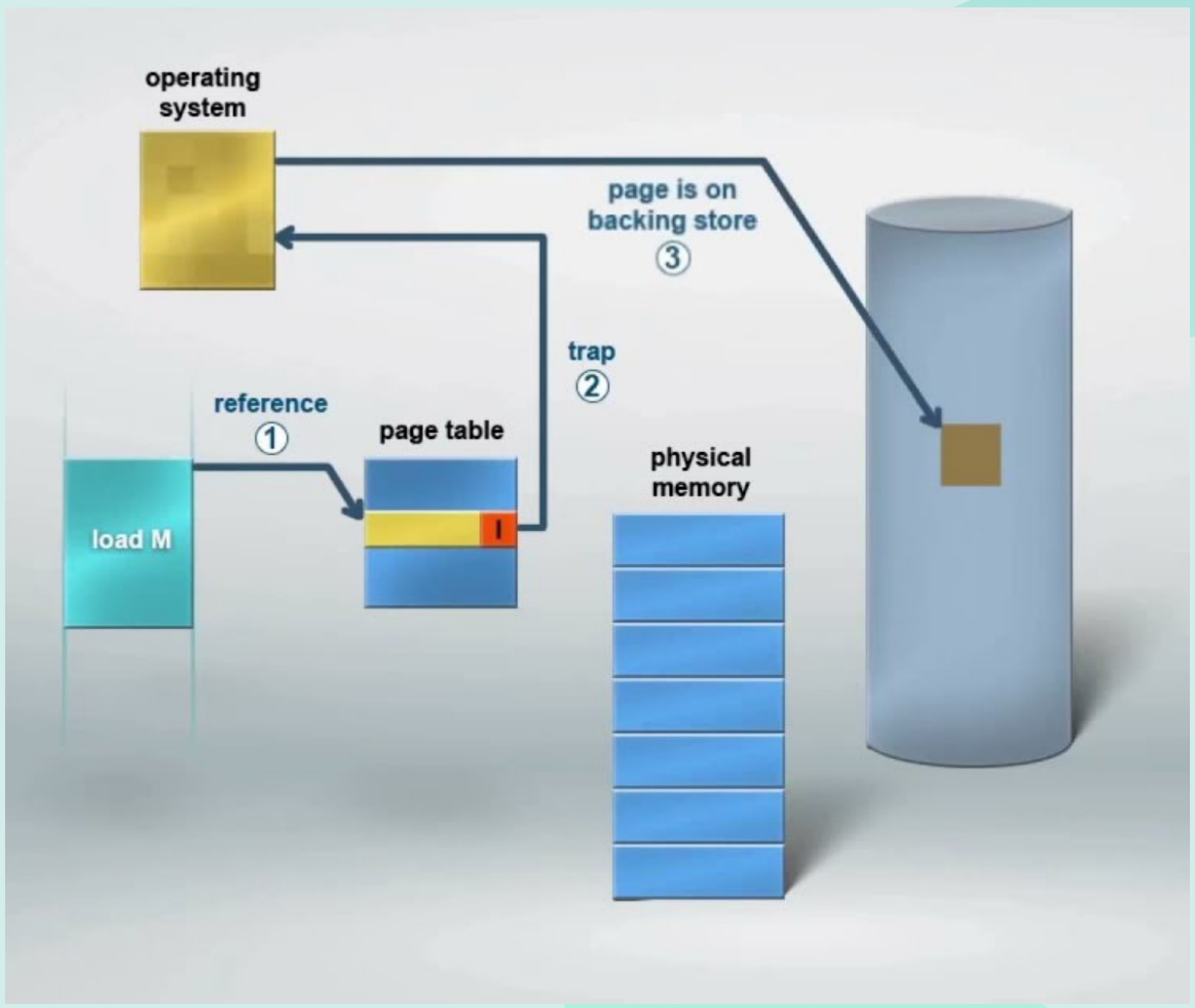
PAGE REPLACEMENT ALGORITHMS

A page replacement algorithm is needed to decide which page needs to be replaced when a new page comes in.

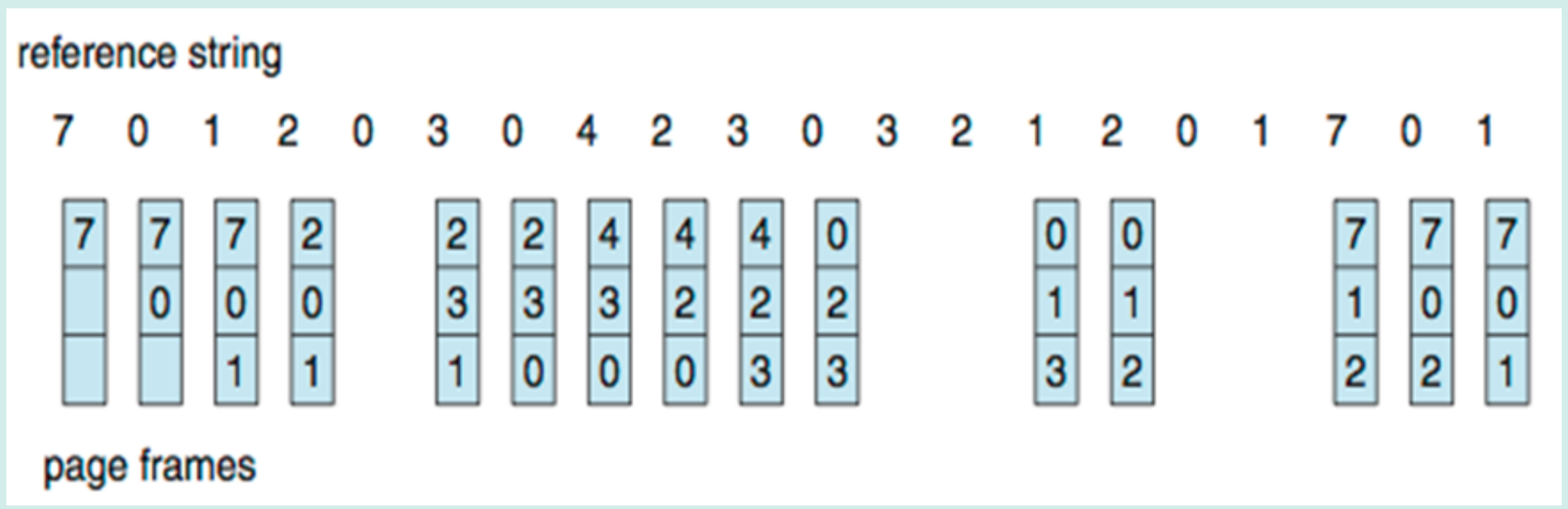
The target for all algorithms is to reduce the number of page faults.

Page Fault: A page fault happens when a running program accesses a memory page that is mapped into the virtual address space but not loaded in physical memory. Since actual physical memory is much smaller than virtual memory, page faults happen.



First come First out(FIFO)

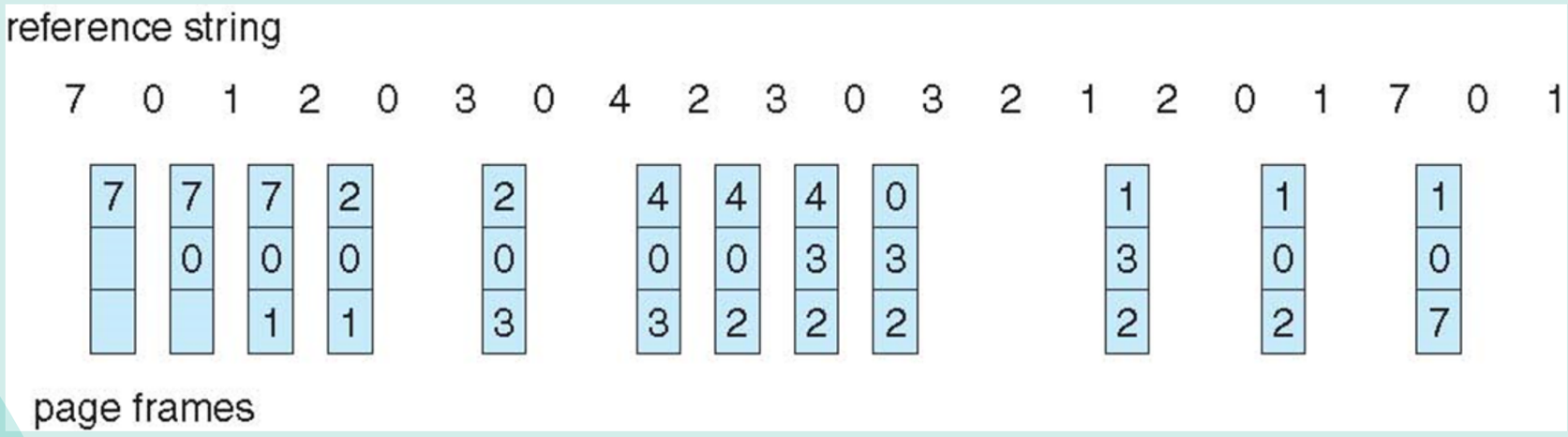
In this algorithm, the operating system keeps track of all pages in the memory in a queue, the oldest page is in the front of the queue. When a page needs to be replaced page in the front of the queue is selected for removal.



15 page faults

Least Recently used (LRU)

The Least Recently Used (LRU) Page Replacement Algorithms works on a certain principle.
The principle is: Replace the page with the page which is less dimension of time recently used page in the past.

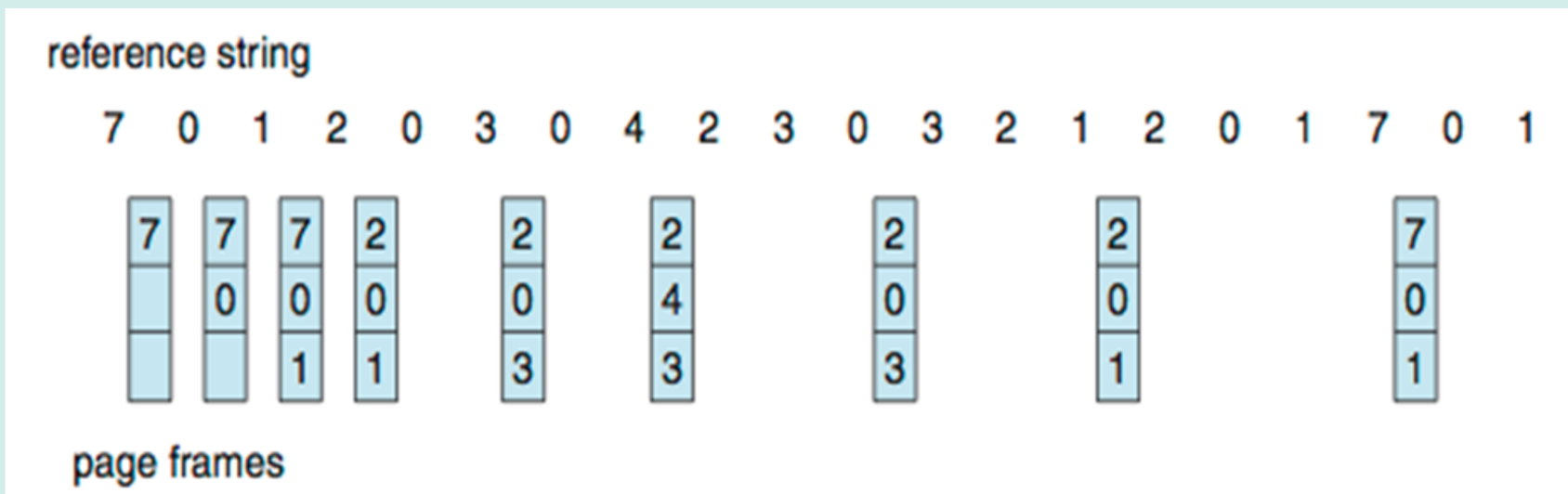


12 page faults

Better than FIFO but worse than OPT

Optimal Page replacement(OPT)

The OPTIMAL Page Replacement Algorithms works on a certain principle.
The principle is:
Replace the Page which is not used in the Longest Dimension of time in future



9 page faults