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7800x

Intel Core i7-7800X testing with a ASUS TUF X299 MARK 2 (2002 BIOS) and NVIDIA GeForce GTX 1070 8GB on ManjaroLinux 19.0.2 via the Phoronix Test Suite.

Automated Executive Summary

7800X had the most wins, coming in first place for 87% of the tests.

The results with the greatest spread from best to worst included:

Rodinia (Test: OpenMP CFD Solver) at 1.037x
7-Zip Compression (Compress Speed Test) at 1.016x
Stockfish (Total Time) at 1.01x
x265 (H.265 1080p Video Encoding) at 1.008x
x264 (H.264 Video Encoding) at 1.004x
Gzip Compression (Linux Source Tree Archiving To .tar.gz) at 1.003x
Rodinia (Test: OpenMP LavaMD) at 1.002x
asmFish (1024 Hash Memory, 26 Depth) at 1.001x
Timed Linux Kernel Compilation (Time To Compile) at 1x
OpenSSL (RSA 4096-bit Performance) at 1x.

Test Systems:

i7 7800X

Processor: Intel Core i7-7800X @ 4.60GHz (6 Cores / 12 Threads), Motherboard: ASUS TUF X299 MARK 2 (2002 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 32768MB, Disk: 14GB INTEL MEMPEK1J016GA + 1000GB Samsung SSD 970 EVO Plus 1TB + 1000GB Seagate ST1000DM003-1ER1 + 250GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 1070 8GB (1506/4006MHz), Audio: Realtek ALC1220, Monitor: U2879G6, Network: Intel I219-V

OS: ManjaroLinux 19.0.2, Kernel: 5.4.24-1-MANJARO (x86_64), Desktop: KDE Plasma 5.18.3, Display Server: X Server 1.20.7, Display Driver: NVIDIA 440.64, OpenGL: 4.6.0, Compiler: GCC 9.2.1 20200130, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++,d --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x2000064
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

7800X

Processor: Intel Core i7-7800X @ 4.60GHz (6 Cores / 12 Threads), Motherboard: ASUS TUF X299 MARK 2 (2002 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 32768MB, Disk: 14GB INTEL MEMPEK1J016GA + 1000GB Samsung SSD 970 EVO Plus 1TB + 1000GB Seagate ST1000DM003-1ER1 + 250GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 1070 8GB, Audio: Realtek ALC1220, Network: Intel I219-V

OS: ManjaroLinux 19.0.2, Kernel: 5.4.24-1-MANJARO (x86_64), Desktop: KDE Plasma, Display Server: X Server 1.20.7, Compiler: GCC 9.2.1 20200130, File-System: ext4, Screen Resolution: 1024x768

Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++,d --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x2000064
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

7800X cpu

Intel Core i7-7800X

Processor: Intel Core i7-7800X @ 4.60GHz (6 Cores / 12 Threads), Motherboard: ASUS TUF X299 MARK 2 (2002 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 32768MB, Disk: 14GB INTEL MEMPEK1J016GA + 1000GB Samsung SSD 970 EVO Plus 1TB + 250GB Samsung SSD 850 + 1000GB Seagate ST1000DM003-1ER1, Graphics: NVIDIA GeForce GTX 1070 8GB (1506/4006MHz), Audio: Realtek ALC1220, Monitor: U2879G6, Network: Intel I219-V

OS: ManjaroLinux 19.0.2, Kernel: 5.5.8-1-MANJARO (x86_64), Desktop: KDE Plasma 5.18.3, Display Server: X Server 1.20.7, Display Driver: NVIDIA 440.64, OpenGL: 4.6.0, Compiler: GCC 9.2.1 20200130, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release

7800x

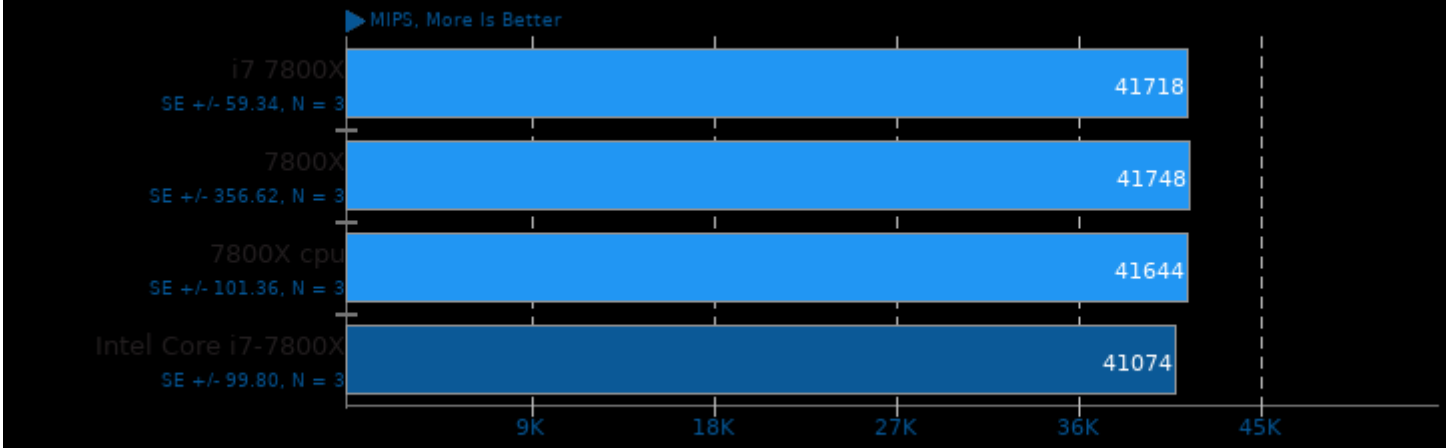
--enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++,d --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x2000064
Python Notes: Python 3.8.1
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

	i7 7800X	7800X	7800X cpu	Intel Core
7-Zip Compression - C.S.T (MIPS)	41718	**41748**	41644	**41074**
Normalized	99.93%	100%	99.75%	98.39%
Standard Deviation	0.2%	1.5%	0.4%	0.4%
Rodinia - OpenMP LavaMD (sec)		**37.372**	**37.454**	
Normalized		100%	99.78%	
Standard Deviation		0.6%	1%	
Rodinia - OpenMP CFD Solver (sec)		**29.059**	**30.135**	
Normalized		100%	96.43%	
Standard Deviation		1.4%	1.1%	
x264 - H.2.V.E (FPS)		**63.24**	**63.00**	
Normalized		100%	99.62%	
Standard Deviation		2.1%	2.1%	
x265 - H.2.1.V.E (FPS)		**36.04**	**35.77**	
Normalized		100%	99.25%	
Standard Deviation		1.7%	0.2%	
Stockfish - Total Time (Nodes/s)		**19928542**	**19724083**	
Normalized		100%	98.97%	
Standard Deviation		1.7%	0.1%	
asmFish - 1.H.M.2.D (Nodes/s)		**21628838**	**21609985**	
Normalized		100%	99.91%	
Standard Deviation		0.6%	1.7%	
Timed Linux Kernel Compilation - Time To Compile (sec)			104.461	
Standard Deviation			2.8%	
POV-Ray - Trace Time (sec)			71.630	
Standard Deviation			6.9%	
OpenSSL - R.4.b.P (Signs/sec)			2090	
Standard Deviation			0.2%	
ctx_clock - C.S.T (Clocks)			910	
Sysbench - CPU (Events/sec)			15763	
Standard Deviation			0%	
Blender - Barbershop - CPU-Only			1280	
Timed Apache Compilation - Time To Compile (sec)				30.813
Standard Deviation				0.5%
Timed FFmpeg Compilation - Time To Compile (sec)				77.039
Standard Deviation				0.1%
Timed GCC Compilation - Time To Compile (sec)				1263
Standard Deviation				0.2%

Timed GDB GNU Debugger Compilation - Time To Compile (sec)	152.039
Standard Deviation	0.1%
Timed ImageMagick Compilation - Time To Compile (sec)	40.656
Standard Deviation	0.6%
Timed Linux Kernel Compilation - Time To Compile (sec)	116.304
Standard Deviation	1.6%
Timed LLVM Compilation - Time To Compile (sec)	551.28
Timed MPlayer Compilation - Time To Compile (sec)	51.859
Standard Deviation	0.2%
Timed PHP Compilation - Time To Compile (sec)	73.584
Standard Deviation	0.2%
Build2 - Time To Compile (sec)	137.417
Standard Deviation	1.1%
Gzip Compression - L.S.T.A.T.t.g (sec)	**35.098**
Normalized	100%
Standard Deviation	0.2%

7-Zip Compression 16.02

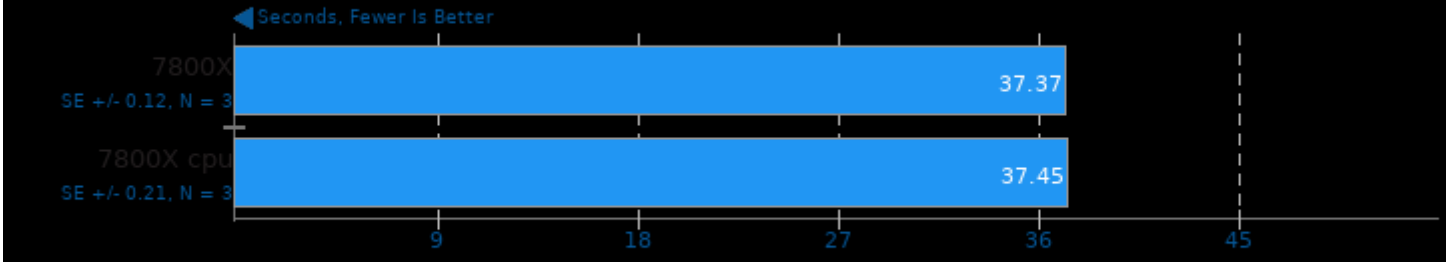
Compress Speed Test



1. (CXX) g++ options: -pipe -lpthread

Rodinia 2.4

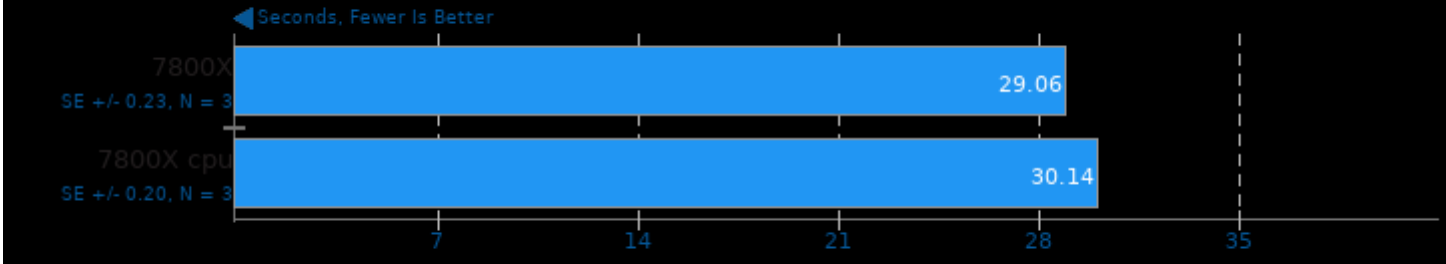
Test: OpenMP LavaMD



1. (CXX) g++ options: -O2 -lOpenCL

Rodinia 2.4

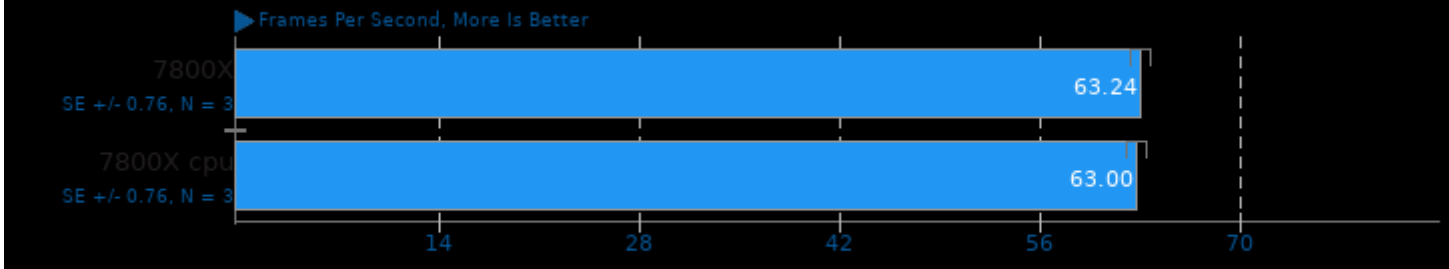
Test: OpenMP CFD Solver



1. (CXX) g++ options: -O2 -lOpenCL

x264 2018-09-25

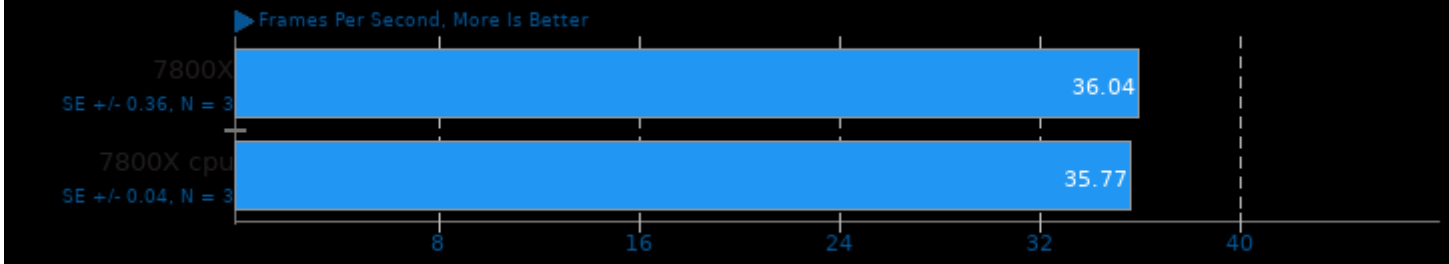
H.264 Video Encoding



1. (CC) gcc options: -ldl -llsmash -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree

x265 3.0

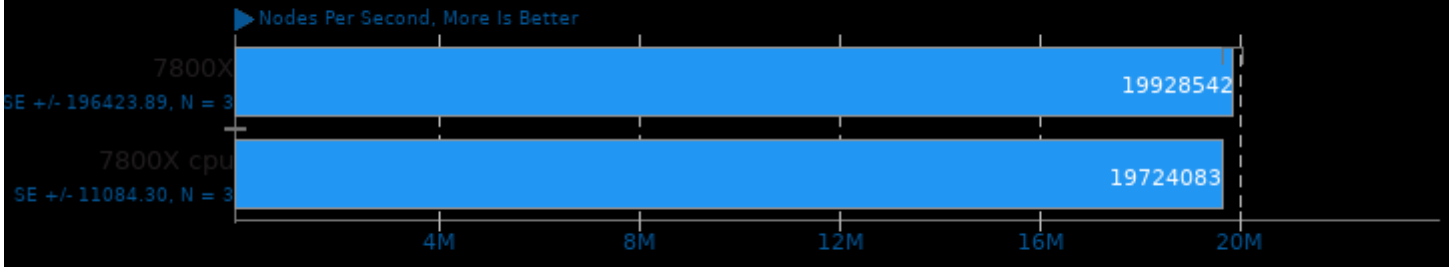
H.265 1080p Video Encoding



1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl

Stockfish 9

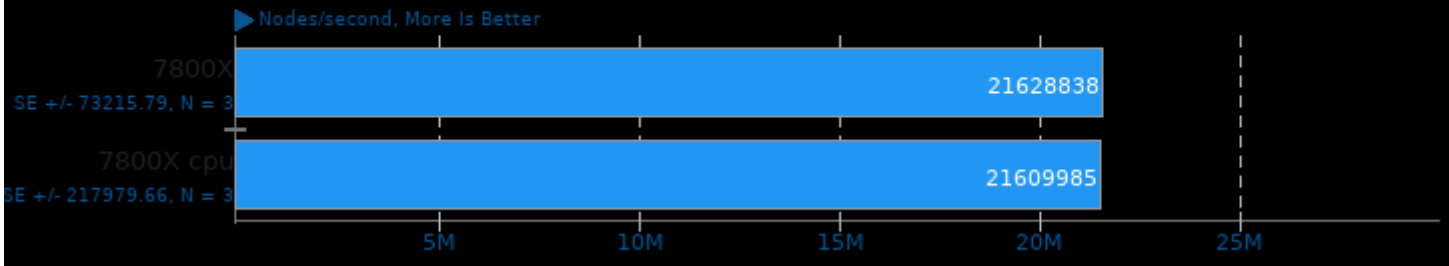
Total Time



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

asmFish 2018-07-23

1024 Hash Memory, 26 Depth



Timed Linux Kernel Compilation 4.18

Time To Compile



POV-Ray 3.7.0.7

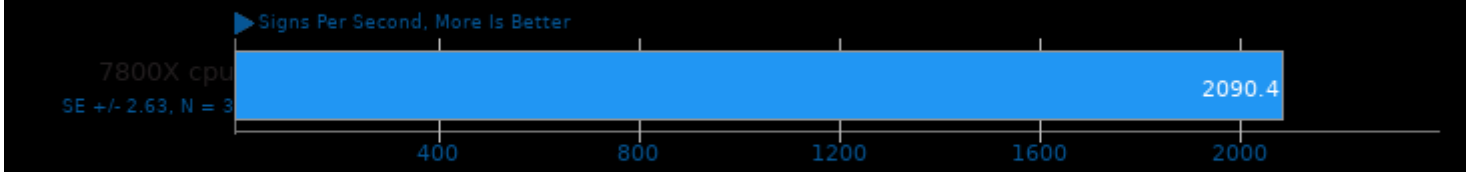
Trace Time



1. (CXX) g++ options: -pipe -O3 -ffast-math -march=native -pthread -lSDL -lpthread -lXpm -lSM -lICE -lX11 -lIlmImf -lIlmImf-2_4 -lImath-2_4 -lHalf-2_4 -lIe

OpenSSL 1.1.1

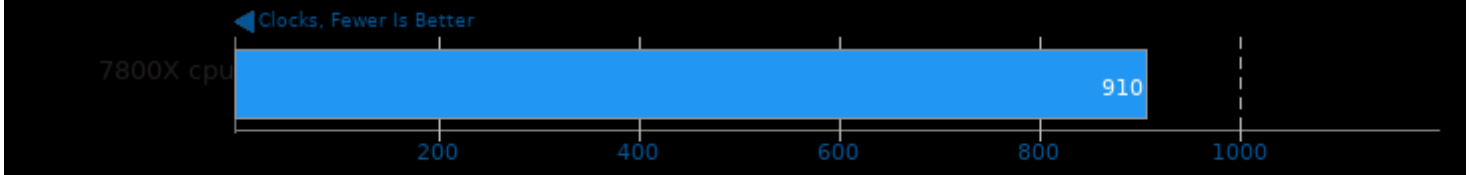
RSA 4096-bit Performance



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

ctx_clock

Context Switch Time



Sysbench 2018-07-28

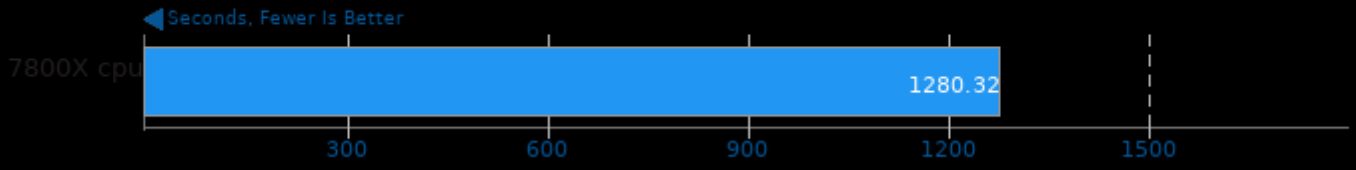
Test: CPU



1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -march=core2 -rdynamic -ldl -laio -lm

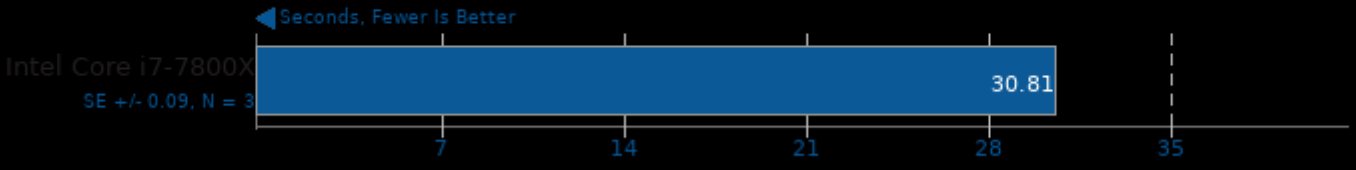
Blender 2.79a

Blend File: Barbershop - Compute: CPU-Only



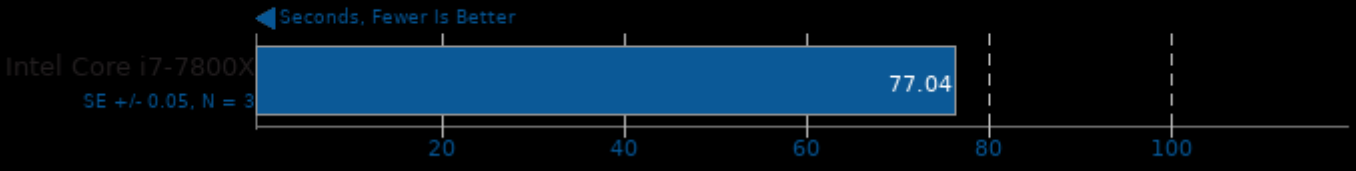
Timed Apache Compilation 2.4.41

Time To Compile



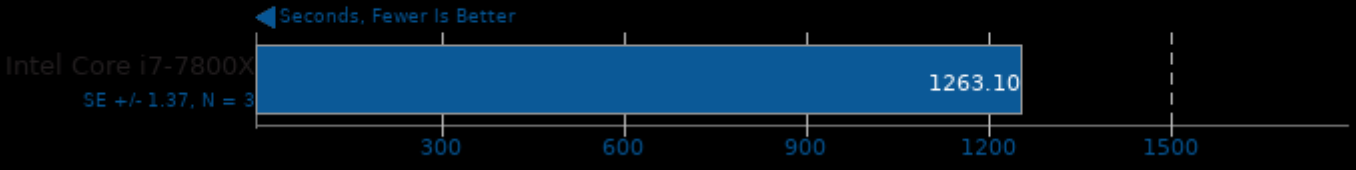
Timed FFmpeg Compilation 4.2.2

Time To Compile



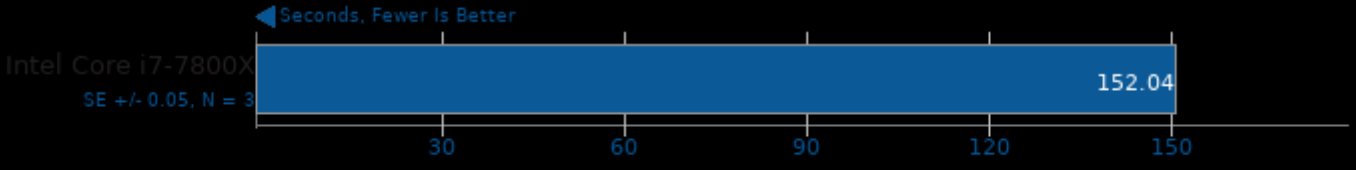
Timed GCC Compilation 9.3.0

Time To Compile



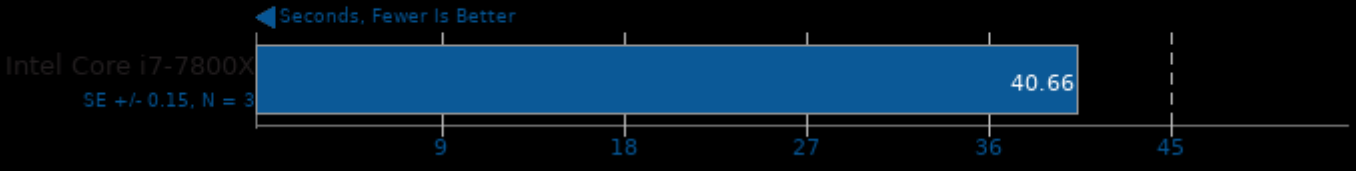
Timed GDB GNU Debugger Compilation 9.1

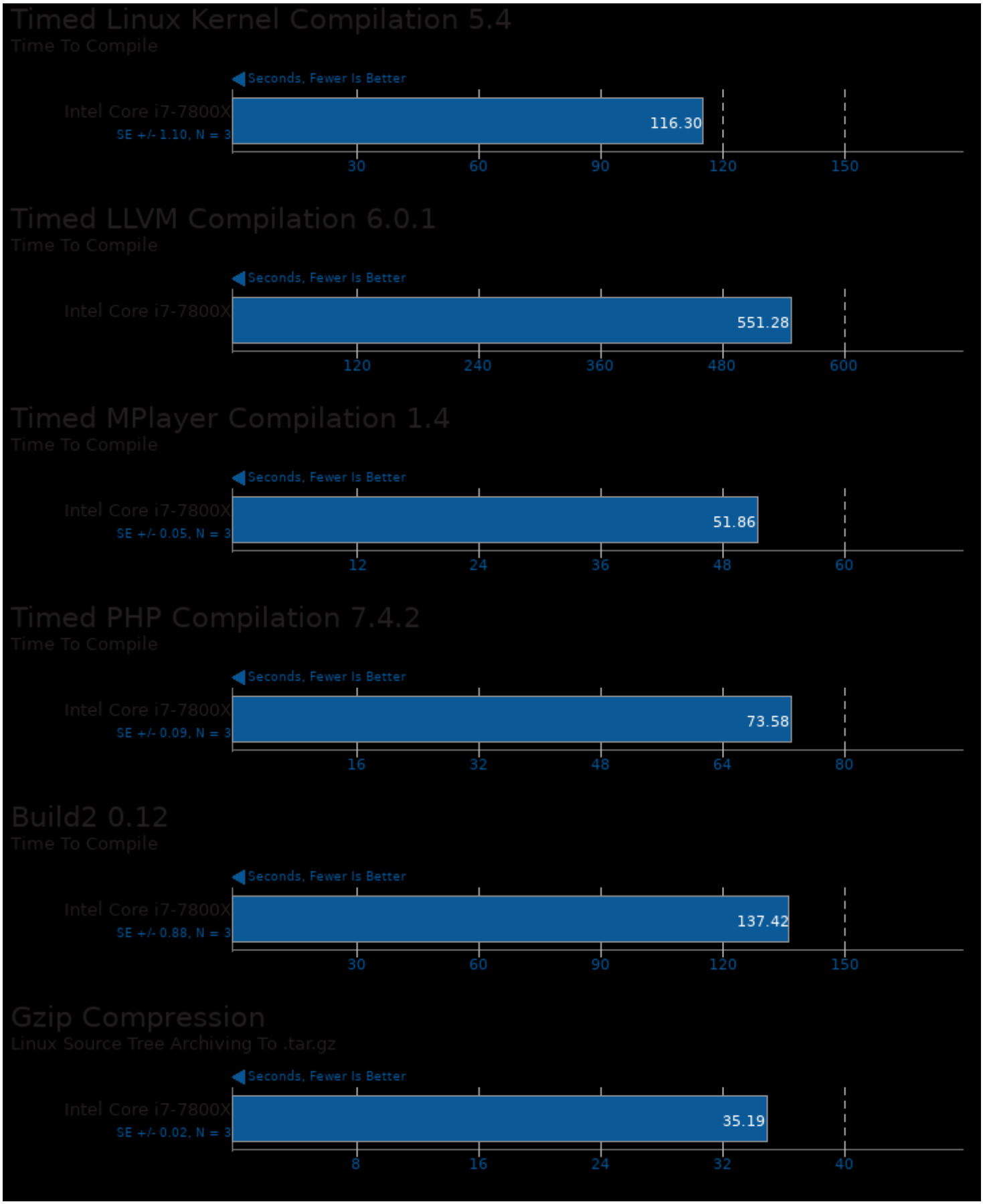
Time To Compile



Timed ImageMagick Compilation 6.9.0

Time To Compile





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06:46.