

My laptop has a Ryzen 7 chipset in it and thus I couldn't perform most of the tests on my laptop. The Hotspot(3), Memory Consumption(6) and Threading(5) test results were taken from my laptop and the rest of the results were taken from my friend's laptop.

Performance Snapshot				
File combo	IPC	Bad Speculation	Physical Core Utilization	DRAM Bound
bfs_huge	0.168	5.80%	92.90%	39.10%
bfs_soc	0.56	20.80%	81.00%	15.70%
cc_huge	0.221	9.50%	96.30%	49.70%
cc_soc	0.477	22.20%	81.20%	30.20%
pr_huge	0.259	0%	94.70%	71.70%
pr_soc	0.427	9%	94.90%	44.60%

Microarchitecture Exploration

File combo	Instructions Retired	CPI Rate	Port Utilization	Average CPU Frequency
bfs_huge	54,219,600,000	6.671	51.40%	2.0 GHZ
bfs_soc	9,934,200,000	1.859	39.80%	2.8 GHZ
cc_huge	48,292,200,000	4.641	17.80%	1.6 GHZ
cc_soc	11,703,600,000	3.454	70.80%	3.0 GHZ
pr_huge	36,640,800,000	3.876	19.90%	1.3 GHZ
pr_soc	154,632,600,000	2.526	34.10%	2.0 GHZ

Hotspots

File combo

Top Hotspot

bfs_huge

Function	Module	CPU Time ☺	% of CPU Time ☺
TDStep_omp_fn.0	bfs	144.107s	46.4%
func@0x19070	libgomp.so.1	87.178s	28.1%
func@0x18ee0	libgomp.so.1	58.209s	18.8%
func@0x17db0	libgomp.so.1	5.596s	1.8%
GOMP_parallel	libgomp.so.1	3.728s	1.2%
[Others]	N/A*	11.461s	3.7%

bfs_soc

Function	Module	CPU Time ☺	% of CPU Time ☺
BUStep_omp_fn.0	bfs	8.126s	54.4%
TDStep_omp_fn.0	bfs	1.789s	12.0%
InitParent_omp_fn.0	bfs	1.347s	9.0%
func@0x19070	libgomp.so.1	1.290s	8.6%
func@0x18ee0	libgomp.so.1	1.095s	7.3%
[Others]	N/A*	1.293s	8.7%

cc_huge

Function	Module	CPU Time ☺	% of CPU Time ☺
Link	cc	120.512s	70.8%
Compress_omp_fn.0	cc	38.122s	22.4%
Afforest_omp_fn.1	cc	4.408s	2.6%
Afforest_omp_fn.0	cc	2.599s	1.5%
func@0x19070	libgomp.so.1	1.745s	1.0%
[Others]	N/A*	2.930s	1.7%

cc_soc

Function	Module	CPU Time ☺	% of CPU Time ☺
Link	cc	6.328s	40.3%
Afforest_omp_fn.1	cc	4.159s	26.5%
Compress_omp_fn.0	cc	1.526s	9.7%
Afforest_omp_fn.3	cc	1.143s	7.3%
func@0x18ee0	libgomp.so.1	0.992s	6.3%
[Others]	N/A*	1.561s	9.9%

pr_huge

Function	Module	CPU Time ☺	% of CPU Time ☺
PageRankPullGS_omp_fn.1	pr	163.014s	93.3%
PageRankPullGS_omp_fn.0	pr	3.845s	2.2%
func@0x19070	libgomp.so.1	2.394s	1.4%
pvector<float>::fill_omp_fn.0	pr	2.328s	1.3%
func@0x18ee0	libgomp.so.1	1.956s	1.1%
[Others]	N/A*	1.133s	0.6%

pr_soc

Function	Module	CPU Time ☺	% of CPU Time ☺
PageRankPullGS_omp_fn.1	pr	394.533s	98.6%
func@0x19070	libgomp.so.1	2.674s	0.7%
func@0x18ee0	libgomp.so.1	1.473s	0.4%
PageRankPullGS_omp_fn.0	pr	0.860s	0.2%
pvector<float>::fill_omp_fn.0	pr	0.277s	0.1%
[Others]	N/A*	0.471s	0.1%

Memory Access				
File combo	Loads	Stores	LLC Miss Count	Average Latency(cycles)
bfs_huge	20.852.732.523	2,645,663,393	555,976,368	19
bfs_soc	2,646,787,550	453.333.452	11,425,028	11
cc_huge	12.914.300.357	2.226.390.954	1,092,807,026	36
cc_soc	2,277,864,699	334,658,652	22,514,587	12
pr_huge	9,206,272,300	2,407,209,228	1.909.116.091	87
pr_soc	52,476,376,516	3,640,401.50	2.362.208.290	41

Threading

File combo	Total Thread Count	Wait Time with poor CPU Utilization.
bfs_huge	16	0.297s
bfs_soc	16	0.278s
cc_huge	16	0.254s
cc_soc	16	0.284s
pr_huge	16	0.295s
pr_soc	16	0.287s

Memory Consumption

File combo

bfs_huge

Function	Memory Consumption	Allocation/Deallocation Delta
TDStep_omp_fn.0	62.4 GB	0.0 B
[Unknown]	14.4 GB	0.0 B
DOBFS	2.8 GB	0.0 B
Reader<int, int, int, (bool)1>::ReadSerializedGraph	1.0 GB	5.1 KB
BitmapToQueue_omp_fn.0	32.4 MB	0.0 B
[Others]	112.2 KB	77.3 KB

bfs_soc

Function	Memory Consumption	Allocation/Deallocation Delta
Reader<int, int, int, (bool)1>::ReadSerializedGraph	664.2 MB	5.1 KB
DOBFS	639.9 MB	0.0 B
TDStep_omp_fn.0	153.6 MB	0.0 B
[Unknown]	38.1 MB	0.0 B
BitmapToQueue_omp_fn.0	12.8 MB	0.0 B
[Others]	112.2 KB	77.3 KB

cc_huge

Function	Memory Consumption	Allocation/Deallocation Delta	Allocations	Module
main	1.4 GB	0.0 B	16	cc
Reader<int, int, int, (bool)1>::ReadSerializedGraph	1.0 GB	5.1 KB	10	cc
func@0x8f3f0	72.7 KB	72.7 KB	1	libstdc++.so.6
__alloc_dir	32.8 KB	0.0 B	1	libc.so.6
SampleFrequentElement.constprop.0	4.7 KB	0.0 B	16	cc
[Others]	6.6 KB	4.6 KB	48	N/A*

cc_soc

Function	Memory Consumption	Allocation/Deallocation Delta
Reader<int, int, int, (bool)1>::ReadSerializedGraph	664.2 MB	5.1 KB
main	310.2 MB	0.0 B
func@0x8f3f0	72.7 KB	72.7 KB
SampleFrequentElement.constprop.0	36.2 KB	0.0 B
__alloc_dir	32.8 KB	0.0 B
[Others]	6.6 KB	4.6 KB

pr_huge

Function	Memory Consumption	Allocation/Deallocation Delta
PageRankPullGS	2.7 GB	0.0 B
Reader<int, int, int, (bool)1>::ReadSerializedGraph	1.0 GB	5.1 KB
func@0x8f3f0	72.7 KB	72.7 KB
__alloc_dir	32.8 KB	0.0 B
PrintTime	4.1 KB	4.1 KB
[Others]	2.7 KB	528.0 B

pr_soc

Function	Memory Consumption	Allocation/Deallocation Delta
Reader<int, int, int, (bool)1>::ReadSerializedGraph	664.2 MB	5.1 KB
PageRankPullGS	620.5 MB	0.0 B
func@0x8f3f0	72.7 KB	72.7 KB
__alloc_dir	32.8 KB	0.0 B
PrintTime	4.1 KB	4.1 KB
[Others]	2.7 KB	528.0 B

Input/Output		
File combo	Effective Physical Core Utilization:	Effective Logical Core Utilization
bfs_huge	93.20%	93.00%
bfs_soc	70.60%	68.90%
cc_huge	95.20%	94.90%
cc_soc	76.80%	75.50%
pr_huge	89.30%	89.00%
pr_soc	91.00%	90.80%