Concepts  
- Thrashing

**Thrashing is when the page fault and swapping happens very frequently at a higher rate, and then the operating system has to spend more time swapping these pages.**- Belady’s anamoly

**the phenomenon in which increasing the number of page frames results in an increase in the number of page faults for certain memory access patterns**.  
- Victim page

**The operating system must use any page replacement algorithm in order to select the victim frame**.  
- Dirty bit

**A dirty bit is a flag that indicates whether an attribute needs to be updated.**  
- Valid/Invalid bit

**With the help of valid-invalid bit, the system can know, when required, that pages C, D and E are not in the memory.**  
- Page replacement approaches: FIFO/OPT/LRU

Fifo-

**When a page needs to be replaced page in the front of the queue is selected for removal**.

Graphical user interface, application

Description automatically generated

OPT-

**when a page needs to be swapped in, the operating system swaps out the page whose next use will occur farthest in the future**.

LRU-

Algorithm is **a page replacement technique used for memory management**.

- Memory management approaches: Static/Dynamic  
o Best Fit / Worst Fit / First Fit / Next Fit  
- Anonymous memory pages

**represent memory that is not backed by a filesystem**.  
- Degree of multiprogramming

**describes the maximum number of processes that a single-processor system can accommodate efficiently**.   
- Virtual memory: Pros/Cons

Virtual memory **reduces the amount of hard disk space available for your usage**. - It has a negative impact on system stability. - It enables bigger programs to operate on systems that do not have enough physical RAM to execute them on their own. - It can't provide support at the level a RAM does.  
- Locality of reference  
o Spatial locality

refers to the use of data elements within relatively close storage locations  
o Temporal locality

Temporal locality refers to the reuse of specific data and/or resources within a relatively small-time duration.  
- Address binding

Address binding is **the process of mapping from one address space to another address space**.