

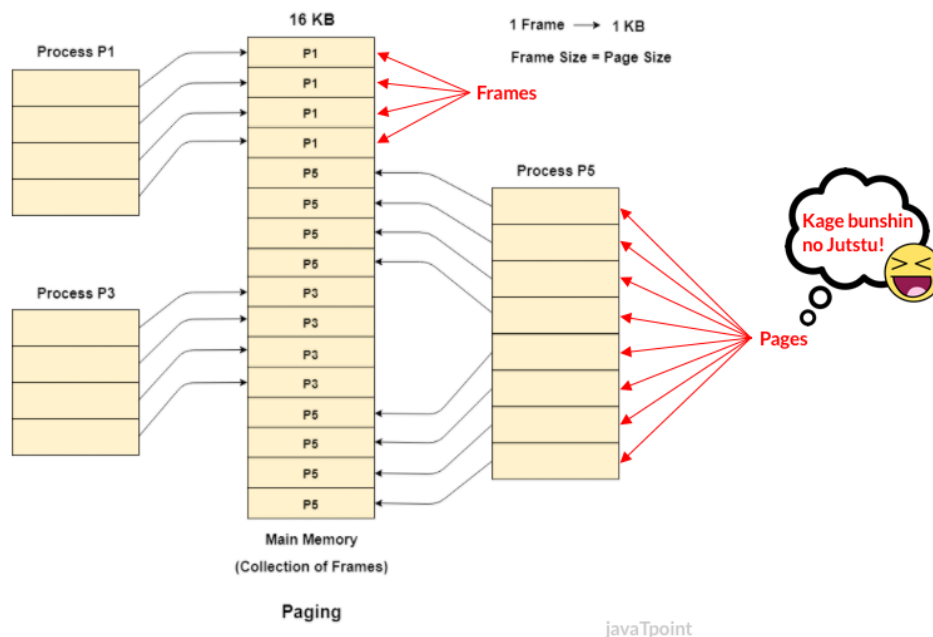
CSC369 Week 6 Notes

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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) Tanenbaum AS, Bos H. 2015. Modern Operating Systems. 4th Edition. New Jersey: 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 Frequent(PFF)
- Thrashing