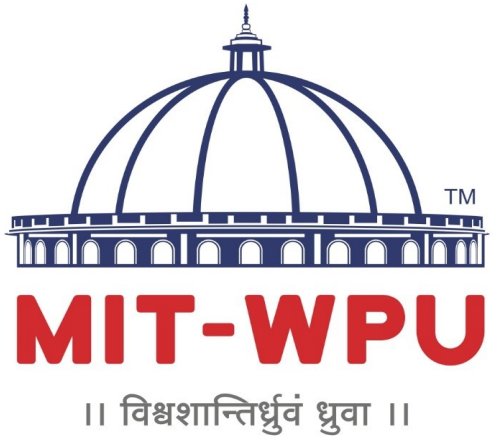

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CET2011A -Operating Systems

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Lab Assignment 7
FIFO Page Replacement Algorithm

Problem Statement : Write a program to simulate the FIFO (First In First Out) page replacement algorithm.

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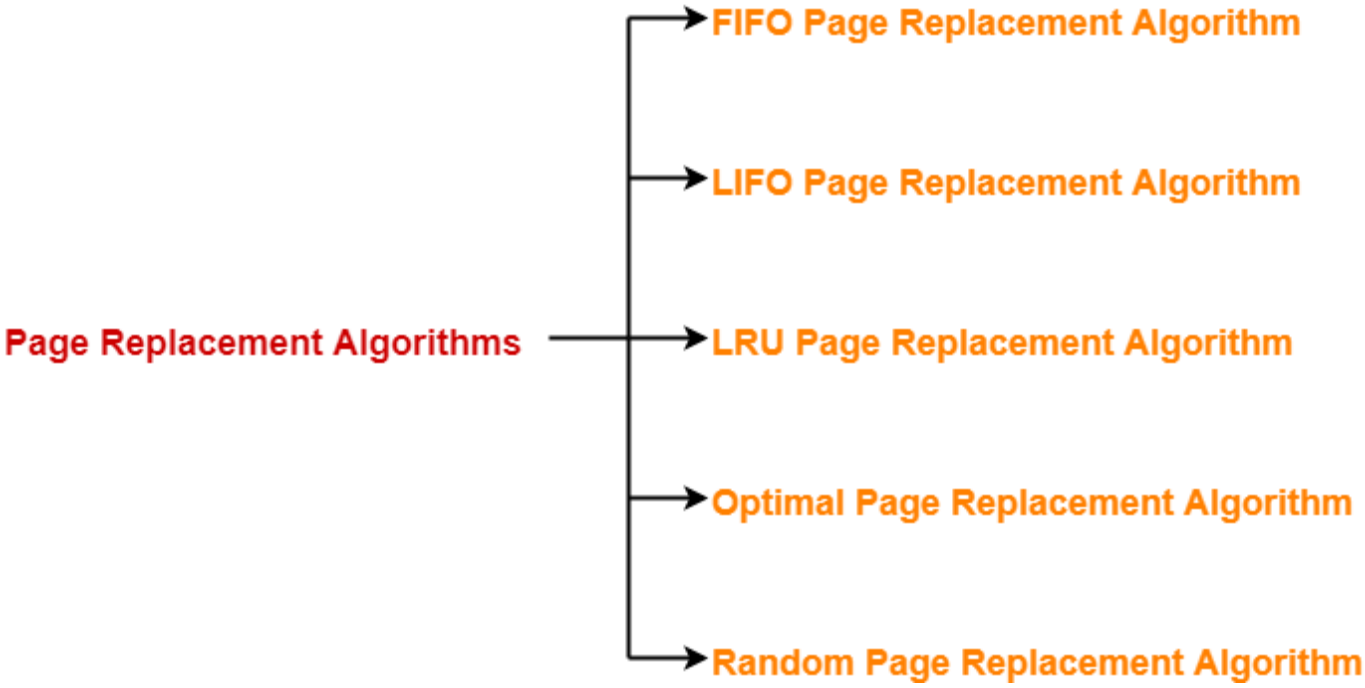
Page Replacement Algorithms



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FIFO Page Replacement Algorithm

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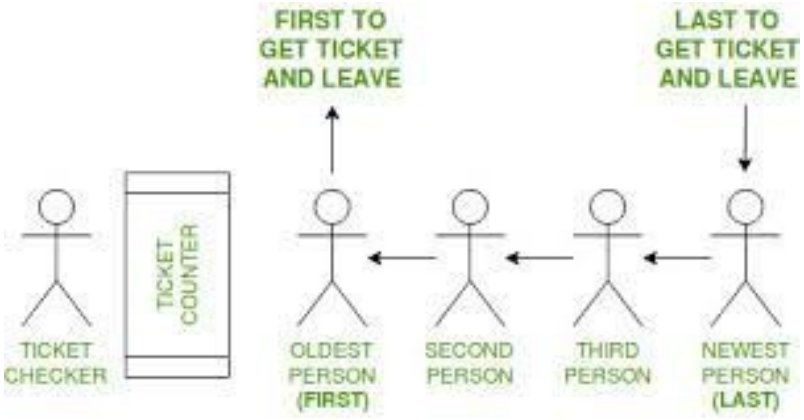
FIFO Page Replacement Algorithm

FIFO is a method of processing and retrieving data.

In a **FIFO** system, the first items entered are the first ones to be removed.

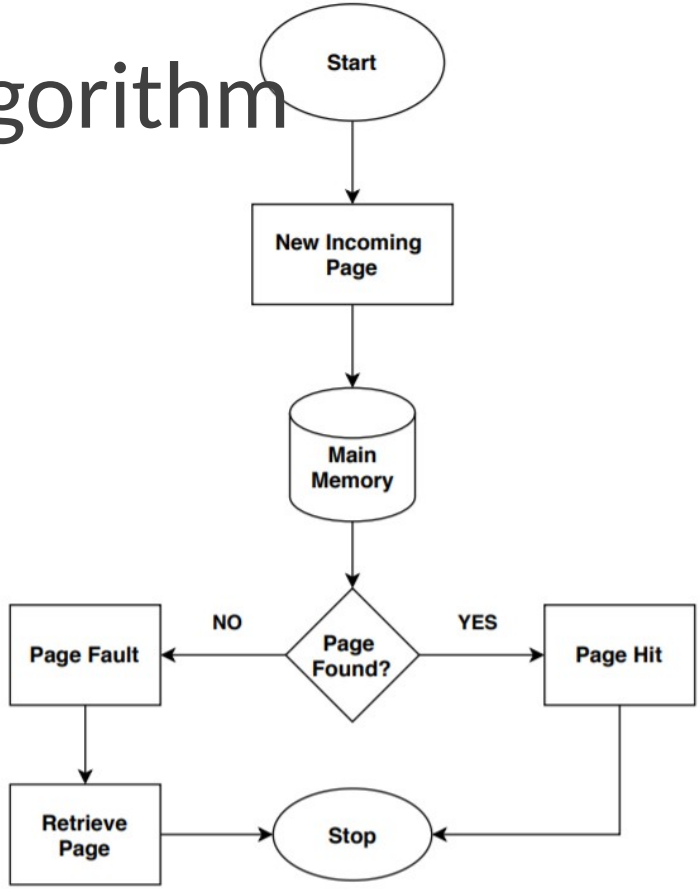
In this algorithm, the operating system keeps track of all pages in the memory in a queue, the oldest page is in the front of the queue. When a page needs to be replaced page in the front of the queue is selected for removal.



FIFO Page Replacement Algorithm

Page replacement algorithms like FIFO are used when there is a new page request, and there is not enough space in the main memory to allocate the new page.

Hence, a page replacement algorithm decides which page it should replace so that it can allocate the memory for the new page.



Example- Consider page reference string 1, 3, 0, 3, 5, 6 with 3 page frames. Find number of page faults.

Page reference 1, 3, 0, 3, 5, 6, 3

1	3	0	3	5	6	3
		0	0	0	0	3
	3	3	3	3	6	6
1	1	1	1	5	5	5
Miss	Miss	Miss	Hit	Miss	Miss	Miss

Total Page Fault = 6

Initially all slots are empty, so when 1, 3, 0 came they are allocated to the empty slots —> **3 Page Faults.**

when 3 comes, it is already in memory so —> **0 Page Faults.**

Then 5 comes, it is not available in memory so it replaces the oldest page slot i.e 1. —>**1 Page Fault.**

6 comes, it is also not available in memory so it replaces the oldest page slot i.e 3 —>**1 Page Fault.**

Finally when 3 come it is not avilable so it replaces 0 **1 page fault**

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Pseudo Code

1. Travel the pages/string
    1. If (reference_set consist less pages, then capacity) then
        1. Insert in reference_set (current_page);
        2. Increment page fault;
        3. Push the current_page in queue;
    2. Else
        1. Check if current page is there in reference_ set or not then
            1. Dequeue the first page; (pop out from queue and erase the value)
            2. Replace fist page in queue with current page;
            3. Increment page fault;
2. Return page_fault;