Part 2: Task 3 by Josh Gelua & Hou Ren Chin

Simple loop	Hit rate	Hit count	Miss count	Overall eviction count	Clean eviction count	Dirty Eviction count
FIFO						
-m 50	22.4822	759	2617	2567	23	2544
-m 100	23.7855	803	2573	2473	12	2471
CLOCK						
-m 50	25.1481	849	2527	2477	0	2477
-m 100	25.0889	847	2529	2429	1	2428
LRU						
-m 50	25.2073	851	2525	2475	0	2475
-m 100	25.2073	851	2525	2425	0	2425

Blocked	Hit rate	Hit count	Miss count	Overall eviction count	Clean eviction count	Dirty Eviction count
FIFO						
-m 50	99.8245	3507538	6166	6116	2066	4050
-m 100	99.8817	3509549	4155	4055	1395	2660
CLOCK						
-m 50	99.8616	3508841	4863	4813	1333	3480
-m 100	99.8908	3509868	3836	3736	1304	2432
LRU						
-m 50	99.8618	3508737	4855	4805	1304	3501
-m 100	99.8971	3509978	3614	3514	1304	2210

Matmul	Hit rate	Hit count	Miss count	Overall eviction count	Clean eviction count	Dirty Eviction count
FIFO						
-m 50	62.9391	1913768	1126896	1126846	552288	574558
-m 100	64.3709	1957302	1083362	1083262	535960	547302
CLOCK						
-m 50	65.7663	1999733	1040931	1040881	520003	520878
-m 100	65.7699	1999841	1040823	1040723	519951	520772
LRU						
-m 50	65.7663	1999716	1040924	1040874	520000	520874
-m 100	66.9058	2034366	1006275	1006174	502761	503413

On examining the three algorithms, we can investigate similarities and differences between the results of the algorithms as a result of their fundamental properties. FIFO and LRU are quite similar algorithm structures such that FIFO is a naive implementation of LRU, and this is reflected in their Hit Rate and Eviction counts. For starters, LRU consistently beats the FIFO as shown with a higher hit rate and lower overall eviction count, clean eviction count, and dirty eviction count. Additionally, we see that as memory size increases, hit rate increases, and the overall, clean, and dirty eviction counts decreases for FIFO and LRU. This is expected, as the probability of hitting a frame that hasn't been used increases over time. In contrast, CLOCK results do not change significantly as message size increases, they largely stay the same. This is solely because CLOCK is not based on time or time recently used (ironically), it merely circulates the list of pages in the memory. CLOCK yields better results than FIFO, however, because pages do not have to be pushed to the back of the list. Here we can order the algorithms from worst to best: FIFO, CLOCK, and LRU respectively.

trace1	hits	misses	trace2	hits	misses	trace3	hits	misses
FIFO	13	17		30	5		0	36
CLOCK	14	16		30	5		0	36
LRU	15	15		30	5		0	36