CSC369 Week 6 Notes

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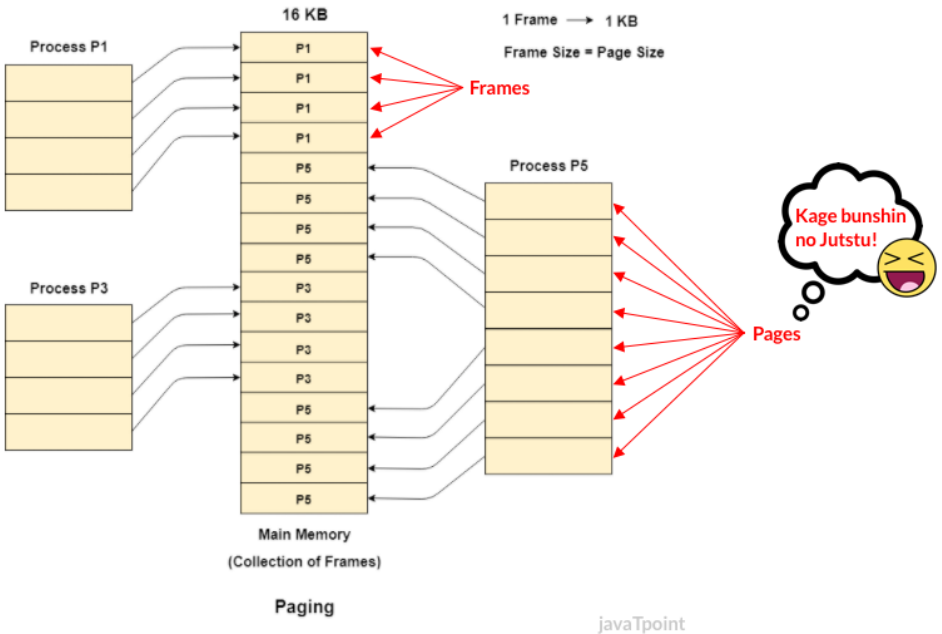
1 Virtual Memory & Page Replacement

- Recap
  - Solves **internal fragmentation** and **external fragmentation**
  - Stores and retrieves data from **secondary storage** for use in **main memory** [1]
    - Secondary storage → Hard Drive
    - Main memory → RAM
  - Is an important part of **virtual memory** management in modern OS [1]
  - Partitions memory into equal, fixed-size chunks
    - Are called **page frames** or **frames**
  - Divide processes' memory into chunks of the same size
    - These are called **pages**



Refernces:

1) Wikipedia: Paging, link
2) JavaTPoint: Paging with Example, link

- Summary so far: Page Table
  - Is the data structure used by a virtual memory system in computer operating system to store the mapping between virtual addresses and physical addresses.

1) Wikipedia: Page Table, link

- Multilevel Page Tables
- Inverted Page Tables (Read the book)
  - Is an alternate to ever-increasing levels in page hierarchy [1]
  - Advantages [1]
    - Saves a lot of space (when the virtual address is much larger than the physical memory)
  - Disadvantages [1]
    - Increased difficulty of virtual to physical translation

Refernces:

1) Tanebaum AS, Boss H. 2015. Modern Operating Systems. 4th Edition. New Jersy: Pearson Education, Inc.

- Page Faults
- Demand Paging
- Prepaging (aka Prefetching)
- Belady's Algorithm
- Page Table Entries(PTE)
- Not-Recently-Used (NRU)
- First-In First-Out (FIFO)
- Second-Chance
- Least Recently Used (LRU)

- Counting-based Replacement
- Page Fault Frequench(PFF)
- Thrashing