

APL
Miscellaneous

6 Issues

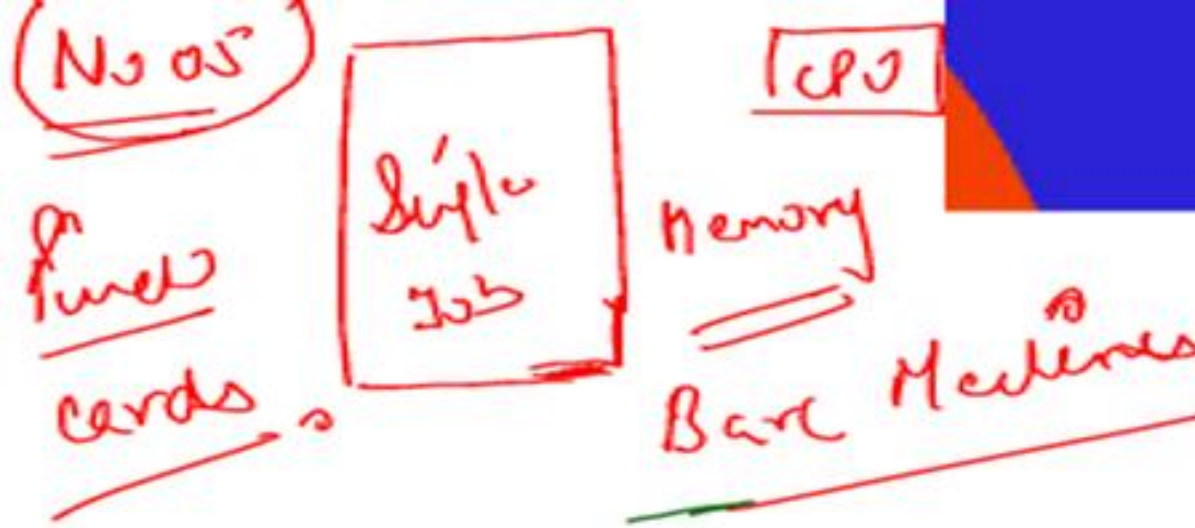
- How Memories are Managed:
- ↳ Bare Machine →
 - ↳ Paging
 - Segmentation
 - Logical & Physical add
 - Demand Paging

Conceptual



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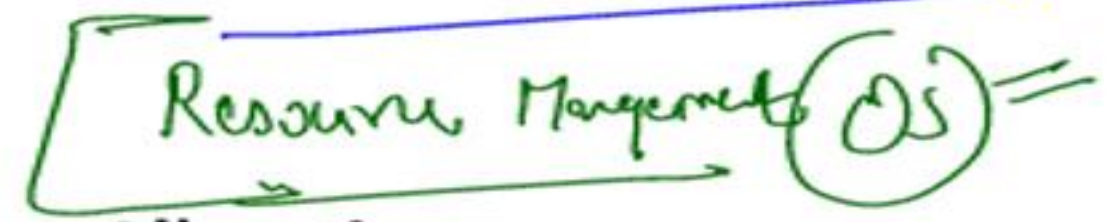
Class 11: Memory Management Part-1



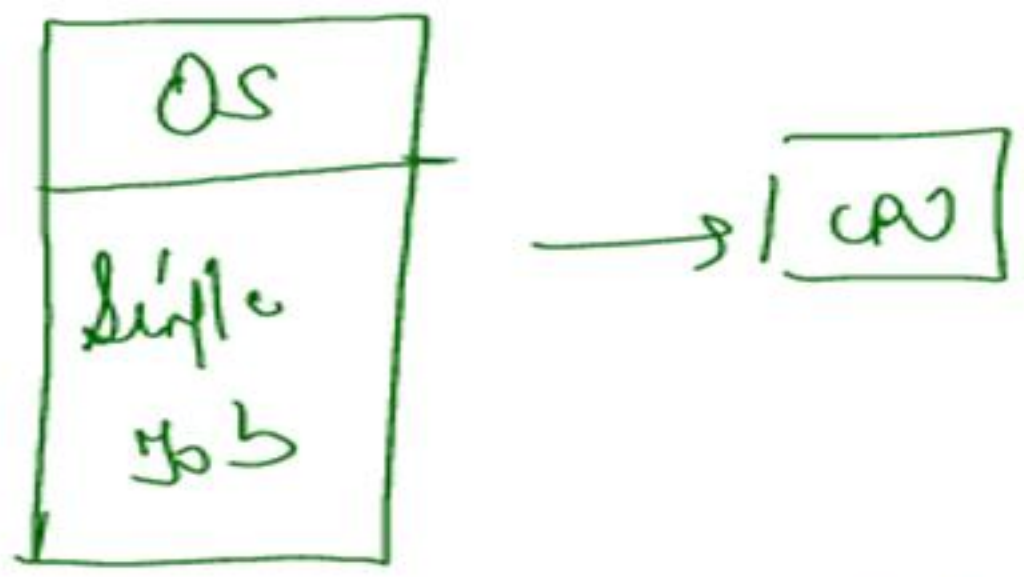
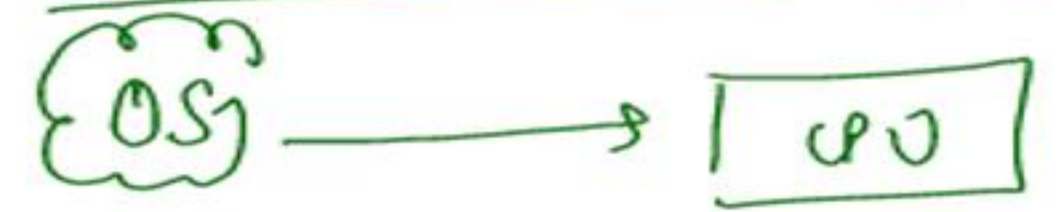
Content :-

1. Memory Management
2. Non-Contiguous Memory Allocation
3. Bare Machine
4. Resident Monitor
5. Multiple Programming with Fixed Partition

Conceptual Topic



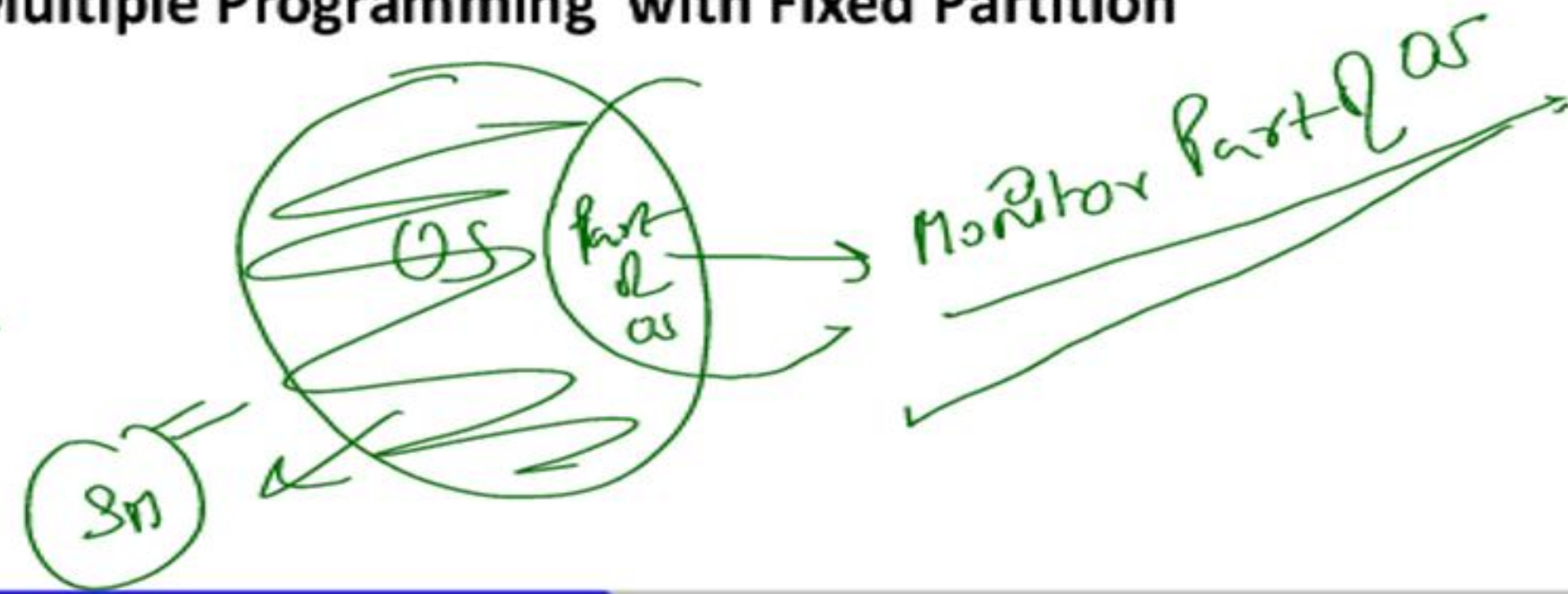
OS should be a ^{slow} process



MM (RAM) -> Memory

Sub Memories where OS

Resident Monitors



Swapping - moving

Jobs is done

MM

Memory Management :-

Buf 1 - swap out
Buf 2 - storing next job

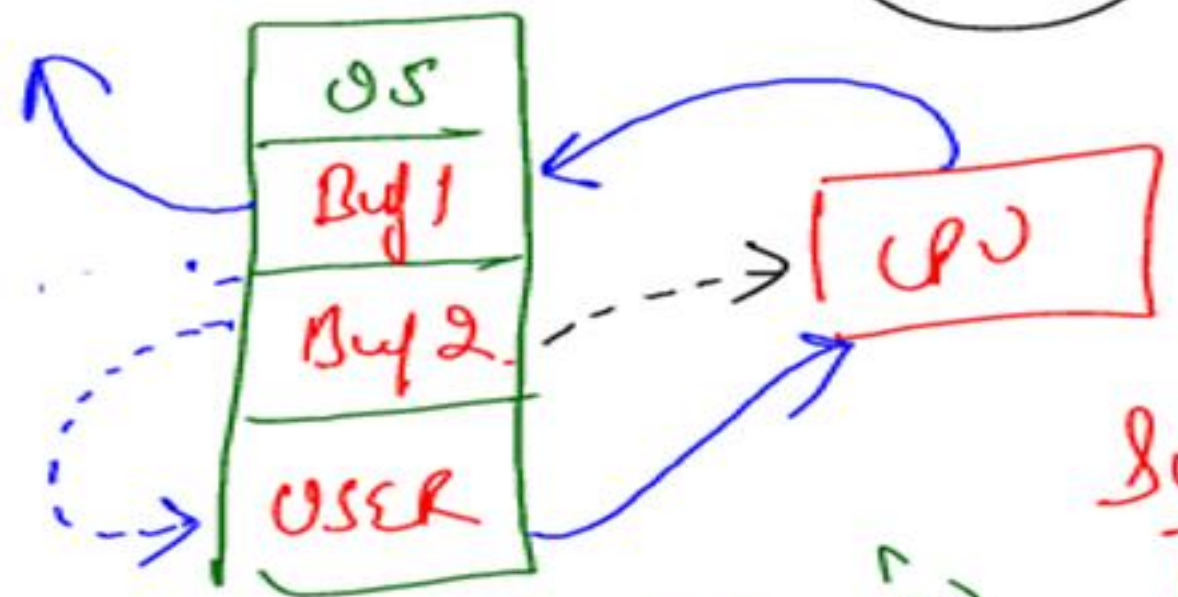
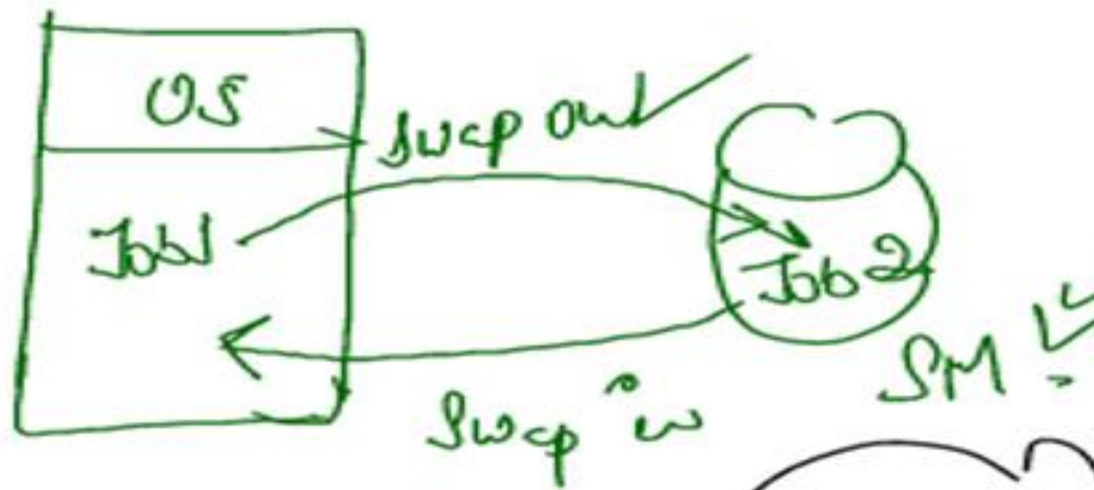
Memory management schemes broadly divided into following categories :

USER - holding job that is to be transferred to

Non-Contiguous Memory Allocation:- It implies that a CPU

single logical object may be place in non-consecutive sets of memory location. Paging (System view) and segmentation (user view) are two mechanisms that are used to manage non-contiguous memory allocation.

RAM



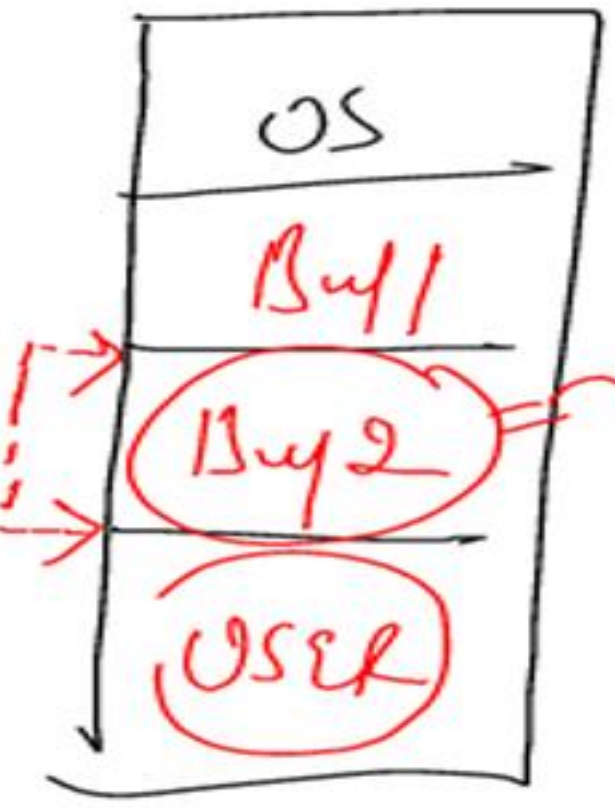
Partitions in MM

Swapping with MM

These partitions are for doing a fixed job

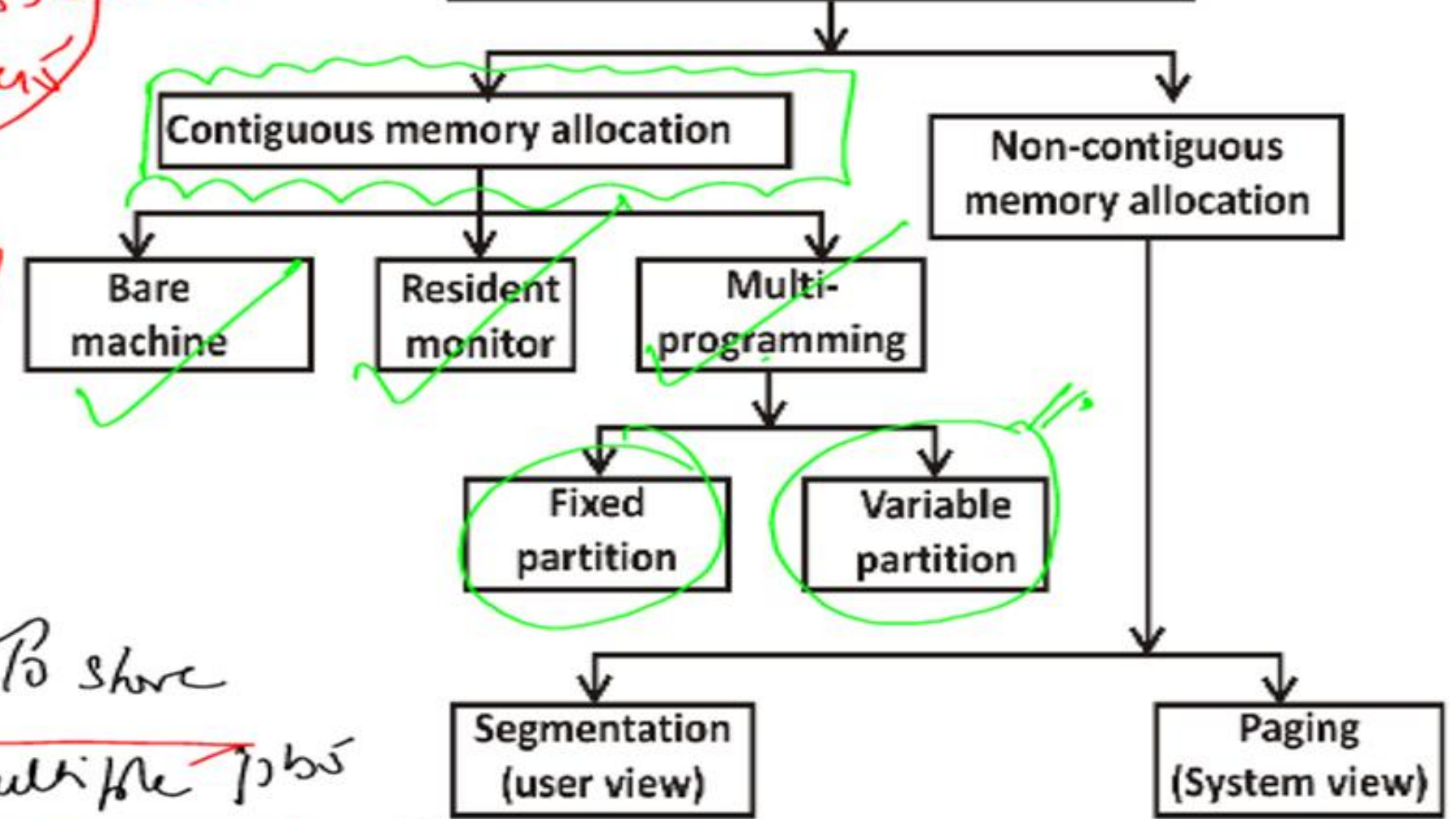
RAM

Instructions
Printer



CPU

MEMORY MANAGEMENT SCHEME



Partitions ✓ - To store multiple jobs (multiprogramming).

Printer

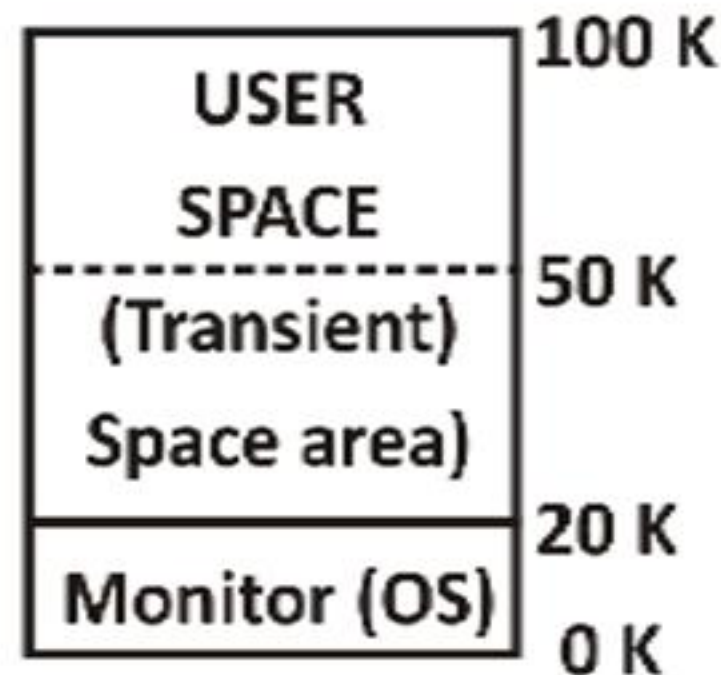
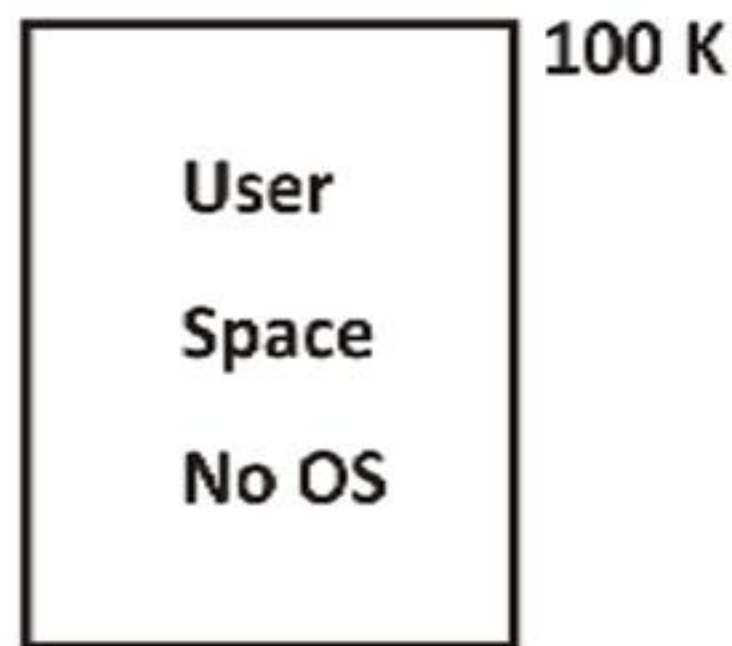
Multiprogramming →
Multiple jobs are
ready inside main
Memory.
→ Partitions

Bare Machine (Single User):- It is one of the most simplest memory management method in which user has complete control over the memory while in other models OS has complete control over memory.

The advantage of using this method are:

- Flexible
- No hardware support is required
- No software is needed for OS

While the disadvantage of using this method is:As OS has no control over the memory , id does not provide any services and resources to the user. Such memory management method is used in user-dedicated systems.



Continuous Memory Allocation

One job will be continuously shared in one location of the memory.

Job is not partitioned

Process looks

Fixed partitions

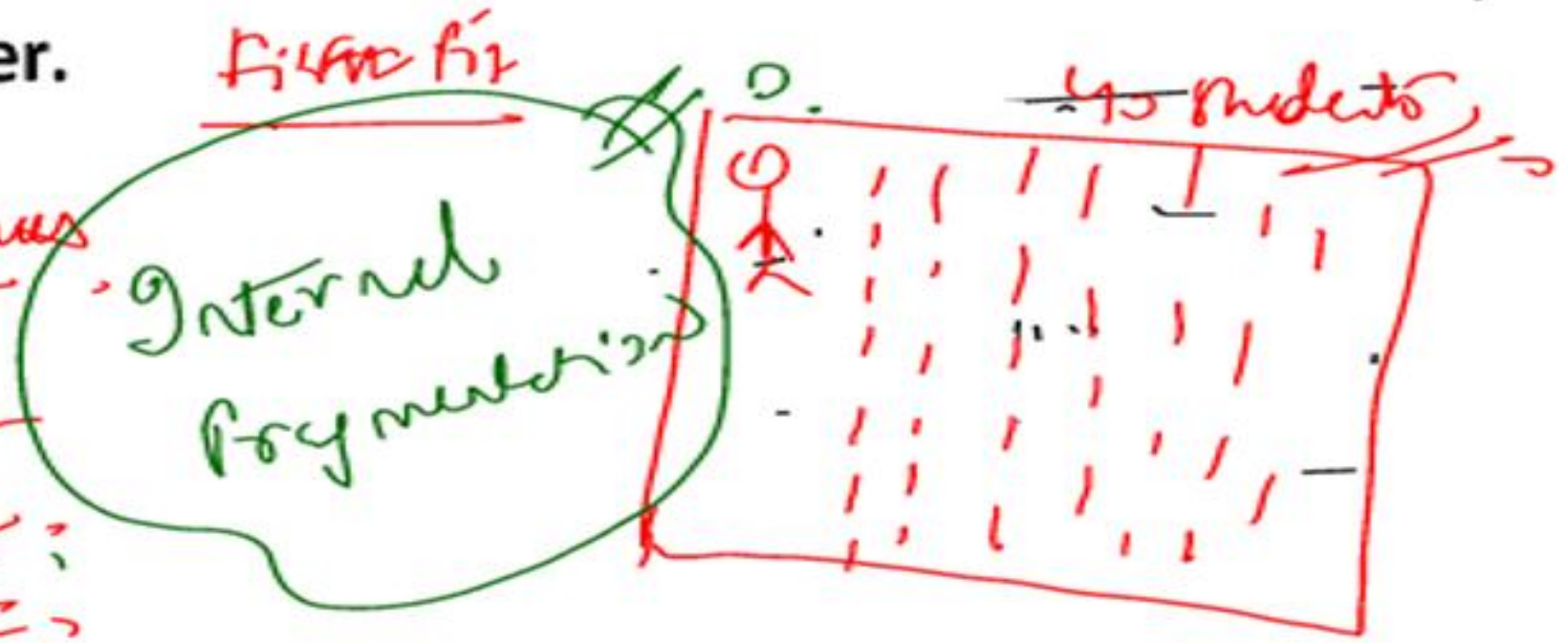
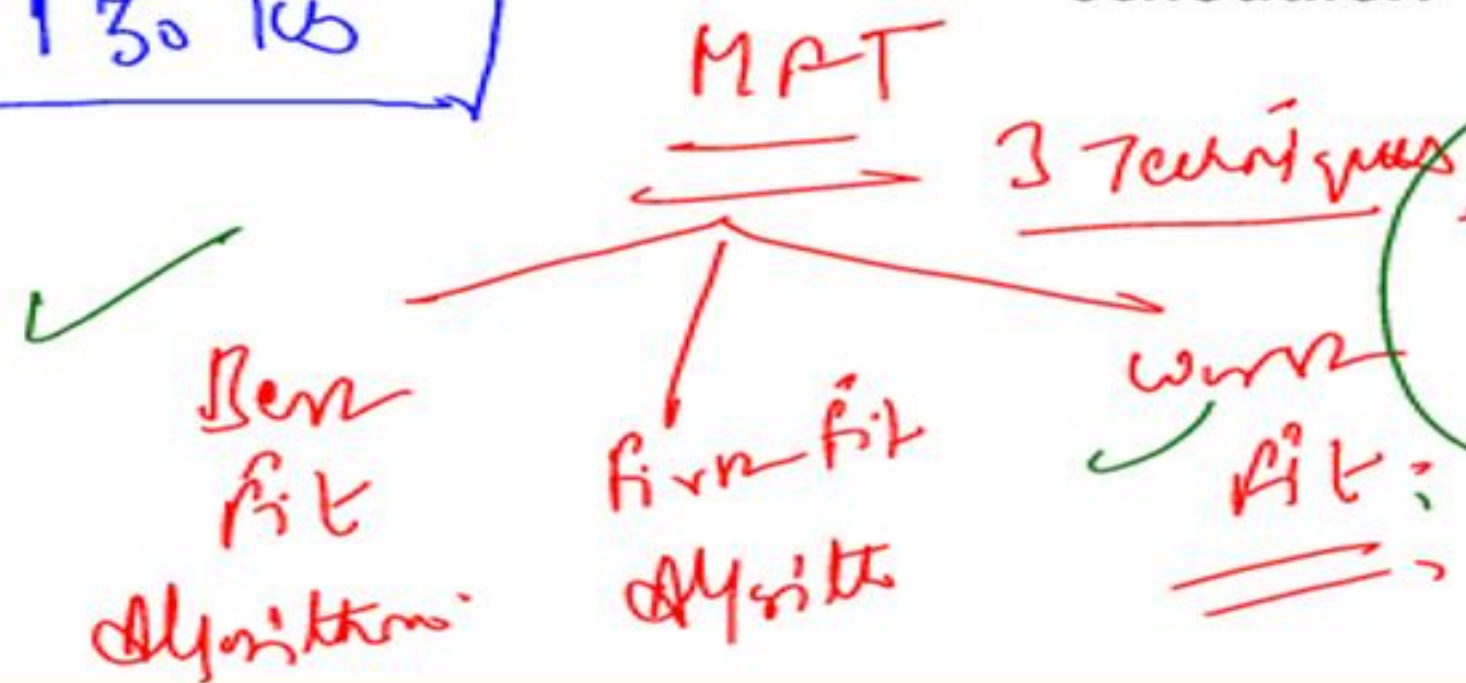
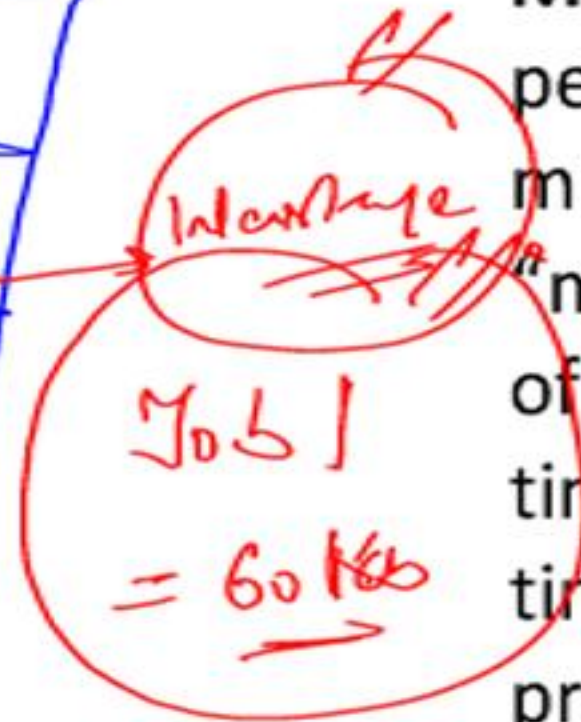
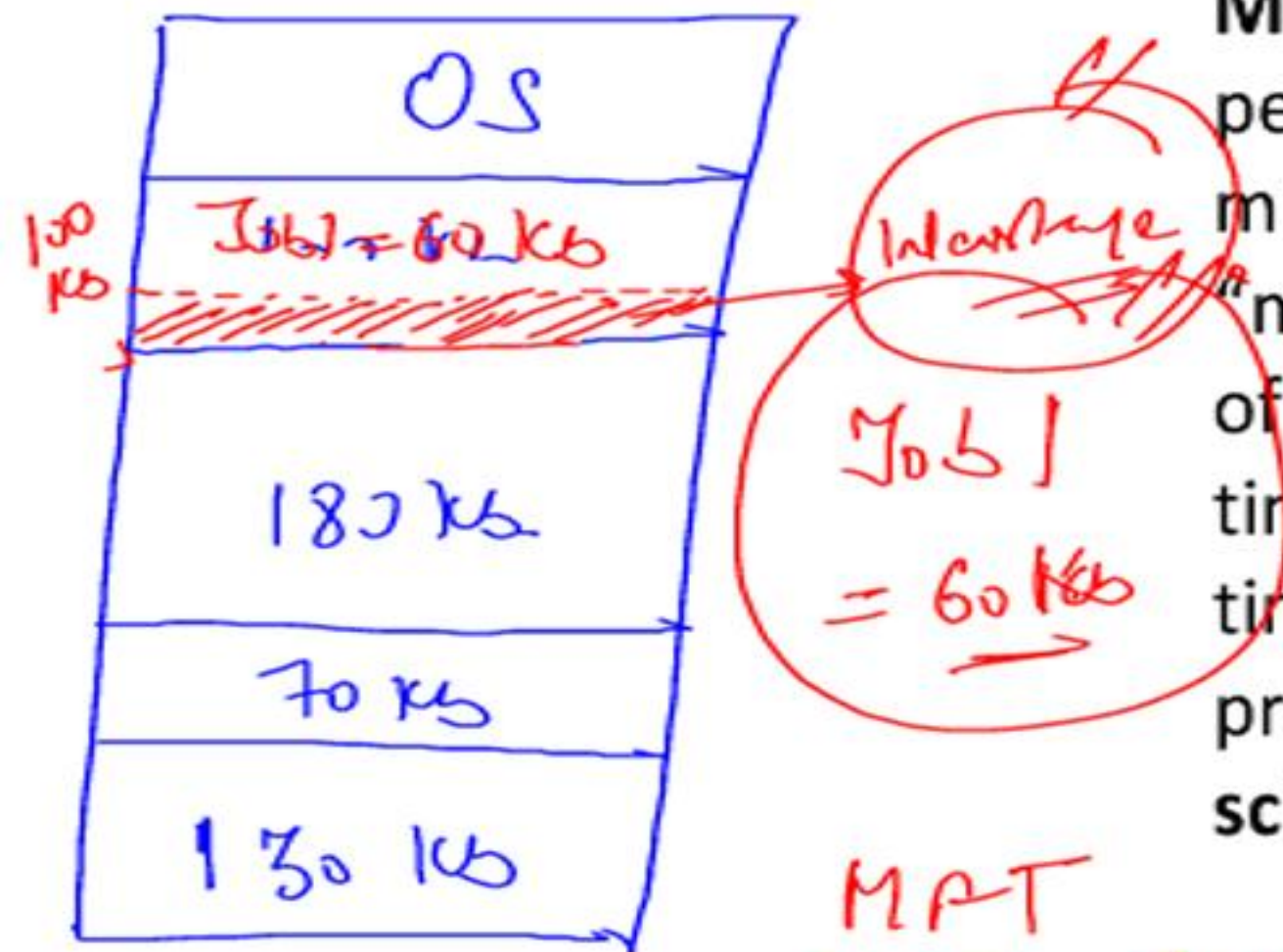
Resident Monitor (Single Process Monitor):- It is also simplest memory management method in which memory is divided into two contiguous areas. One of them is usually the permanently allocated to the resident portion of the OS (**Monitor**). The remaining memory is allocated to the so-called **transient processes**, which is loaded and executed one at a time, in response to user commands.

Processor and Memory utilization is reduced due to lack of multiprogramming support. Processor cycle wasted because there is no pending work that may be executed while the process is waiting for completion of **I/O operation**.

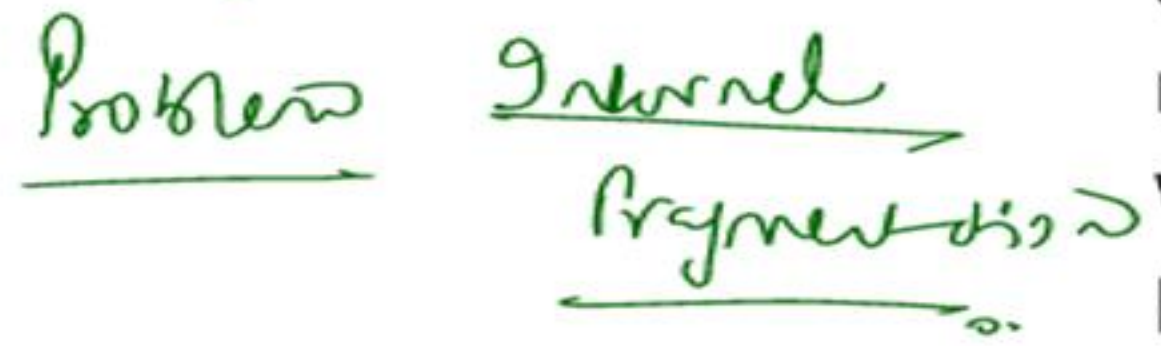
Multiprogramming with fixed partitions
(NPT)

Multiprogramming Partitions of Memory are created by OS. - gradeup

Multi Programming with fixed Partition:- To improve the performance of the computer system, the concept of multiprogramming was introduced, which states that "more than one processes are accessed at a single instant of time". But only one process is executed by **CPU** at a time in a uniprocessor which(PC) and at that particular time other process may be accessed by I/O process which process is executed and which order is decided by **CPU scheduler**.



Multiprogramming with Fixed Partitions



① is larger than and

- ✓ (1) firm, ben, work fit
- (2) ben fit, firm fit, work
- (3) work, firm, ben

(4) work, ben, firm

Partitioned memory Management for contiguous memory allocating is one of that method in which physical memory is divided into a various sectors called '**partitions**', each of which may be allocated at a different process. Depending on when and how partitions are created and modified, memory partitioning may be fixed(static) or various(dynamic) . In fixed partition method , these partitions could be off different sized, but once decided at time of system generation (at some time prior to the execution of user program), they cloud not be changed i.e. fixed . This method could be used with swapping or relocation or without them.

Q1 Inher a memory is
 // divided into several
 fixed sized partitions
 then each partition will
 contain -

- ① Multiple processes at
 one -
- ② At least one process
- ✓ ③ Only 1 process
- ④ None of these

In static partition management, two major problems may occur :-

- a. How to select a specific partition for the given process.
- b. What is done when no suitable partition is available for allocation .

The first problem can be solved in several ways, for which first fit and best fit are probably the most common strategies .

The **first fit** approach basically consists of allocation the first fit free partition large enough to accommodate the process being created . For this of process must be made known to the OS .

10 free

Q: In fixed sized partitions, degree of multiprogramming is bounded by _____

- (1) CPU utilization
 - (2) Memory size
 - (3) No of partitions
 - (4) All of these -
- (4) All of these -

The **best fit** approach requires that the OS allocate the smallest free partition that meets the requirements of the process under the consideration. By doing its work move thoroughly, best fit may achieve high utilization of memory by creating the smallest possible gap resulting from the different size between the process and its allocated partition. This difference in size is called **internal fragmentation** of memory which is causes a primary problem in **static partitioned**.

Q: The first fit, Best fit & worst fit algorithms are to select _____

- (1) Process from queue to put in memory
- (2) Processor to run next process
- (3) A free space available from all free spaces.

Q. No internal fragmentation, memory internal to a partition and



gradeup

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- (1) is being used
- (2) is not being used
- (3) is always used
- (4) none of these

Practise
topic-wise quizzes

Keep attending
live classes



is
james the

Time 3:00
6:35

6:35

Flip flops

Time 3:00