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Lenovo Legion 7 2021

Intel Core i5-3210M testing with a Type2 Board Vendor Name1 VA70_HC (V2.28 BIOS) and Intel HD 4000 2GB on Ubuntu 21.04 via the Phoronix Test Suite.

Automated Executive Summary

AMD Ryzen 7 5800H - NVIDIA GeForce RTX 3060 Laptop had the most wins, coming in first place for 93% of the tests.

Based on the geometric mean of all complete results, the fastest (AMD Ryzen 7 5800H - NVIDIA GeForce RTX 3060 Laptop) was 2.167x the speed of the slowest (Intel i5-3210M - Intel HD4000 - Acer Aspire V3-771g Notebook).

Test Systems:

AMD Ryzen 7 5800H - NVIDIA GeForce RTX 3060 Laptop

Processor: AMD Ryzen 7 5800H @ 3.20GHz (8 Cores / 16 Threads), Motherboard: LENOVO LNVNB161216 (GKCN24WW BIOS), Memory: 2 x 16384 MB 3200MHz Samsung M471A2G43AB2-CWE, Disk: 954GB SKHynix_HFS001TDE9X084N, Graphics: NVIDIA GeForce RTX 3060 Laptop GPU 6GB, Network: Killer Wi-Fi 6

AX1650x 160MHz Wireless (200NGW) + Realtek PCIe GbE

OS: Microsoft Windows 10 Home Build 19042, Kernel: 10.0 (x86_64), Display Driver: 461.56 (27.21.14.6156), File-System: NTFS, Screen Resolution: 2560x1600

Security Notes: __user pointer sanitization: Disabled + Retpoline: Full + IBPB: Always + IBRS: Enabled + STIBP: Enabled

Intel i5-3210M - Intel HD4000 - Acer Aspire V3-771g Notebook

Processor: Intel Core i5-3210M @ 3.10GHz (2 Cores / 4 Threads), Motherboard: Type2 Board Vendor Name1 VA70_HC (V2.28 BIOS), Chipset: Intel 3rd Gen Core DRAM, Memory: 12GB, Disk: 240GB SanDisk Ultra II + 750GB TOSHIBA MQ01ABD0, Graphics: Intel HD 4000 2GB (1100MHz), Audio: Realtek ALC269VB, Network: Qualcomm Atheros AR8151 v2.0 + Qualcomm Atheros AR9462

OS: Ubuntu 21.04, Kernel: 5.11.0-18-generic (x86_64), Desktop: KDE Plasma 5.21.4, Display Server: X Server 1.20.11, OpenGL: 4.2 Mesa 21.0.1, Vulkan: 1.2.145, Compiler: GCC 10.3.0, File-System: ext4, Screen Resolution: 1920x1080

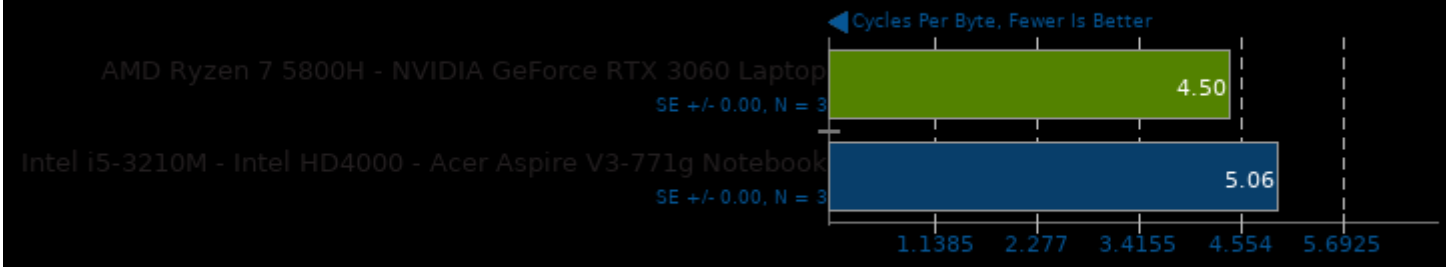
Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-gcn/usr, hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_cpufreq schedutil - CPU Microcode: 0x21 - Thermald 2.4.3
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Vulnerable: No microcode + tsx_async_abort: Not affected

	AMD Ryzen 7 5800H - NVIDIA GeForce RTX 3060 Laptop	Intel i5-3210M - Intel HD4000 - Acer Aspire V3-771g Notebook
BLAKE2 (Cycles/Byte)	**4.5**	**5.06**
Normalized	100%	88.93%
Standard Deviation	0%	0%
CacheBench - Read (MB/s)	**11152**	**4699**
Normalized	100%	42.14%
Standard Deviation	1.5%	0%
CacheBench - Write (MB/s)	**33164**	**20654**
Normalized	100%	62.28%
Standard Deviation	0.5%	0.1%
CacheBench - R.M.W (MB/s)	**66430**	**22149**
Normalized	100%	33.34%
Standard Deviation	0%	0.1%
SciMark - Composite (Mflops)	**787.04**	**447.44**
Normalized	100%	56.85%
Standard Deviation	0.2%	0.3%
SciMark - Monte Carlo (Mflops)	**183.43**	**98.17**
Normalized	100%	53.52%
Standard Deviation	0.8%	7.8%

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SciMark - F.F.T (Mflops)	**329.26**	**122.21**
Normalized	100%	37.12%
Standard Deviation	1.4%	0%
SciMark - S.M.M (Mflops)	**789.63**	**489.09**
Normalized	100%	61.94%
Standard Deviation	0.6%	0%
SciMark - D.L.M.F (Mflops)	**1371**	**635.15**
Normalized	100%	46.34%
Standard Deviation	0.4%	0.2%
SciMark - J.S.O.R (Mflops)	**1271**	**892.57**
Normalized	100%	70.2%
Standard Deviation	0.4%	0.1%
Stockfish - Total Time (Nodes/s)	**25819472**	**3740667**
Normalized	100%	14.49%
Standard Deviation	0.6%	0.9%
ebizzy (Records/s)	**9835**	**40762**
Normalized	24.13%	100%
Standard Deviation	2.1%	9%
C-Ray - Total Time - 4.1.R.P.P (sec)	**67.211**	**622.447**
Normalized	100%	10.8%
Standard Deviation	0.2%	0.1%
FLAC Audio Encoding - WAV To FLAC (sec)	**6.880**	**14.531**
Normalized	100%	47.35%
Standard Deviation	0.4%	0.4%
LAME MP3 Encoding - WAV To MP3 (sec)	**7.389**	**43.752**
Normalized	100%	16.89%
Standard Deviation	0.5%	0.1%

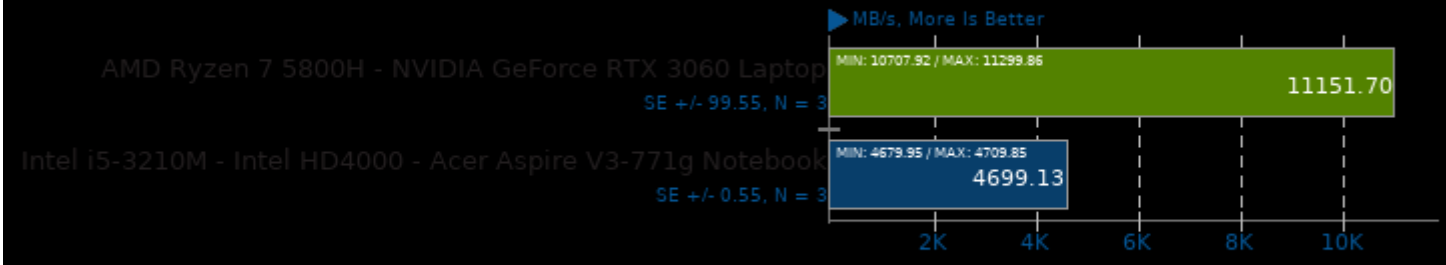
BLAKE2 20170307



1. (CC) gcc options: -O3 -march=native -lcrypto -lz

CacheBench

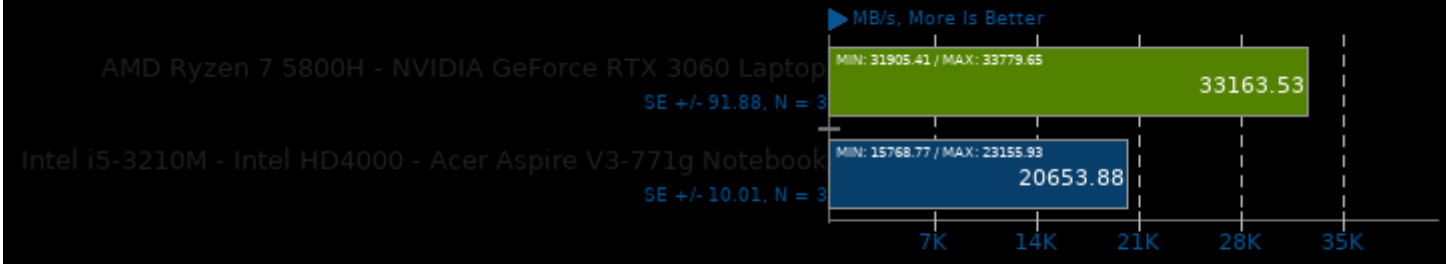
Test: Read



1. (CC) gcc options: -lrt

CacheBench

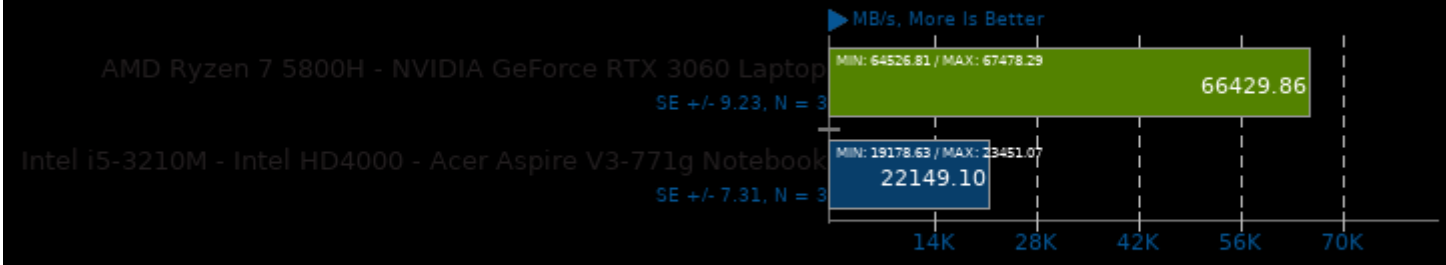
Test: Write



1. (CC) gcc options: -lrt

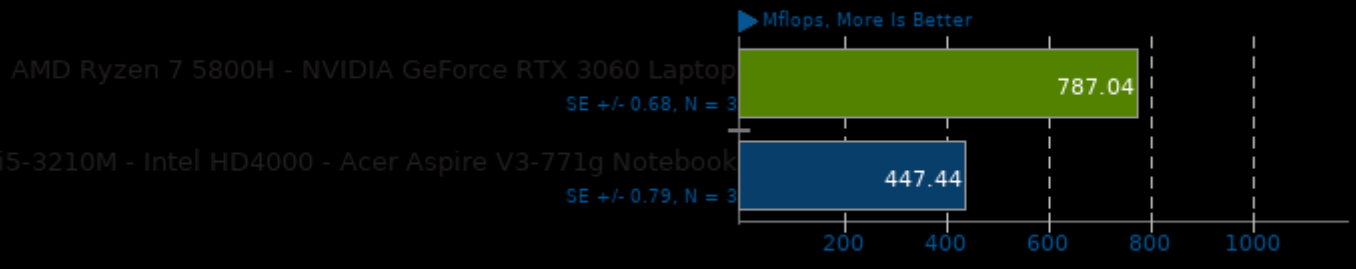
CacheBench

Test: Read / Modify / Write



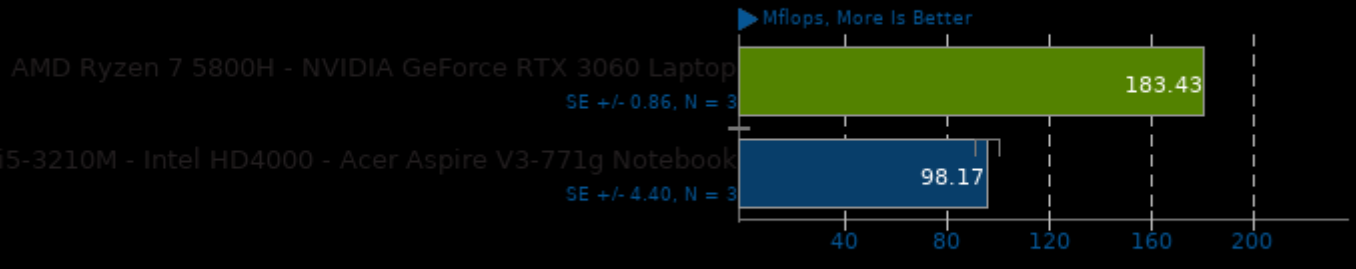
1. (CC) gcc options: -lrt

SciMark 2.0
Computational Test: Composite



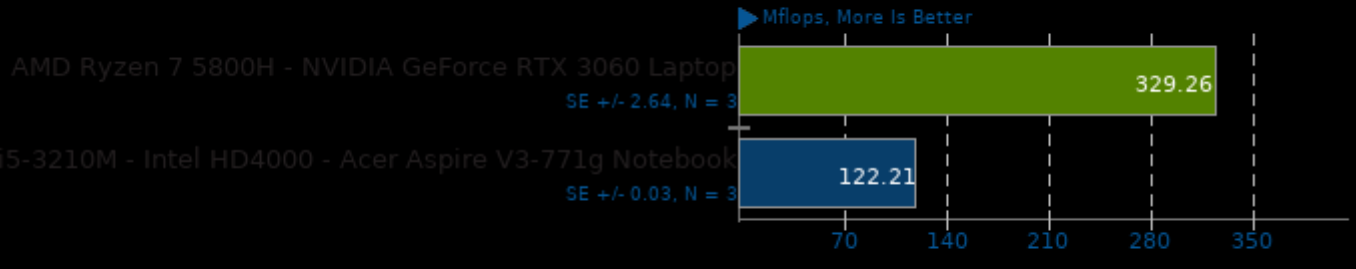
1. (CC) gcc options: -lm

SciMark 2.0
Computational Test: Monte Carlo



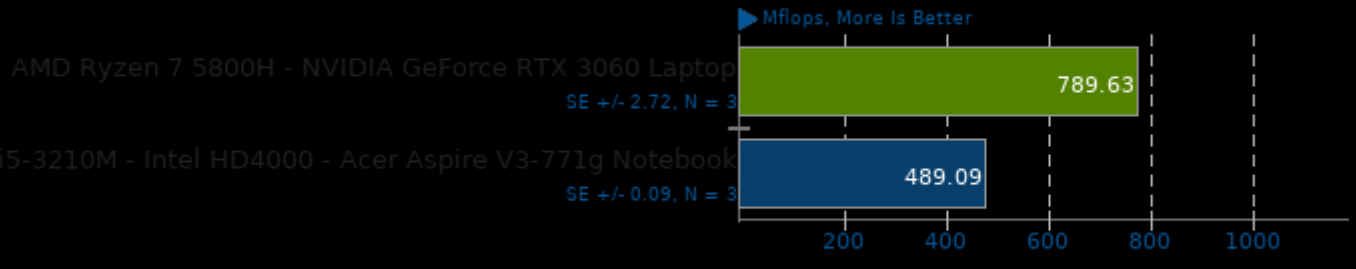
1. (CC) gcc options: -lm

SciMark 2.0
Computational Test: Fast Fourier Transform



1. (CC) gcc options: -lm

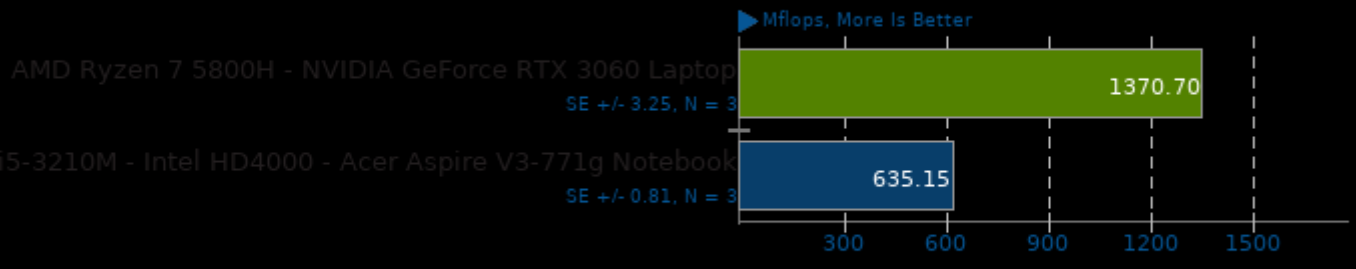
SciMark 2.0
Computational Test: Sparse Matrix Multiply



1. (CC) gcc options: -lm

SciMark 2.0

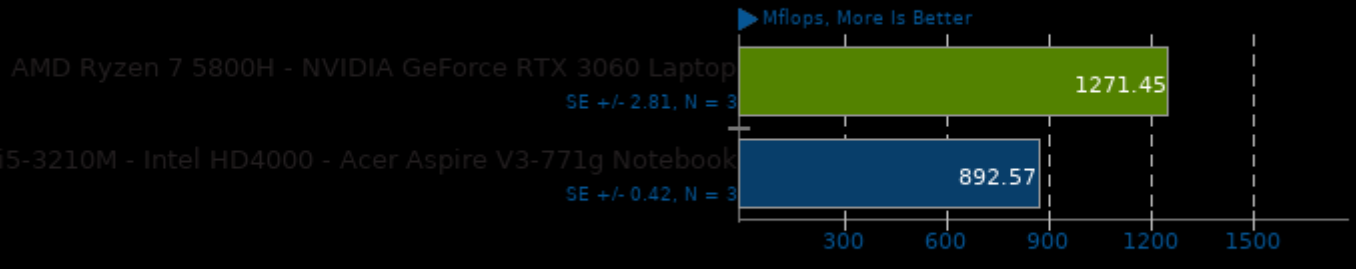
Computational Test: Dense LU Matrix Factorization



1. (CC) gcc options: -lm

SciMark 2.0

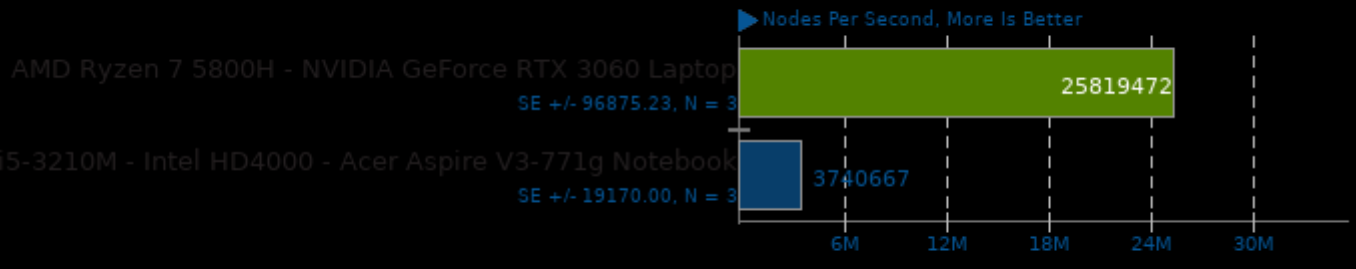
Computational Test: Jacobi Successive Over-Relaxation



1. (CC) gcc options: -lm

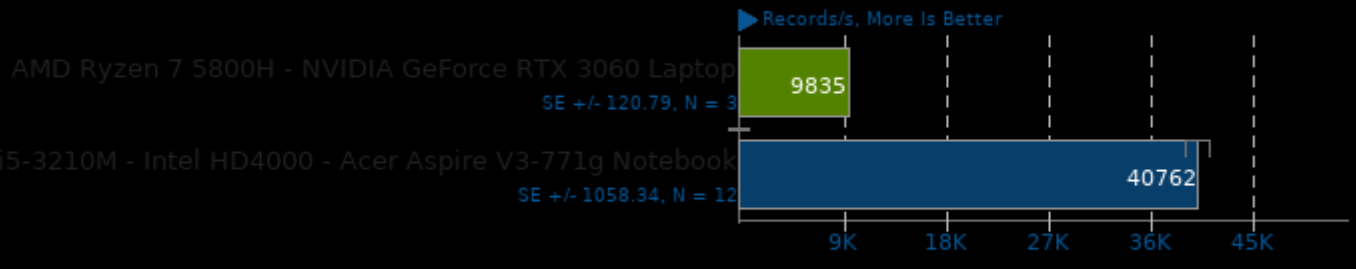
Stockfish 9

Total Time



1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -flto

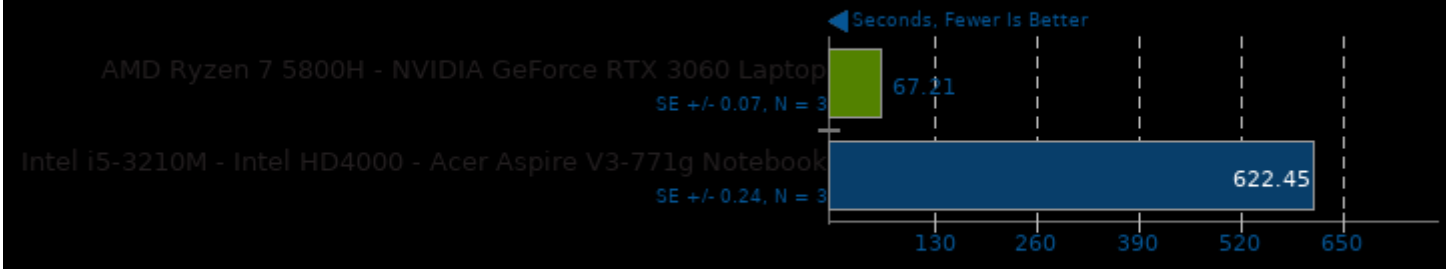
ebizzy 0.3



1. (CC) gcc options: -pthread -lpthread -O3 -march=native

C-Ray 1.1

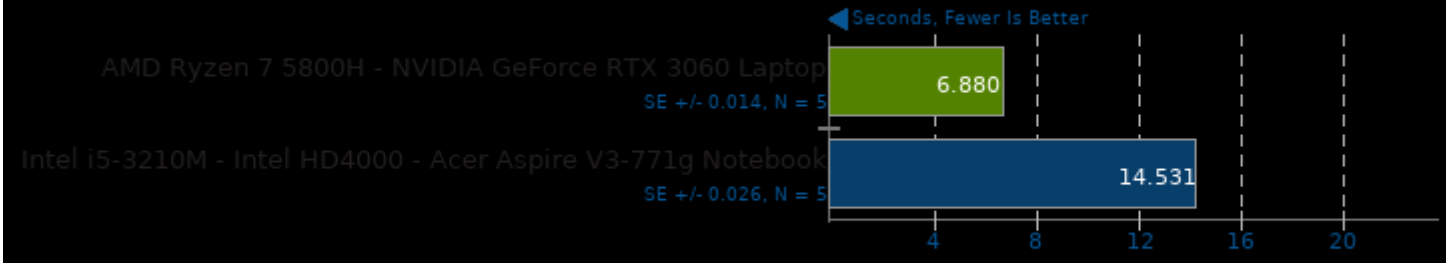
Total Time - 4K, 16 Rays Per Pixel



1. (CC) gcc options: -lm -lpthread -O3

FLAC Audio Encoding 1.3.2

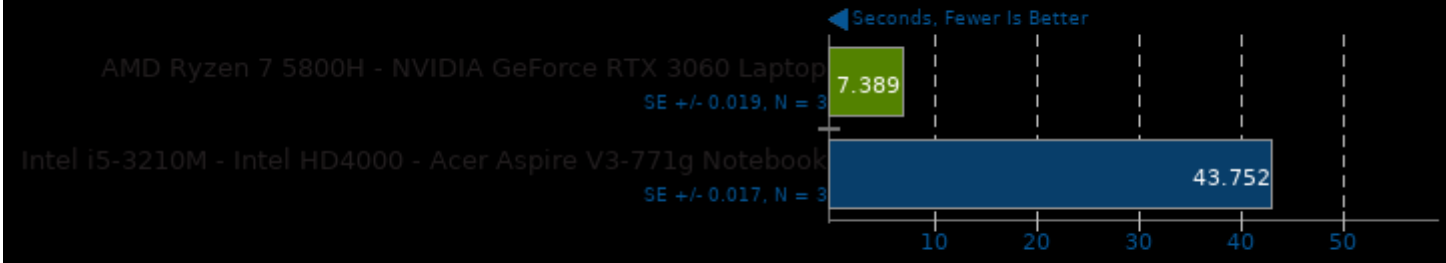
WAV To FLAC



1. (CXX) g++ options: -O2 -fvisibility=hidden -lm

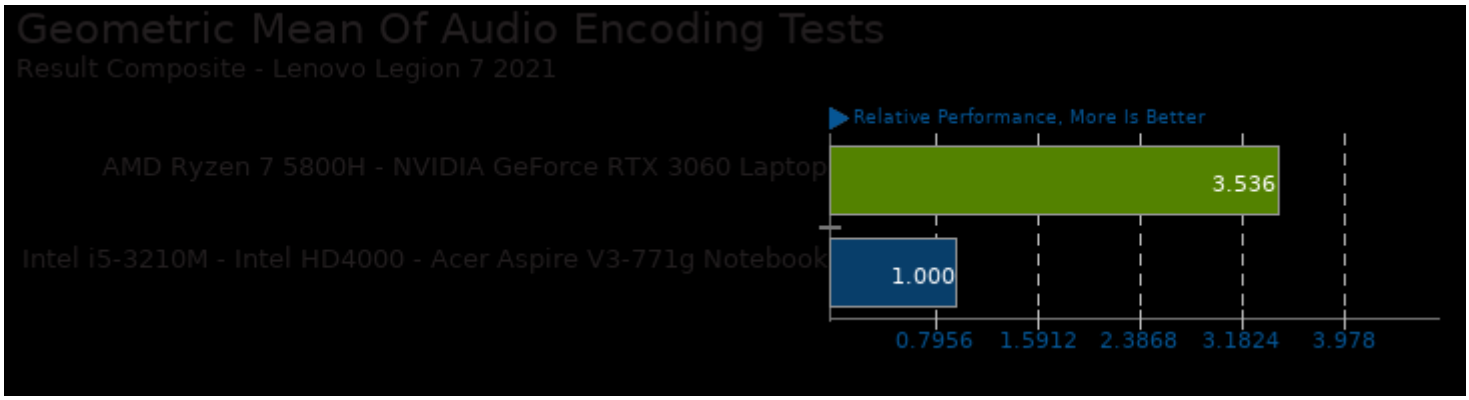
LAME MP3 Encoding 3.100

WAV To MP3

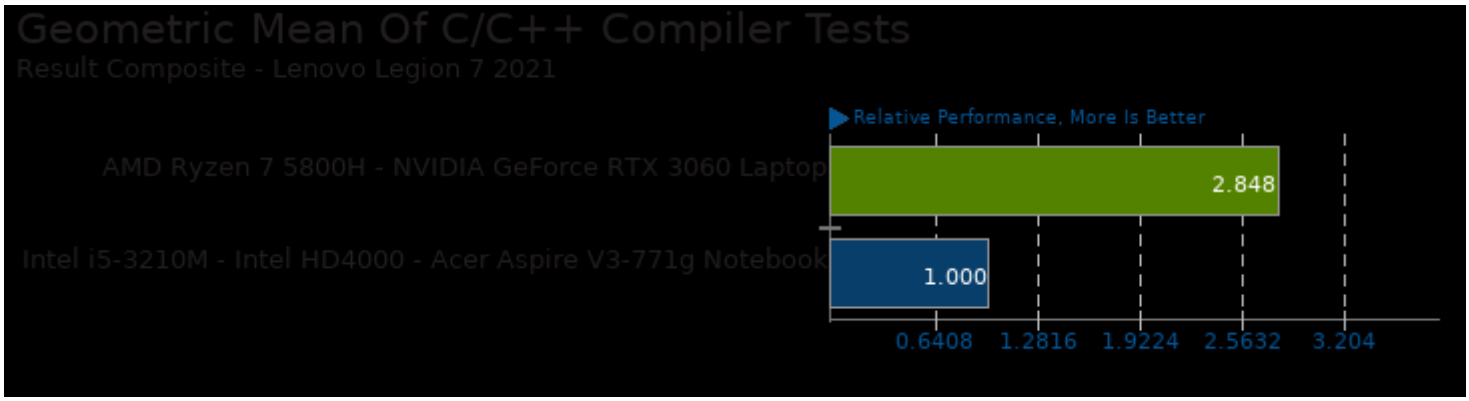


1. (CC) gcc options: -lm

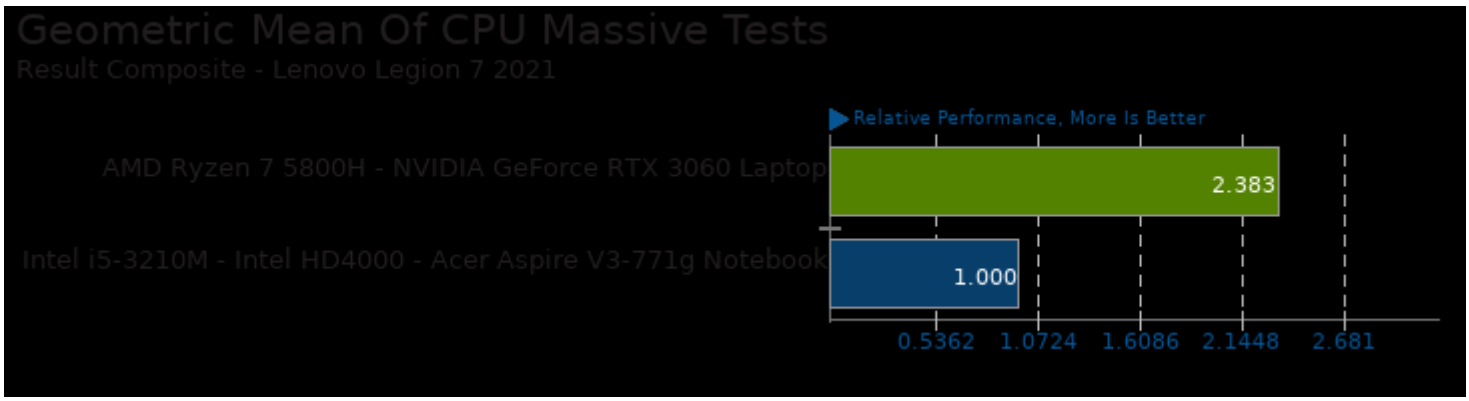
These geometric means are based upon test groupings / test suites for this result file.



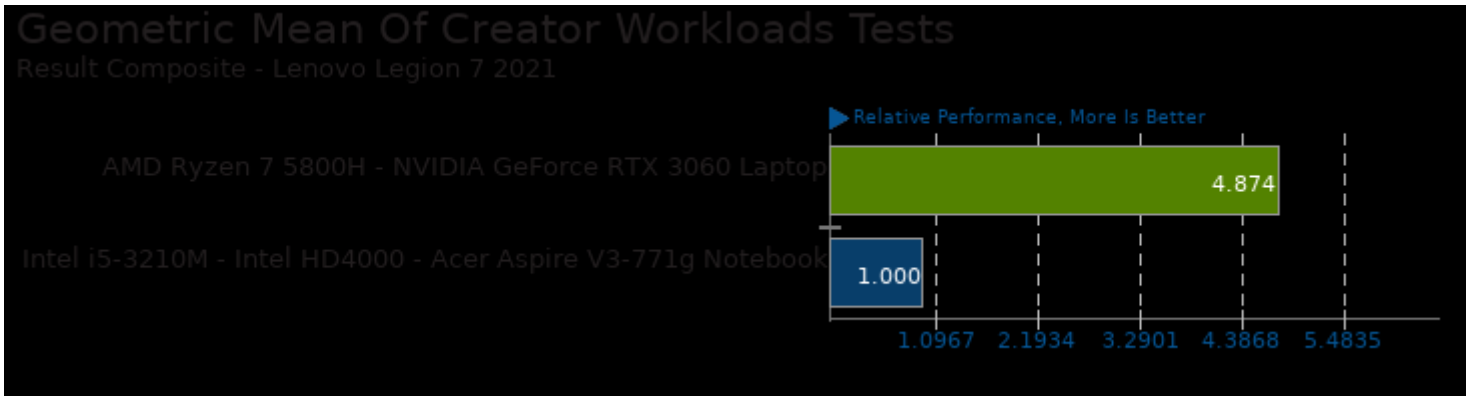
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



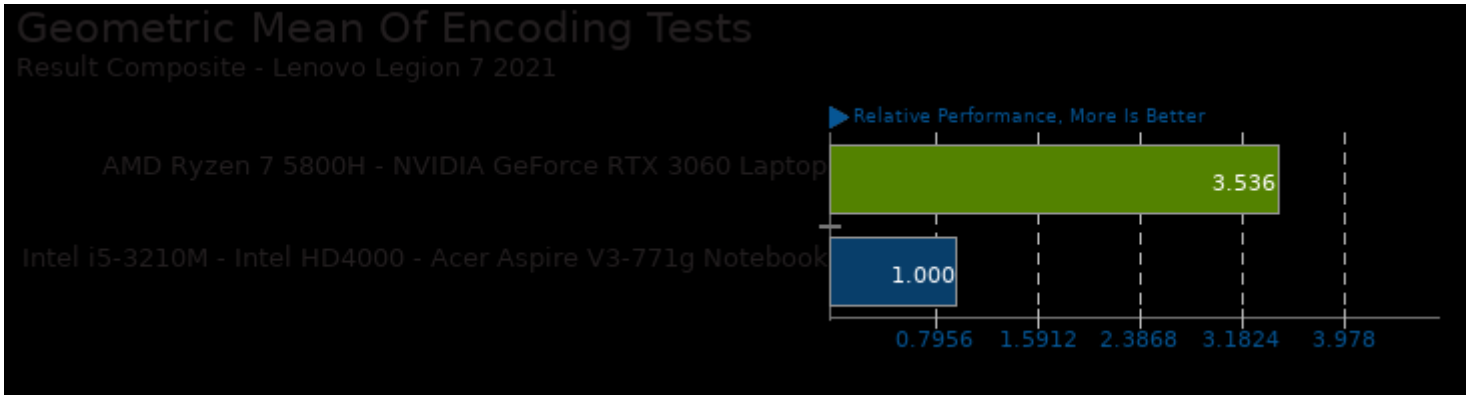
Geometric mean based upon tests: pts/scimark2, pts/stockfish, pts/c-ray, pts/encode-mp3 and pts/encode-flac



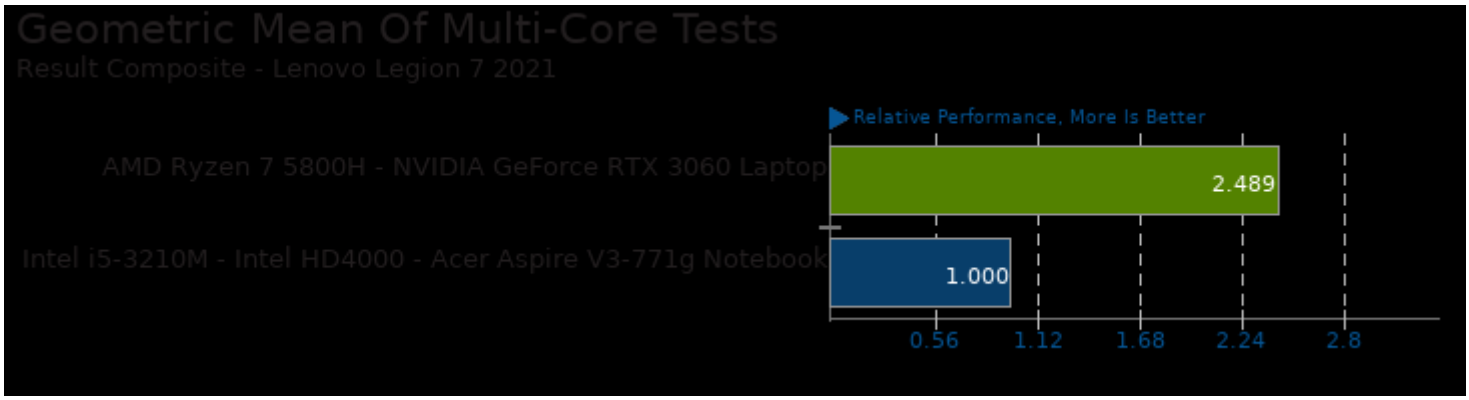
Geometric mean based upon tests: pts/blake2, pts/c-ray, pts/cachebench, pts/ebizzy, pts/encode-flac, pts/encode-mp3 and pts/stockfish



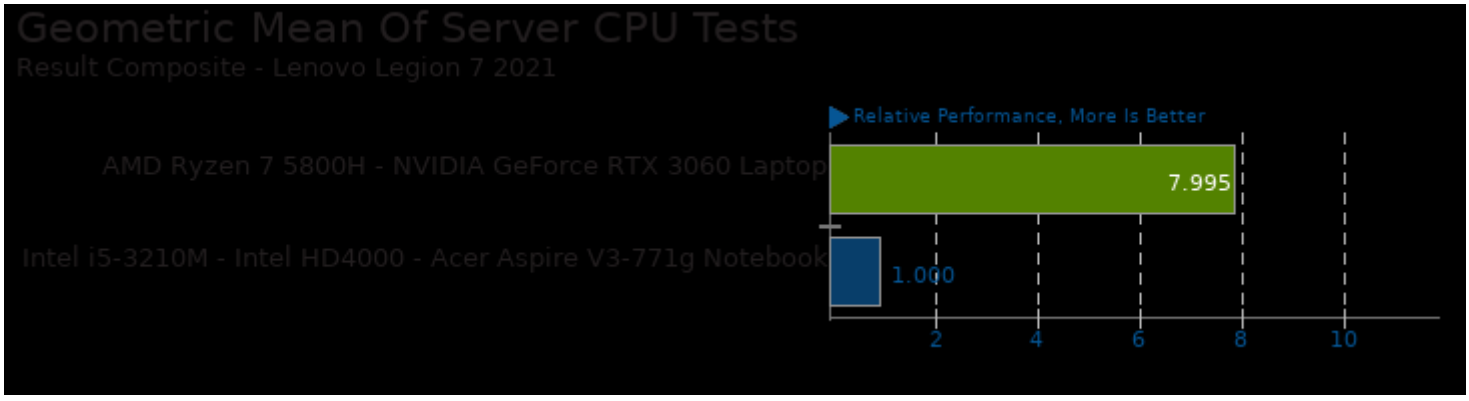
Geometric mean based upon tests: pts/c-ray, pts/encode-mp3 and pts/encode-flac



Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac

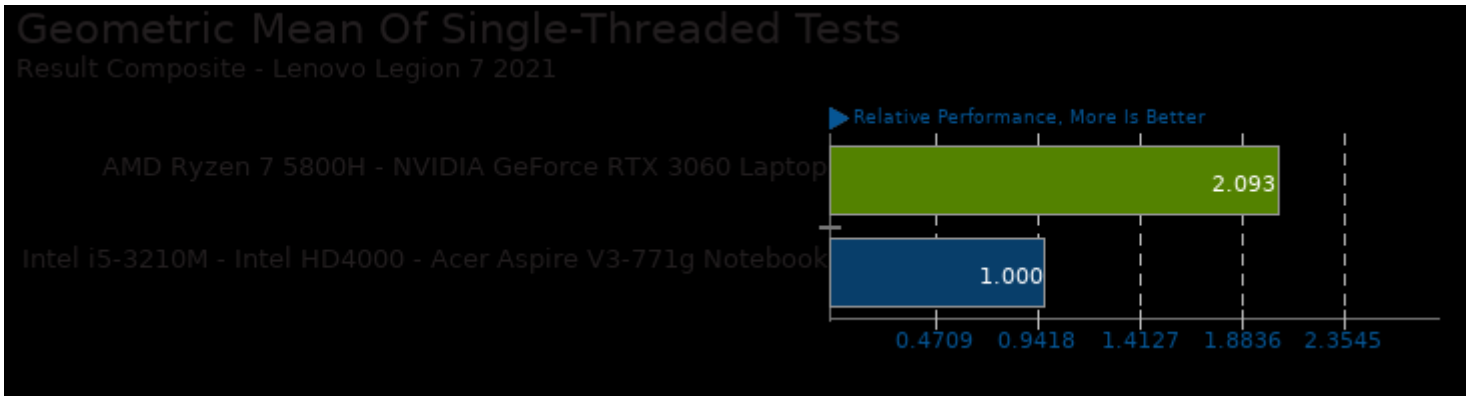


Geometric mean based upon tests: pts/c-ray, pts/stockfish and pts/ebizzy



Geometric mean based upon tests: pts/stockfish and pts/c-ray

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Geometric mean based upon tests: pts/blake2, pts/cachebench, pts/scimark2, pts/encode-flac and pts/encode-mp3

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