* System Programming and Operating System (SPOS) - Case Study - 6.

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Memory Management in Linux / Windows / Android

* Memory Management in Operating System -

The term memory can be defined as a collection of data in specific formate. It is the functionality of an operating system which handles or manages primary memory and moves processes back and forth between main memory and disk during execution.

Memory management keeps track of each and every memory location, regardless of either it is allocated of some process or it is free. It track whenever some memory gets freed or unallocated and correspondingly it updates the status.

* Memory Management in Linux -

The subsystem of linux memory management is responsible to manage the memory inside the system. It contain the implementation of demand paging and virtual memory.

Also it contains memory allocation for user space program and kernal internal structure. Linux memory management subsystem includes files mapping into the address space of the processes and several other things.

Tasks of Memory Management-

① Huge Pages: translation of addresses requires various memory access

② Virtual Memory Primer: It separates the physical memory details through the application of software.

③ Zones: Combine memory pages into zones according to the possible usage.

④ Page cache: It help to ignore expensive access of disk on the subsequent reads of files.

⑤ Node: It help to process multiple zones task using multi-processor.

⑥ Anonymous Memory: Specifies memory that isn't backend by any file system.

⑦ Compaction: Memory compaction define the partitioning problem.

⑧ OOM killer: In order to save the rest of system, it selects a task to stop for the sake of overall system health. [Out of Memory]

⑨ Reclaim: The pages that could be freed either due to their cache

the details that existed elsewhere on a harddisk or due to they could be again swapped out to a hard disk are known as reclaimables.

* CMA Debugfs Interface:

It is helpful for retrieving basic details areas of CMA and testing release / allocation in all the areas.