Page Fault and Page Replacement

What happen when there is a page fault?

➡ The OS loads the faulted page frame from disk into physical memory

What when there is no physical memory available?

(or the process has reach its limit of maximum page frame allowed)

➡ The OS must evict an existing frame (swap) to replace it with the new one

How to determine which page frame should be evicted?

➡ The page replacement algorithm (a.k.a page eviction policy) determines which page frame to evict to minimize the fault rate (affecting paging performances)

Page Replacement Algorithms

The goal of the replacement algorithm is to reduce the fault rate by selecting the best victim page to remove

- **FIFO - First In, First Out**
  evict the oldest page in the system
- **LRU - Last Recently Used**
  evict the page that has not been used for the longest time in the past
- **Second Chance**
  an approximation of LRU (more implementable)

➡ Replacement algorithms are evaluated on a reference string by counting the number of page faults