

Erin Alltop
CS475 – Spring 2018
Project 3 – Commentary

1. I ran this program on Rabbit –

System Info

HOST OS : Linux

OS Version : 2.6.32-504.3.3.el6.x86_64

Driver Version : 3.4.2-1

MPSS Version : 3.4.2

Host Physical Memory : 65859 MB

2.

I did four trials for Fix 1 and ten trials for Fix 2.

Charts

FIX 1 - TRIAL 1				
	NUMT1	NUM2	NUMT4	NUMT8
NUM0	340.663995	235.001363	183.68126	187.280245
NUM1	354.698792	650.61369	264.792564	214.946321
NUM2	352.756127	307.597827	235.562731	229.598093
NUM3	354.726068	582.48467	332.897322	277.320318
NUM4	352.749347	678.826086	405.555363	432.629521
NUM5	354.730013	655.05248	591.074911	332.377872
NUM6	352.744156	648.130519	629.730416	474.662644
NUM7	354.740969	645.880721	1030.541994	460.869124
NUM8	354.726163	647.753764	1181.400084	474.137545
NUM9	352.747676	644.830672	1187.275041	710.816344
NUM10	352.141176	659.213101	728.877103	590.269034
NUM11	354.720692	673.324962	1076.231284	660.596623
NUM12	351.748898	657.138901	1162.689612	623.529018
NUM13	351.813596	653.589671	1307.254218	808.126869
NUM14	351.491579	646.483557	1367.490677	1984.51057
NUM15	352.779109	645.359984	1360.95157	2030.37635
NUM16	354.685959	647.39663	1331.629591	2037.79271

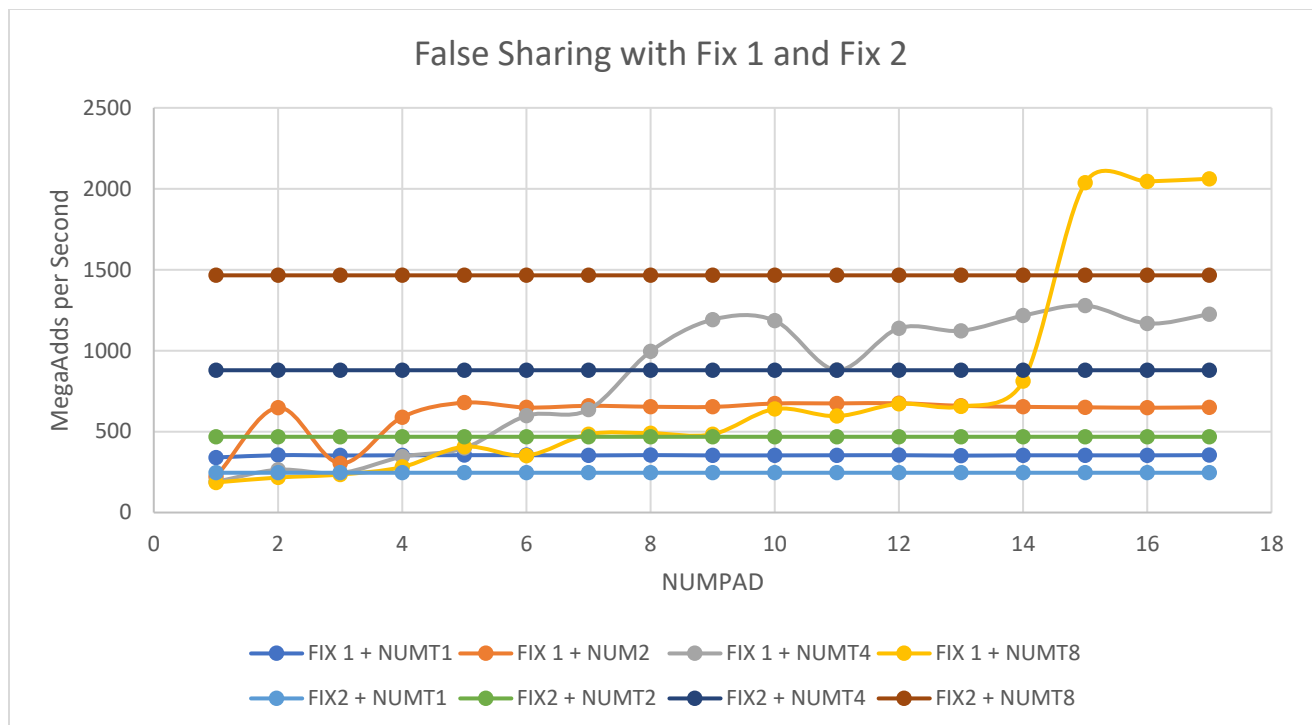
FIX 1 - TRIAL 2				
	NUMT1	NUM2	NUMT4	NUMT8
NUM0	339.05234	211.78962	194.737768	185.208869
NUM1	352.78692	646.60603	267.797655	215.776024
NUM2	349.296011	300.90104	252.464112	230.332818
NUM3	352.796338	588.07615	334.945291	282.137833
NUM4	354.706103	680.8495	394.072784	368.169114
NUM5	352.779314	676.34603	604.139471	362.205433
NUM6	352.793691	687.25624	645.14865	496.445994
NUM7	354.715529	672.13525	959.454972	534.309408
NUM8	352.78756	668.54422	1199.963736	476.725333
NUM9	354.752812	700.90345	1206.213261	610.312267
NUM10	354.541506	699.69278	814.746138	612.876486
NUM11	352.606738	700.7144	1213.597539	670.54851
NUM12	352.335168	678.46322	1181.650512	693.088583
NUM13	352.793602	655.06779	1180.171751	779.927801
NUM14	354.689443	648.28108	1217.416218	2012.010702
NUM15	352.771441	647.57874	1173.106822	2030.47048
NUM16	354.697575	647.48726	1177.804045	2062.008864

FIX 1 - TRIAL 3				
	NUMT1	NUM2	NUMT4	NUMT8
NUM0	338.491287	224.193769	190.783042	182.183784
NUM1	354.752108	648.734612	259.308229	212.510384
NUM2	354.709472	300.354702	248.034107	235.463792
NUM3	352.787035	581.579921	354.922896	280.169482
NUM4	354.745	654.175837	394.54751	422.697138
NUM5	354.708934	647.727037	606.639362	371.736727
NUM6	352.702396	646.480324	633.923238	459.055346
NUM7	354.723674	646.986263	979.029407	482.406718
NUM8	349.315486	646.062017	1195.011903	502.466464
NUM9	351.918409	647.363083	1178.243341	637.849416
NUM10	354.266864	649.866605	805.422436	593.414735
NUM11	354.738824	648.324808	1078.46902	676.063
NUM12	352.169667	647.909684	1181.382764	622.469282
NUM13	354.542022	649.916439	1180.078877	810.129829
NUM14	352.630314	658.217204	1218.368097	2090.22218
NUM15	354.656963	650.596872	1071.713244	2101.5452
NUM16	354.703099	659.117484	1179.602281	2061.83971

FIX 1 - TRIAL 4				
	NUMT1	NUM2	NUMT4	NUMT8
NUM0	341.5606	214.76233	190.5533	188.420483
NUM1	354.750694	645.58114	264.905794	221.888559
NUM2	352.781337	306.47719	238.220187	243.177482
NUM3	354.685342	603.73959	354.694306	284.344708
NUM4	354.743714	700.79259	397.691187	403.766746
NUM5	354.700939	616.26043	588.642227	340.328423
NUM6	352.770323	654.83159	630.419576	503.844823
NUM7	354.741322	649.27429	1012.386971	482.837898
NUM8	354.701035	647.89996	1190.0984	480.978819
NUM9	352.788505	701.48304	1169.708689	600.287744
NUM10	354.439608	687.71668	1170.693829	585.965397
NUM11	354.734896	678.94322	1186.234646	679.215394
NUM12	350.748416	652.86352	964.488247	679.393361
NUM13	354.722598	652.88989	1196.838255	846.721813
NUM14	354.67934	646.81824	1312.809613	2062.338832
NUM15	352.792888	646.27267	1067.15819	2019.235643
NUM16	354.665629	646.9953	1208.898742	2085.42838

FIX 2 - ALL TRIALS				
	FIX2 + NUMT1	FIX2 + NUMT2	FIX2 + NUMT4	FIX2 + NUMT8
TRIAL 1	290.469501	581.535956	1091.549568	1550.384654
TRIAL 2	286.339631	579.667265	1138.577374	1644.152878
TRIAL 3	290.097895	577.427566	984.495881	1453.182702
TRIAL 4	296.059094	546.508656	657.64528	1134.086435
TRIAL 5	243.00566	338.721009	762.270845	1559.021091
TRIAL 6	211.63254	417.304565	779.670363	1576.066856
TRIAL 7	245.455405	519.995791	804.209262	1090.743478
TRIAL 8	208.723577	351.962868	850.267496	1504.93407
TRIAL 9	197.136146	356.698234	788.406096	1603.245953
TRIAL 10	188.592041	410.814325	933.699301	1537.238486
AVERAGE	245.751149	468.0636235	879.0791466	1465.30566

3. The graph has both Fix 1 and Fix 2 on it. I ran with 1, 2, 4, 6, and 8 threads for each fix.



4. I ran many trials initially (about 8) for fix 1. I was getting inconsistent results on Flip, so I switched over to Rabbit and got somewhat more consistent results and a better curve. In both cases, my graph never turned out extremely similar to the professor's graph for Fix 1. All my trials showed a dip at 11 padding at NUMT 4. NUMT 4 also doesn't jump up quite as significantly as the professor's graph showed, but it does peak at NUMT 9 and NUMT 15. For Fix 2, my results are somewhat similar to the professor's, especially for NUMT 1 and 2. The horizontal lines line up with Fix 1 generally. Again Fix 2 at NUMT 4 is not where I would expect it to be when compared to the professor's results shown in the lecture. NUMT 8 for Fix one jumps up significantly at 15 padding.

5. The best I can reason with my "odd" results after some thought for the dip in NUMT 4 is that the cache lines on the machine I was running the program on don't line up exactly with the one the professor used. This might explain the dip at 11 padding and the somewhat odd curve at 14 and 15 (instead of a jump). The significant jump in NUMT 8 at the 15 padding mark makes it clear that the padding assisted with reducing the false sharing there.

For Fix 2, the performance lines up similarly to the professor's. at NUMT 1 and 2 the performance is roughly the same as Fix 1. NUMT 4 interestingly lines up with the dip at padding 11 which makes me hypothesize that there is a cache line there. NUMT 8 doesn't line up with the peak of Fix 1, but it does line up with about the average of the jump which is much better performance than most of NUMT 8 for fix 1.