above was 24 prime95 threads and 8 mfactor threads and 16 mlucas threads = 48 threads, across 24 cores / 48 hyperthread capable hardware; possibly up to ~3-fold speedup by dedicating the system, but maybe 1.05-fold judging from 16 core to 24 core usage, as in 7.5M fft self-test benchmarks, or perhaps ~1.47-fold speedup, judging from s1 595. ms / iter timing vs. benchmark 192M fft standalone timings 404. ms / iter.

Initial timing of 1Gdigit S1 is 16.53 hours for 0.41%; 16.53 hours / 0.0041 \* (1 + 1.64) / 24 / 365 = 1.215 years s1&s2

GCDs at stage ends are at 200Mdigit 0.0754% of total yielding 1.216 years with other loading described above.

Adjusting by ms/iter time for no other loading vs iter time shown with other loading, yields about **9.91** months total projection (s1, s2 & gcds)

Second 0.41% of Gdigit S1 after other processes were stopped, indicates 13:01, 468.7 msec/iter at 16 threads; **0.95701** years total (~11.5 months)

The process was halted & resumed with 24 threads. That ran 11.14 hours to give an iteration rate output, 401 ms/iter. Years est: **0.819**

Additional performance past that could probably be obtained by a Linux native boot.

Update to Mlucas V20.1.1 (or later when available) might also help.

And further selftest versus widely varying number of threads for what gives fastest 192M fft length benchmarks is now in progress in V20.1.1.

Splitting stage 2 to multiple systems can provide additional reduction in latency (elapsed calendar time) estimated **7.79** months @ 24 + 12 core in stage 2

Mlucas V20.1.1 P-1 s1 and s2 final GCD time scaling, e5-2697V2

