Simpleloop

Algorithm	Memory size	Hit rate	Hit count	Miss count	Overall eviction count	Clean eviction count	Dirty eviction count
fifo	50		71.0792	7324	29802930	214	2716
	100		73.2337	7546	27582658	45	2613
	150		73.6219	7586	27182568	16	2552
	200		73.6995	7594	27102510	12	2498
rand	50		70.9821	7314	29902940	235	2705
	100		73.0299	7525	27792679	60	2619
	150		73.6607	7590	27142564	14	2550
	200		73.6219	7586	27182518	11	2507
lru	50		72.9911	7521	27832733	89	2644
	100		73.9325	7618	26862586	2	2584
	150		73.9519	7620	26842534	0	2534
	200		73.9519	7620	26842484	0	2484
clock	50		72.797	7501	28032753	105	2648
	100		73.913	7616	26882588	4	2584
	150		73.9227	7617	26872537	0	2537
	200		73.9422	7619	26852485	0	2485

Blocked

Algorithm	Memory size	Hit rate	Hit count	Miss count	Overall eviction count	Clean eviction count	Dirty eviction count
fifo	50		99.731	2411647	65056455	4181	2274
	100		99.8206	2413813	43394239	2760	1479
	150		99.8252	2413925	42274077	2653	1424
	200		99.8687	2414977	31752975	1876	1099
rand	50		99.6478	2409636	85168466	5908	2558
	100		99.7812	2412860	52925192	3435	1757
	150		99.8214	2413832	43204170	2714	1456
	200		99.8407	2414299	38553653	2326	1327
lru	50		99.7843	2412935	52175167	2815	2352
	100		99.8434	2414365	37873687	2606	1081
	150		99.8441	2414382	37703620	2559	1061
	200		99.8471	2414455	36973497	2436	1061
clock	50		99.7824	2412890	52625212	2881	2331
	100		99.8336	2414128	40243924	2617	1307
	150		99.8372	2414216	39363786	2575	1211
	200		99.8681	2414962	31902990	1928	1062

Matmul

Algorithm	Memory size	Hit rate	Hit count	Miss count	Overall eviction count	Clean eviction count	Dirty eviction count
fifo	50		60.9667	1760704	11272721127222	1083232	43990
	100		62.4807	1804429	10835471083447	1061225	22222
	150		98.8085	2853565	3441134261	32944	1317
	200		98.8265	2854086	3389033690	32434	1256
rand	50		65.5178	1892138	995838995788	956120	39668
	100		88.8156	2564974	323002322902	315449	7453
	150		96.6629	2791602	9637496224	93848	2376
	200		98.038	2831314	5666256462	54828	1634
lru	50		63.9461	1846749	10412271041177	1040068	1109
	100		65.1501	1881519	10064571006357	1005276	1081
	150		98.8612	2855088	3288832738	31657	1081
	200		98.8616	2855099	3287732677	31596	1081
clock	50		63.9451	1846720	10412561041206	1040092	1114
	100		63.9502	1846867	10411091041009	1039927	1082
	150		98.85	2854763	3321333063	31979	1084
	200		98.8607	2855072	3290432704	31622	1082

Merg_sort

Algorithm	Memory size	Hit rate	Hit count	Miss count	Overall eviction count	Clean eviction count	Dirty eviction count
fifo	50		95.9246	5955	253203	75	128
	100		97.7287	6067	14141	0	41
	150		98.067	6088	1200	0	0
	200		98.067	6088	1200	0	0
rand	50		95.9729	5958	250200	78	122
	100		97.8737	6076	13232	2	30
	150		98.067	6088	1200	0	0
	200		98.067	6088	1200	0	0
lru	50		97.2616	6038	170120	28	92
	100		98.0348	6086	12222	0	22
	150		98.067	6088	1200	0	0
	200		98.067	6088	1200	0	0
clock	50		96.9555	6019	189139	40	99
	100		97.9704	6082	12626	0	26
	150		98.067	6088	1200	0	0
	200		98.067	6088	1200	0	0

The fourth program is a merge sort program. The program is interesting because it uses recursion and will reference to more instruction addresses.

Given the same program to analyze, the hit rate for rand is usually the lowest. FIFO's hit rate is generally lower than those of LRU and clock. LRU and clock have similar hit rates and are lower than opt.

As memory size increases, the hit rate of LRU increases. This is because as the size of memory increases, the overall eviction count will decrease and more page frame will be able to stay in memory. Thus LRU is less likely to make wrong decisions on whether a least recently used address is more likely to be unused in the future. The miss rate is relatively higher than that of FIFO. This is because when the size of memory is small, LRU is more likely to make decisions evicting a short-term least used page frame. However, this page frame may be referenced in the future.