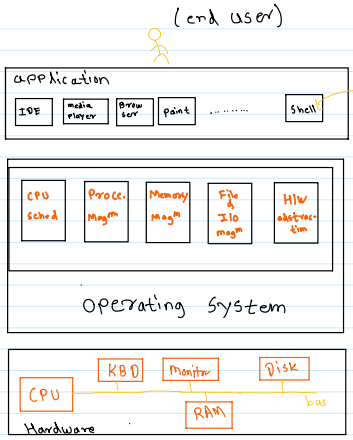
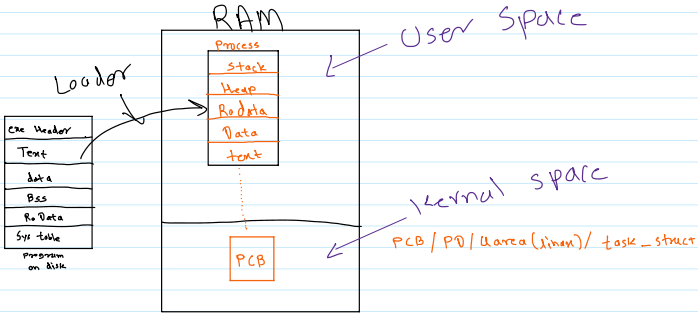
Embedded Operating System

16 November 2023 07:55

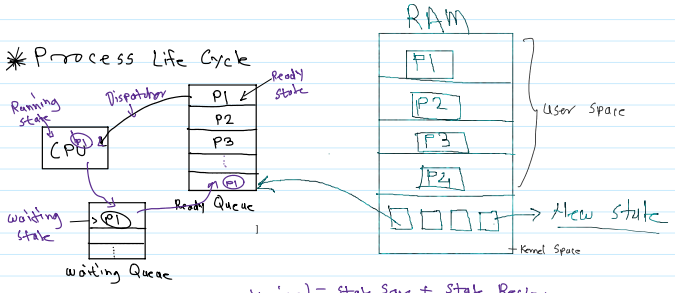


① Interf betn endusor and Hardware
② Interface between applⁿ and HIw
③ Controll prog
④ Resource allocator
⑤ CD/DVD = Core OS + Applⁿ + utilities
⑥ Kernel = Core OS

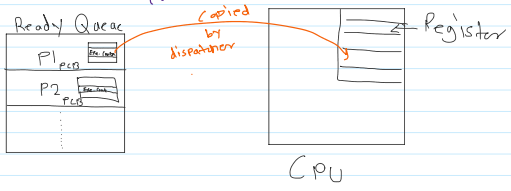
* Commands
- Checle Kernel version
  $ uname -r
- Checle ubuntu version
  $ cat /etc/os-release



① Process id
② Parrent process id
③ Execution content
④ mem info.
⑤ Scheduling info. — stak, priority, time
⑥ Kernel Stack
⑦ Files Info
⑧ exit status

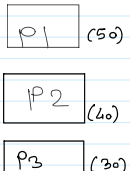


(Context switching) = State Save + State Restore

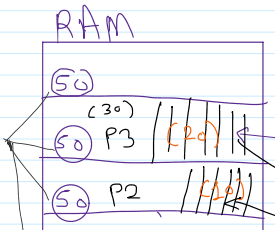


⊛ Contin Memory allocation

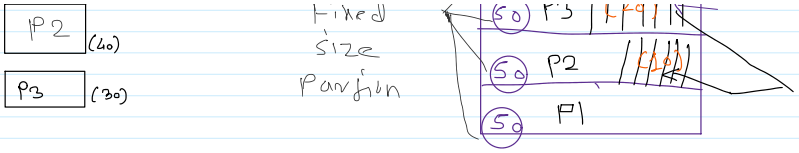
① Fixed size Partion



Fixed size Partion



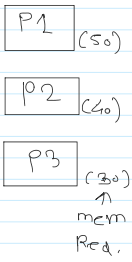
① Process size limited
② Degree of multi. is limited
③ Internal fragmentation

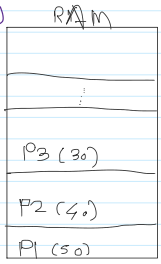


② Degree of multh. is limited

③ Internal fragmentation

②Variable size Partitioning



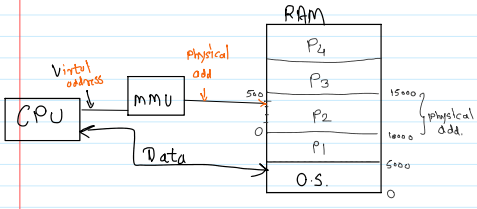


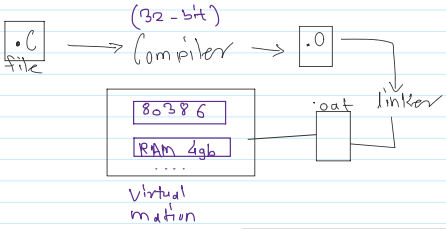
* Advance
① No partition Desided in advance
② No 'internal Frag.
③ No Degree of multiprograming limited
④ Process size Not limited

* Disadvantages
– External Fragmentation (soln is Compaction... but Not practically feasible)

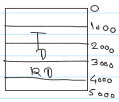
* Non-Contigeous Mem allocation.
- ① Segmentation
- ② Paging

* MMU Memory Management Unit





Program
P2.out

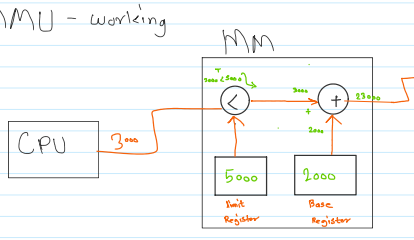


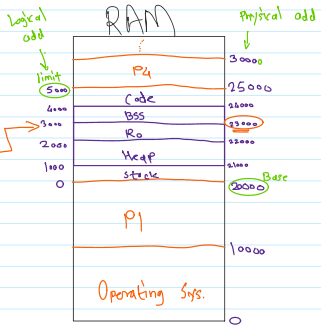
– CPU always execute a process in its Virtual add. space

– Virtual add space: set of virtual addresses used by the process.

```
* 32 bit Compilation
    $ gcc demo.c -m32 demo.out
* CPU info / Archit.
    $ lscpu
* File info
    $ file demo.out
```

① MMU - working





* MMU Types
- ① Simple mmu
- ② Segmentation mmu
- ③ Paging MMU

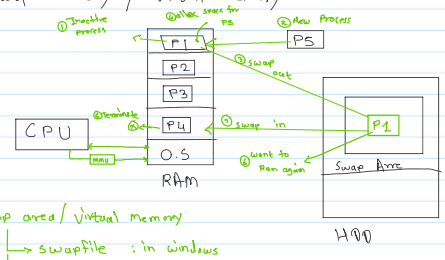
*Types

① Simple MMU (out dated)

② Segmentation MMU (PDP11...)

③ Paging MMU (core-2,3,5,7 use and ARM-use)

* Swap Memory / Virtual Memory




```
*To check Swap area
    $ free -m -h
    or
    $ sudo fdisk -l
```

* Swap area / Virtual memory
- → swapfile : in windows
- → Swap Partition : in linux

Day -2

16 November 2023 19:06