OS2 Lab Exam

Rajiv Shailesh Chitale
CS21BTECH11051

Code design for pgpolicy.c

The main() function reads inp.txt to take in parameters like number of frames and page size. It uses a vector addr to store the access locations. It calls fifo(), lru() and opt() to conduct simulations and print number of page faults.

fifo()

The function maintains a queue to store the valid pages. The function traverses the access locations. If an address finds a corresponding valid page, it is a hit and the loop continues. If no hit is found, it checks if all the frames are in use. If so, it will pop a page from the queue. Then it enqueues the page needed by the latest address.

lru()

The function maintains a queue to store the valid pages. The function traverses the access locations. If an address finds a corresponding valid page, it is a hit. The page is erased from the queue and enqueued at the front again (most recent), then the loop continues. If no hit is found, it checks if all the frames are in use. If so, it will pop a page from the queue. Then it enqueues the page needed by the latest address.

opt()

The function maintains a vector to store the valid pages. The function traverses the access locations. If an address finds a corresponding valid page, it is a hit and the loop continues. If no hit is found, it checks if all the frames are in use. If so, it will pop a page from the queue. This choice is made by going through all valid pages and finding the optimal one to replace, opt. The optimal one is that which is not used for the longest time afterwards. This is found by scanning the addr vector. Then it pushes the page needed by the latest address into the vector.

Each of the functions prints an output. Also, there are extra print statements for debugging which may be activated by setting DEBUG_MODE to 1.