

page-blocked.ref

Memory size = 50

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	13.1380	255622	1690047	1689997	1632627	57370
RAND	99.6067	1938017	7652	7602	6565	1037
FIFO	99.6911	1939658	6011	5961	4946	1015
CLOCK	99.7156	1940135	5534	5484	4484	1000
LRU	99.7477	1940760	4909	4859	3875	984

Memory size = 100

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	21.6730	421684	1523985	1523885	1471265	52620
RAND	99.7451	1940709	4960	4860	3851	1009
FIFO	99.7881	1941547	4122	4022	3025	997
CLOCK	99.7936	1941654	4015	3915	2947	968
LRU	99.8141	1942052	3617	3517	2569	948

page-matmul.ref

Memory size = 50

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	15.9283	369595	1950770	1950720	1931220	19500
RAND	58.5619	1358850	961515	961465	960452	1013
FIFO	52.4492	1217013	1103352	1103302	1102309	993
CLOCK	55.1397	1279442	1040923	1040873	1039911	962
LRU	55.1396	1279440	1040925	1040875	1039914	961

Memory size = 100

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	22.3449	518483	1801882	1801782	1783832	17950
RAND	86.6919	2011569	308796	308696	307714	982
FIFO	53.7949	1248239	1072126	1072026	1071052	974
CLOCK	56.7384	1316539	1003826	1003726	1002766	960
LRU	56.6329	1314090	1006275	1006175	1005215	960

page-simpleloop.ref

Memory size = 50

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	1.4163	48	3341	3291	410	2881
RAND	22.6025	766	2623	2573	47	2526
FIFO	22.7206	770	2619	2569	45	2524
CLOCK	25.3762	860	2529	2479	0	2479
LRU	25.4352	862	2527	2477	0	2477

Memory size = 100

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	1.9475	66	3323	3223	401	2822
RAND	24.1074	817	2572	2472	23	2449
FIFO	24.0189	814	2575	2475	23	2452
CLOCK	25.3762	860	2529	2429	0	2429
LRU	25.4352	862	2527	2427	0	2427

page-repeatloop.ref

Memory size = 50

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	49.2958	280	288	238	164	74
RAND	54.4014	309	259	209	121	88
FIFO	33.4507	190	378	328	241	87
CLOCK	35.5634	202	366	316	232	84
LRU	34.5070	196	372	322	236	86

Memory size = 100

Algorithm	Hit Rate	Hit Count	Miss Count	Overall Eviction Count	Clean Eviction Count	Dirty Eviction Count
MRU	82.7465	470	98	0	0	0
RAND	82.7465	470	98	0	0	0
FIFO	82.7465	470	98	0	0	0
CLOCK	82.7465	470	98	0	0	0
LRU	82.7465	470	98	0	0	0

Analysis:

By looking at the tables, among FIFO, Clock, LRU, and MRU, we see that FIFO has the lowest hit rate. This makes sense because Clock, LRU, and many other algorithms are designed to improve FIFO. We also see that Clock and LRU have a very similar performance in all trace files, this demonstrates that Clock is designed to simulate LRU. Sometimes Clock has a better performance than LRU possibly because in some cases the least recently used page might not be the best page to evict, and the Clock algorithm made a better choice. We see that MRU has the worst performance, this is because this algorithm always evicts the most recently used page, which is not a good way to predict what would be used in the future, because it is highly possible that the most recently used one will be used again in the future. We also see that MRU has a really high clean eviction count, this is because it evicts the most recently used page. On the other hand, Rand has a very unstable hit rate as shown by running with different trace files. It did not beat FIFO, Clock, and LRU in most circumstances but it has a really good performance in page-matul.ref. This is because the data in page-matul.ref are randomly generated. Therefore, it is unlikely that Clock, LRU, and FIFO can have a good performance since locality is reduced, whereas it does not affect Rand. In addition, we see that as we increase the memory size, the hit rate increases for all algorithms. We know that page-simple loop.ref loops over data in different pages,

thus, we can see that all algorithms have a significant decrease in hit rate compared to running other trace files. All algorithms have the same hit rate for page-repeatloop.ref when memory size is 100, this is because the memory is never used up, so they don't have to do any evictions.

trace1:

Algorithm	Hit Rate	Hit Count	Miss Count
FIFO	50.0000	18	18
CLOCK	61.1111	22	14
LRU	44.4444	16	20
OPT	63.8889	23	13

trace2:

Algorithm	Hit Rate	Hit Count	Miss Count
FIFO	47.2222	17	19
CLOCK	66.6667	24	12
LRU	66.6667	24	12
OPT	66.6667	24	12

trace3:

Algorithm	Hit Rate	Hit Count	Miss Count
FIFO	0.0000	0	36
CLOCK	0.0000	0	36
LRU	0.0000	0	36
OPT	58.3333	21	15