P R O J E C T

Page Replacement Algorithms

PROJECT DESCRIPTION

The purpose of this project is to compare the performance of several global page replacement algorithms.

A page replacement algorithm determines which page, currently resident in PM, must be evicted and replaced by a new page whenever a page fault occurs, i.e., when a currently non-resident page is referenced. The main goal is to minimize the number of page faults over a given period of time.

To compare the performance of different algorithms, we use a reference string, RS. This is a series of integers, $r_1\ r_2 \ldots r_T$, where each r_i represents the number of the page accessed at time i.

Each algorithm processes the RS and determines the occurrence of page faults. Specifically, it reads the RS and, for each r_i, it determines if the corresponding page is currently resident in PM. If not, it records a page fault. It then selects one of the resident pages to be evicted from PM and replaced by the page r_i. The choice of the evicted page depends on the given algorithm.

Your assignment is to implement the following page replacement algorithms: FIFO, LRU, Second-chance. (Refer to Section 8.3.1 for details.)

You will be given a RS in the form of a file. Your program must read this RS and, for each of the above algorithms, determine the number of page faults and the times of their occurrence for the given RS.