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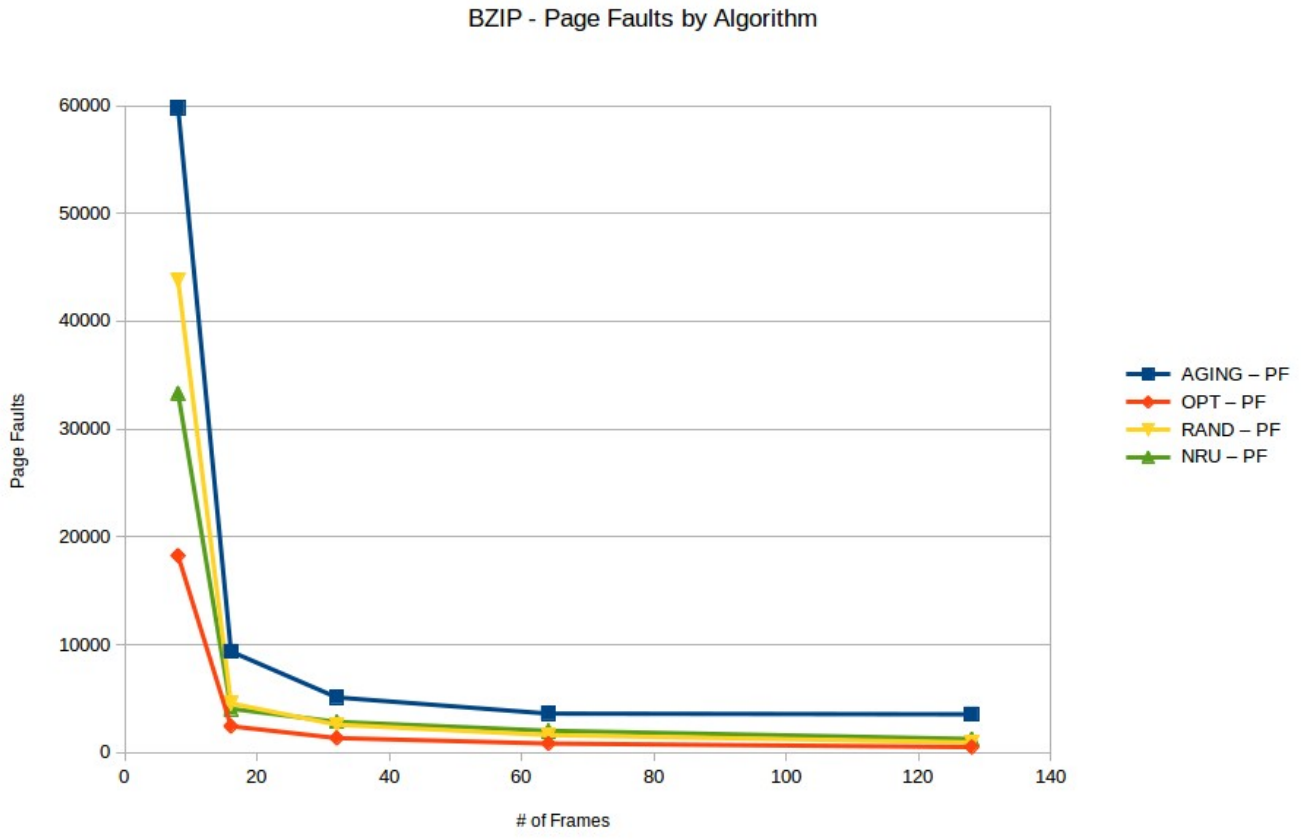
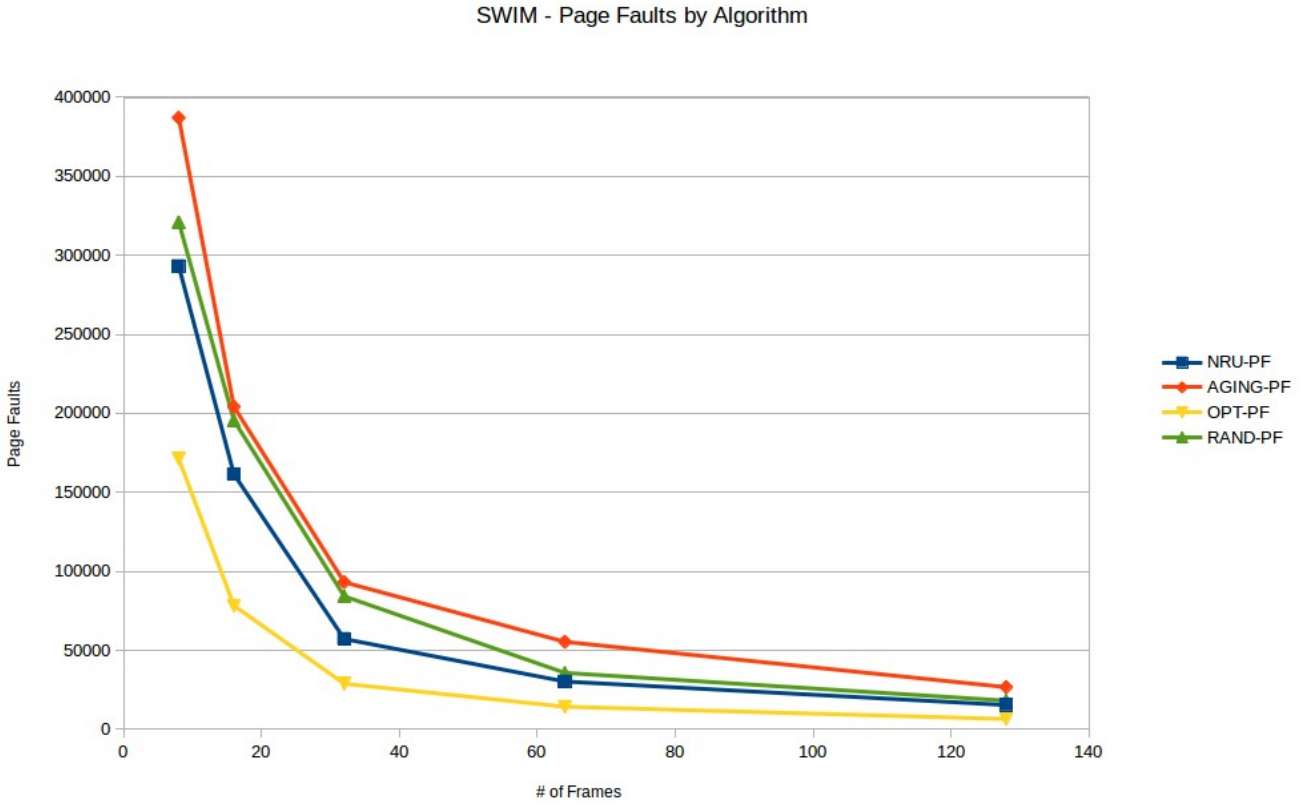
July 8th, 2014





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For bzip.trace:

OPT:

FRAMES	PAGE FAULTS	DISK WRITES
8	18251	7582
16	2427	850
32	1330	460
64	821	291
128	497	165

NRU:

FRAMES	PAGE FAULTS	DISK WRITES
8	33327	8242
16	4051	938
32	2836	645
64	2012	360
128	1251	116

AGING:

FRAMES	PAGE FAULTS	DISK WRITES
8	59775	16986
16	9364	2212
32	5100	1247
64	3599	963
128	3534	462

RAND:

FRAMES	PAGE FAULTS	DISK WRITES
8	43832	16335
16	4546	1490
32	2570	886
64	1608	544
128	931	304

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For swim.trace:

OPT:

FRAMES	PAGE FAULTS	DISK WRITES
8	171244	46452
16	78312	18134
32	28826	6916
64	14289	4114
128	6518	2155

NRU:

FRAMES	PAGE FAULTS	DISK WRITES
8	293147	51054
16	161413	23110
32	57145	8315
64	30225	4688
128	15355	2759

AGING:

FRAMES	PAGE FAULTS	DISK WRITES
8	387059	33672
16	204155	25327
32	93074	14765
64	55356	9034
128	26659	5512

RAND:

FRAMES	PAGE FAULTS	DISK WRITES
8	321044	54388
16	195475	40073
32	84175	18344
64	35715	8479
128	18122	5051

For both bzip.trace and swim.trace , my implementation of the Aging algorithm performed the worst among all of my implementations. All of the page fault rates were inversely proportional to the number of frames available, which is logical, considering that more space means less having to ask for space. Compared to OPT, NRU performed the best out of the real-world implementable algorithms. It was sometimes closely matched by RAND, but this is subject to change from run to run.

The place where the performance of each algorithm can clearly be seen is where there is the least number of frames available in memory. There is a clear ordering: OPT is by far the best, followed in this case by NRU, then RAND, and then Aging.

If I had to choose one of these algorithms to make a part of an operating system, based on these results, I would choose NRU. In terms of both page faults and disk writes, it performed as well as or better than the others at all memory sizes. NRU does not introduce additional storage overhead outside of an already existing page table, since any extra data it needs can be held in three bits. There is some additional computation introduced in finding the best frame to evict, but this can be performed as a

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quick iteration through valid frames and a less than comparison of a two-bit number, so it is not very costly.