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Lab 8

FIFO:

In this program I implemented the FIFO page replacement algorithm. The program checks if the input page number is already in the cache. If it is not in the cache, the program would first populate the cache if the cache is not currently full. Then when the cache is full, it will shift all the page numbers down in the cache such that the oldest page number is eliminated and then it will add the new number in the end of the cache. This process would repeat for all numbers in the input.

LRU:

In this program I implemented the LRU page replacement algorithm. The program checks if the page number in the input is already in the cache. If it is not in the cache, the program would first populate the cache if the cache is not currently full. Then when the cache is full, it will shift all the page numbers up in the cache such that the oldest page number is eliminated and then I would add the new number at the beginning of the cache. However if the page number in the input is already in the cache then it will shift all the page numbers before the input page number up and then place the input page number at the beginning of the cache.

Second Chance:

In this program I implemented the SC page replacement algorithm. Compared to the FIFO and LRU programs this one in particular we will use a circular array instead of just a regular one. The program checks if the page number in the input is already in the cache. If it is not in the cache, the program would first populate the cache with the input number and the second chance cache to 0 if the cache is not currently full. Then when the cache is full, it will insert the new page number the same way as FIFO except if the second chance cache number is 1 it will not replace it but only replace it if the second chance is 0. Once the input is placed in the cache then all the second chances are set to 0. However if the input page number already exists in the cache then it will set the respective second chance number to 1.

Cache Size	FIFO	LRU	CS
10	0.991601	0.991501	0.991501
30	0.972503	0.972803	0.973203
50	0.951505	0.951005	0.951005
100	0.90181	0.90291	0.90221
200	0.80412	0.80232	0.80022
300	0.70513	0.708129	0.706129
400	0.610339	0.611439	0.610239
500	0.513049	0.520648	0.517948

FIFO, LRU and CS

