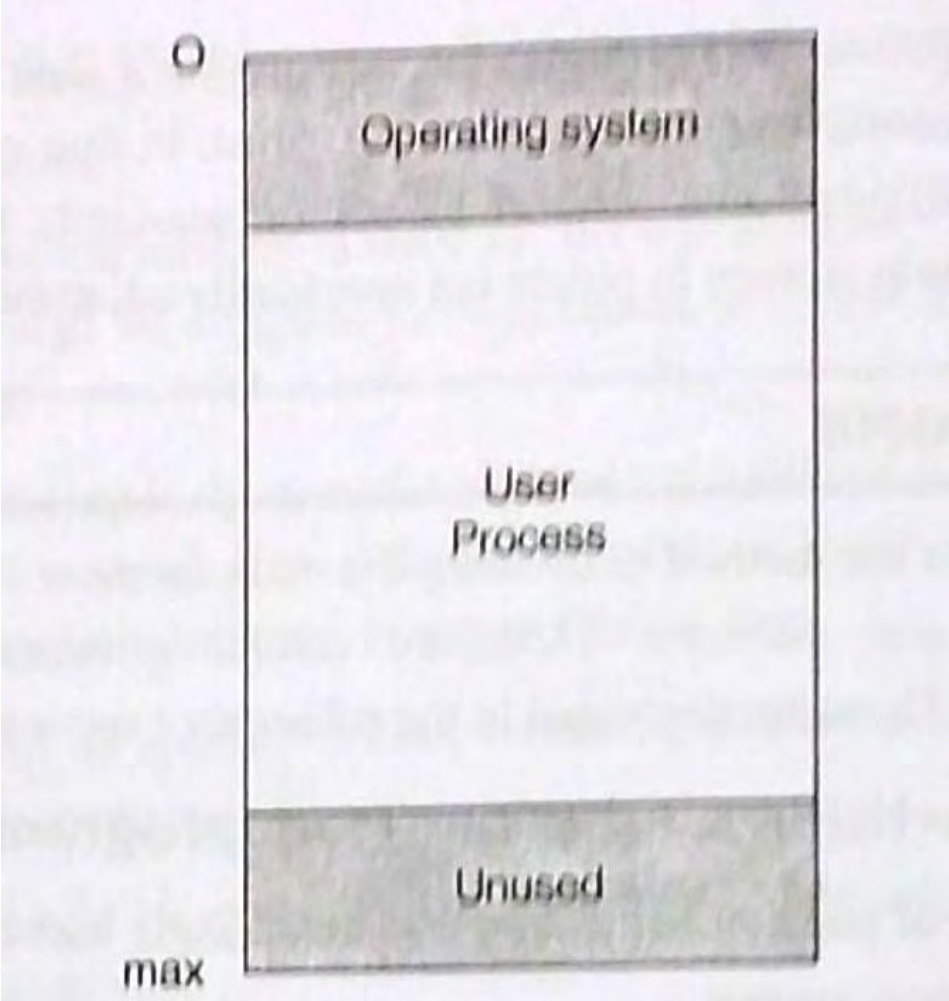
Unit 3

Memory Management

Single Partition Alocation (Monoprogramming)



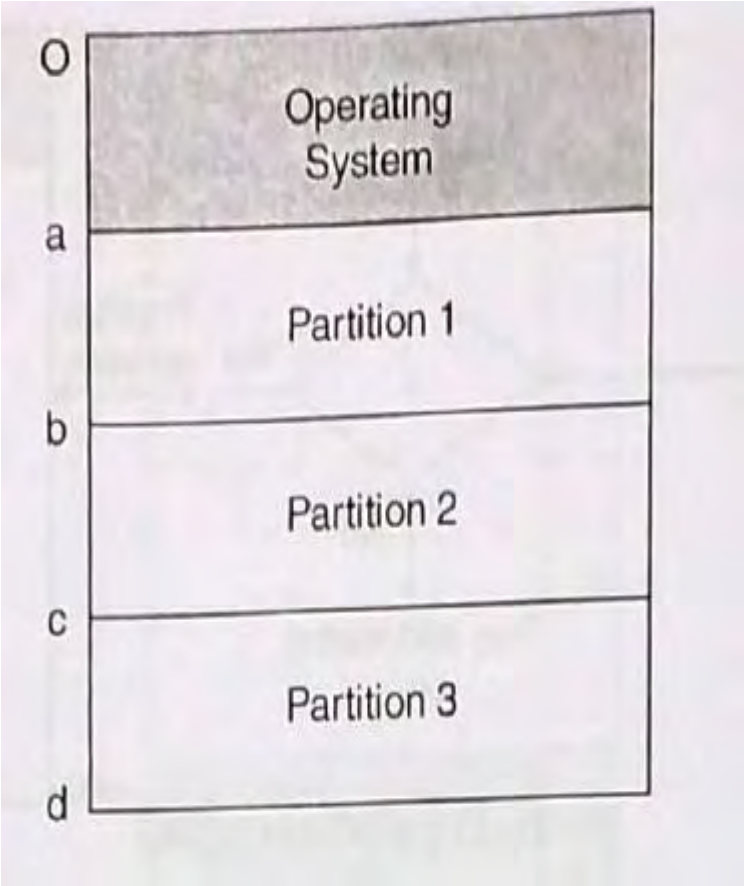
Advantages of single partition allocation

1. The memory allocation scheme is simple, straight forward and free from complexities of multiprogramming.
2. It requires less hardware support.

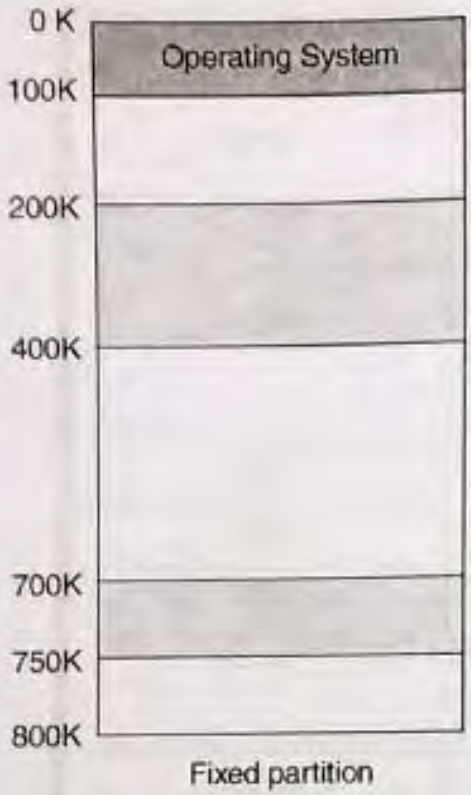
Disadvantages of signal partition allocation

1. It does not support multiprogramming as only one user process can reside in the main memory at a time.
2. It results in poor utilisation of processor. If a single process is busy in I/O operation, processor cycles are wasted and no other process is available for CPU.

Multiple fixed Partition Allocation



Method of Operation



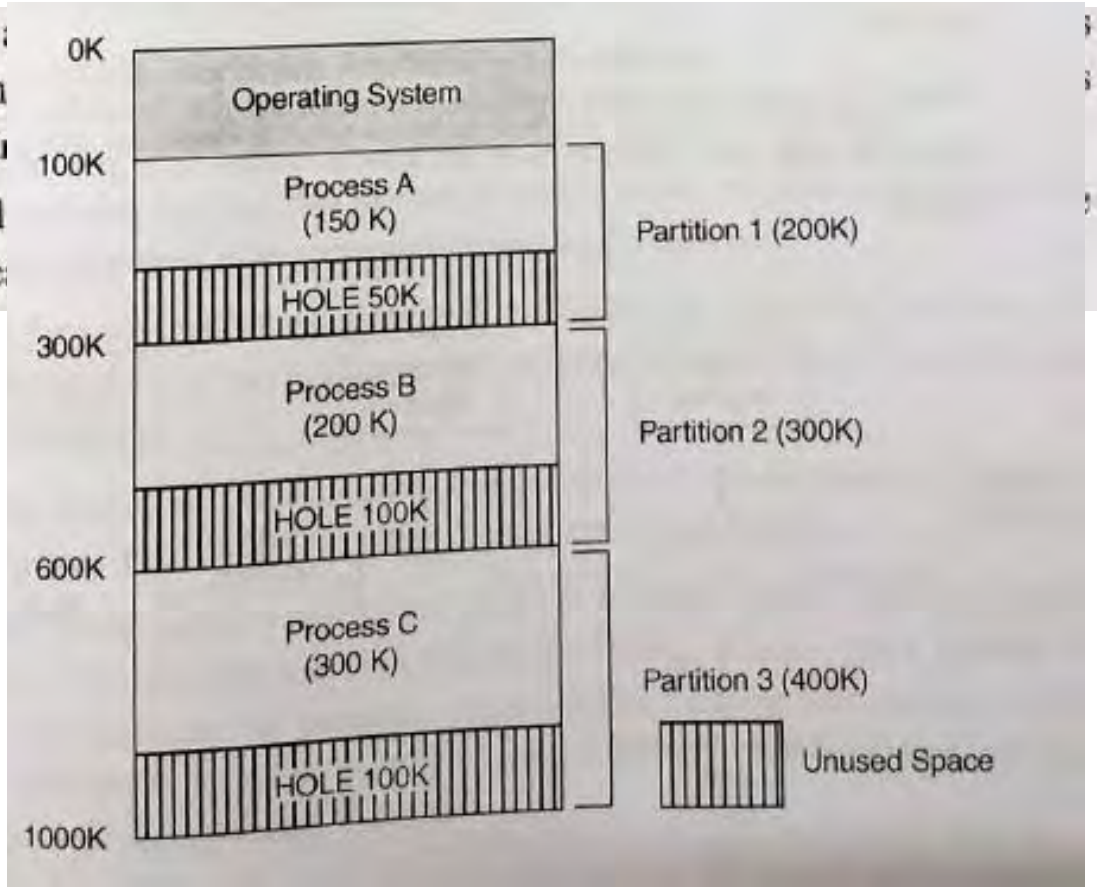
Fixed partition

Partition No.	Partition Base	Partition Size	Partition Status
0	0 K	100 K	ALLOCATED
1	100 K	100 K	ALLOCATED
2	200 K	200 K	FREE
3	400 K	300 K	ALLOCATED
4	700 K	50 K	FREE
5	750 K	50 K	ALLOCATED

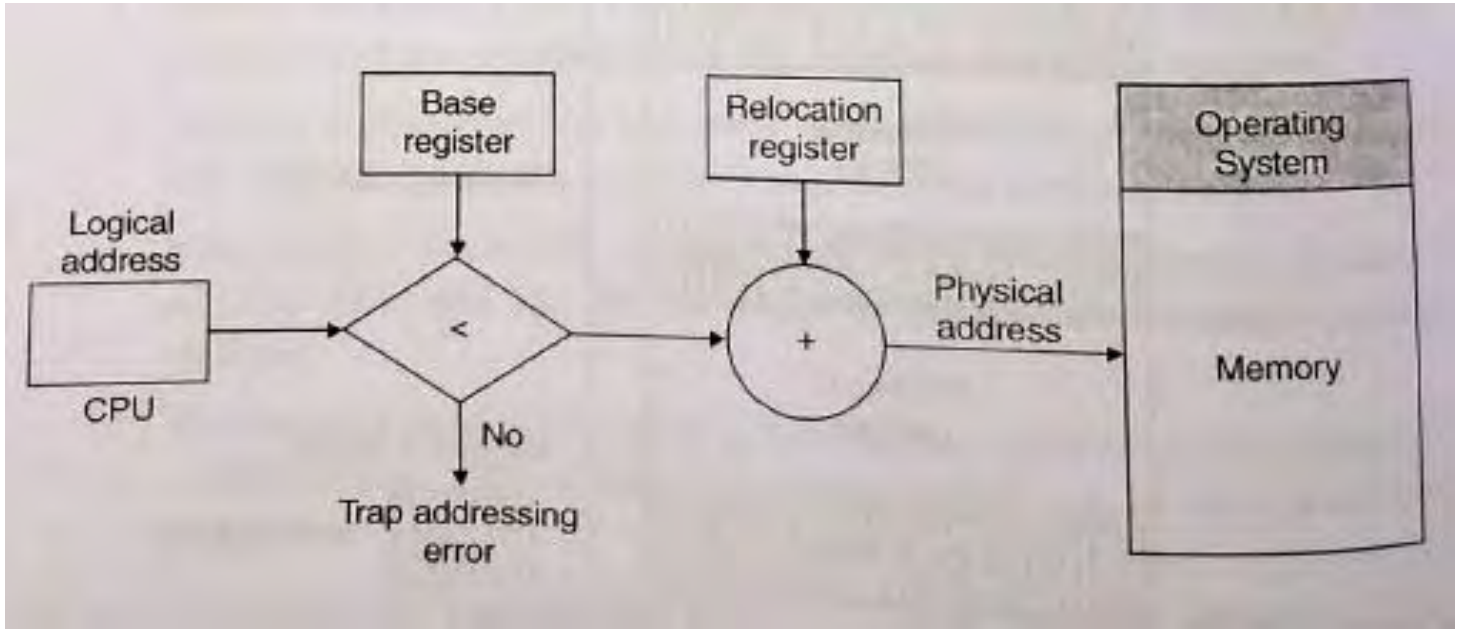
Partition Description Table

Internal Fragmentation

- Thus, the
  requiremen
  known as i
- It is called
  space alloc



Protection in Multiple Fixed Size Partioning



Multiple variable Partition Allocation

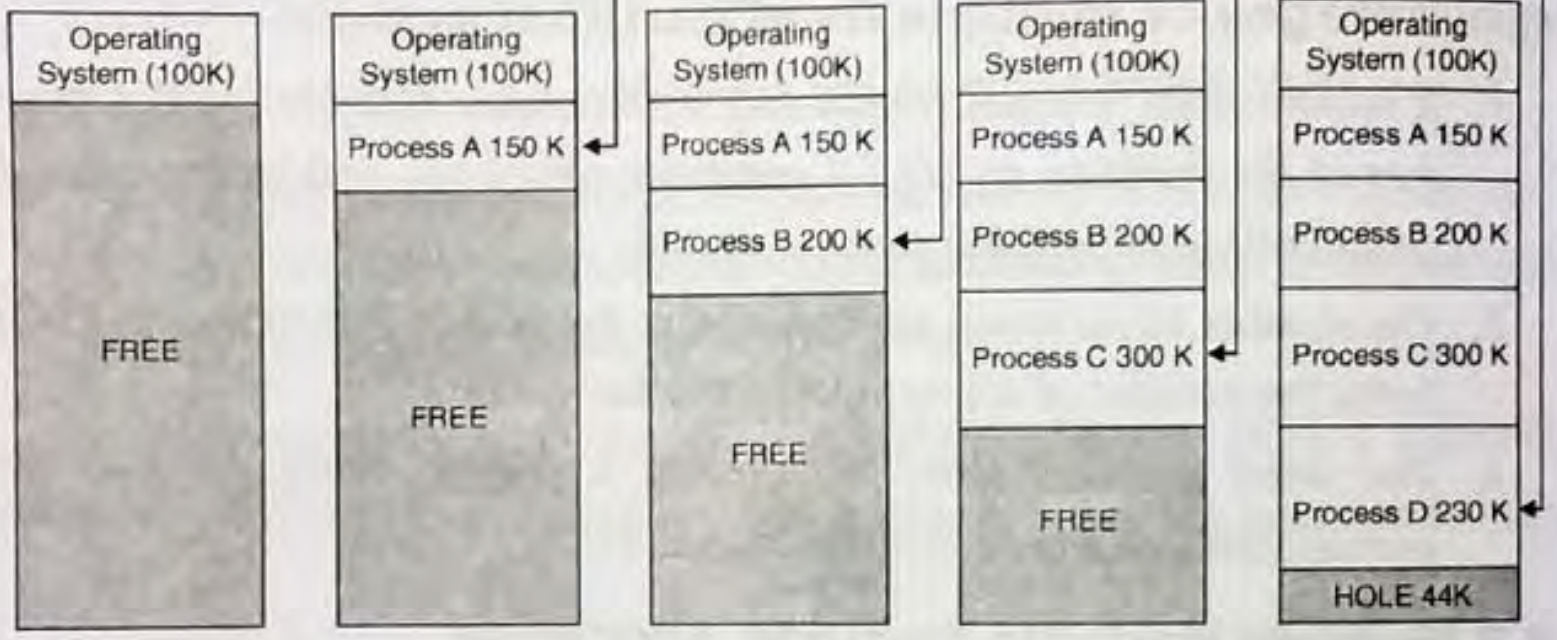


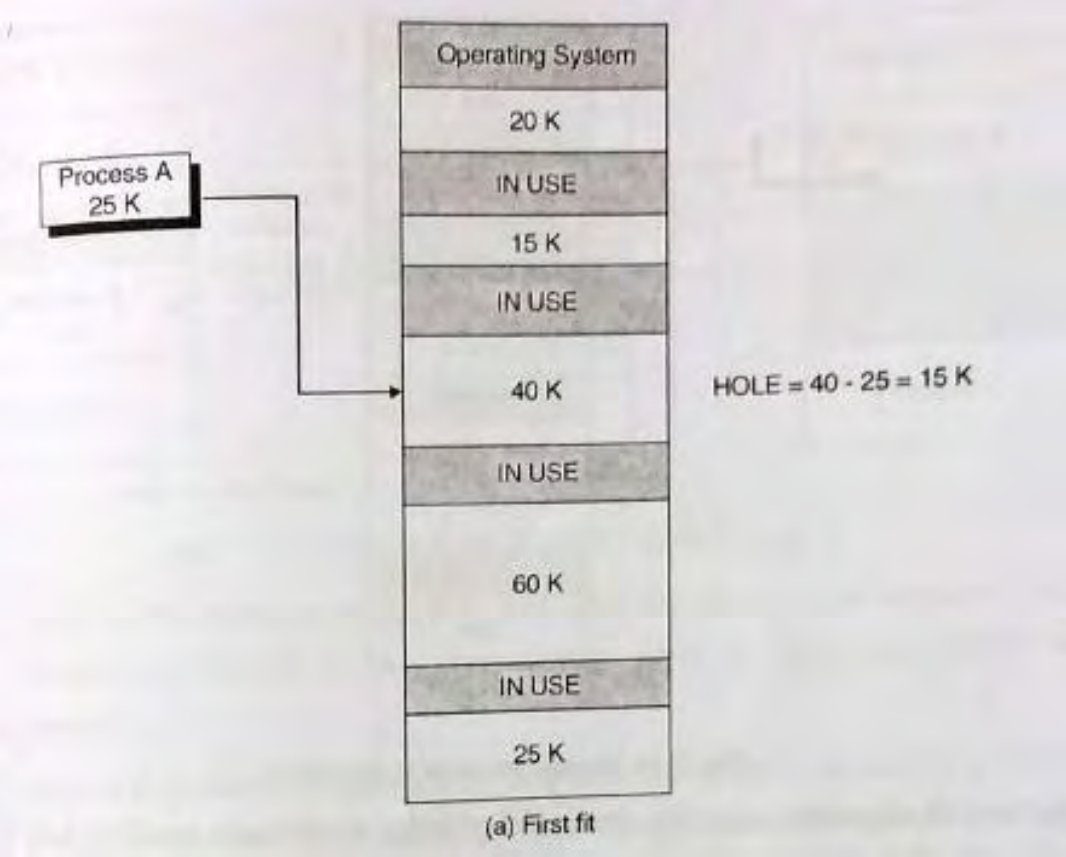
Fig. 7.14 Effect of dynamic partitioning

Storage Placement Algorithms

There are four different placement algorithms for this purpose :

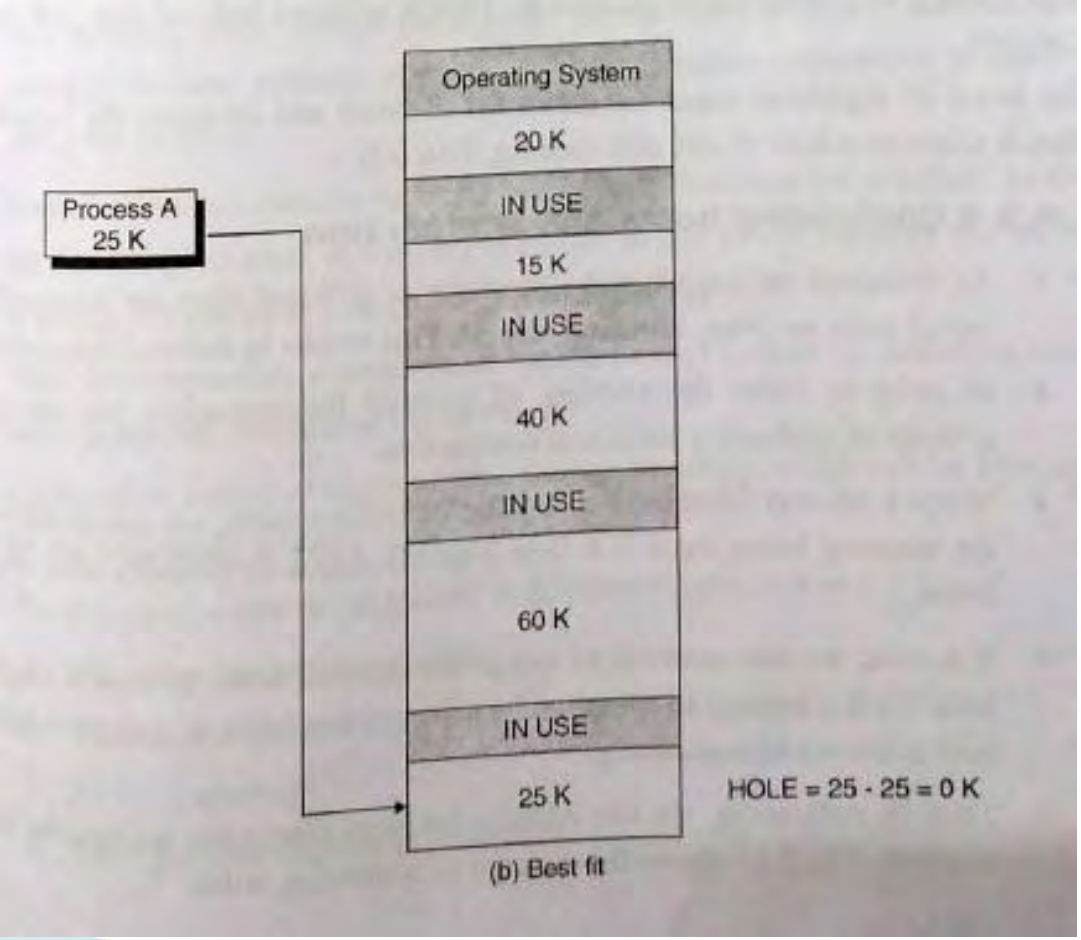
1. First fit
2. Next fit
3. Best fit
4. Worst fit

First Fit



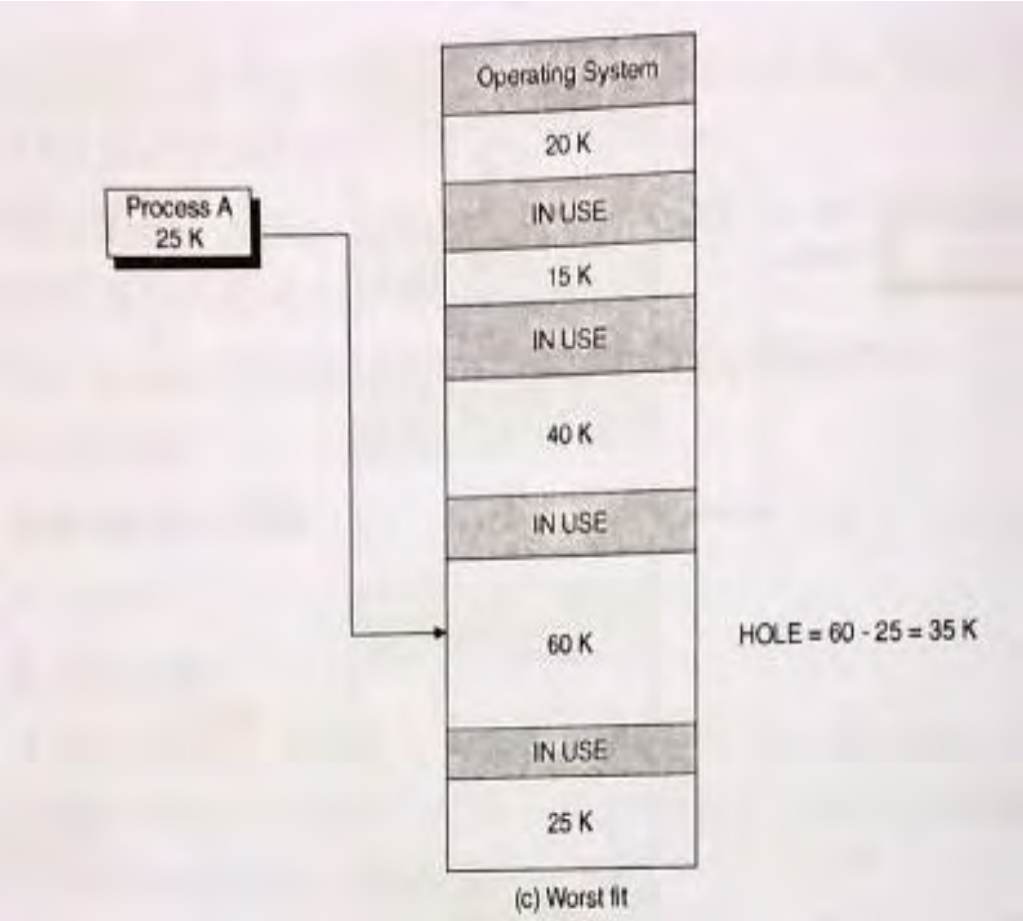
(a) First fit

Best Fit



(b) Best fit

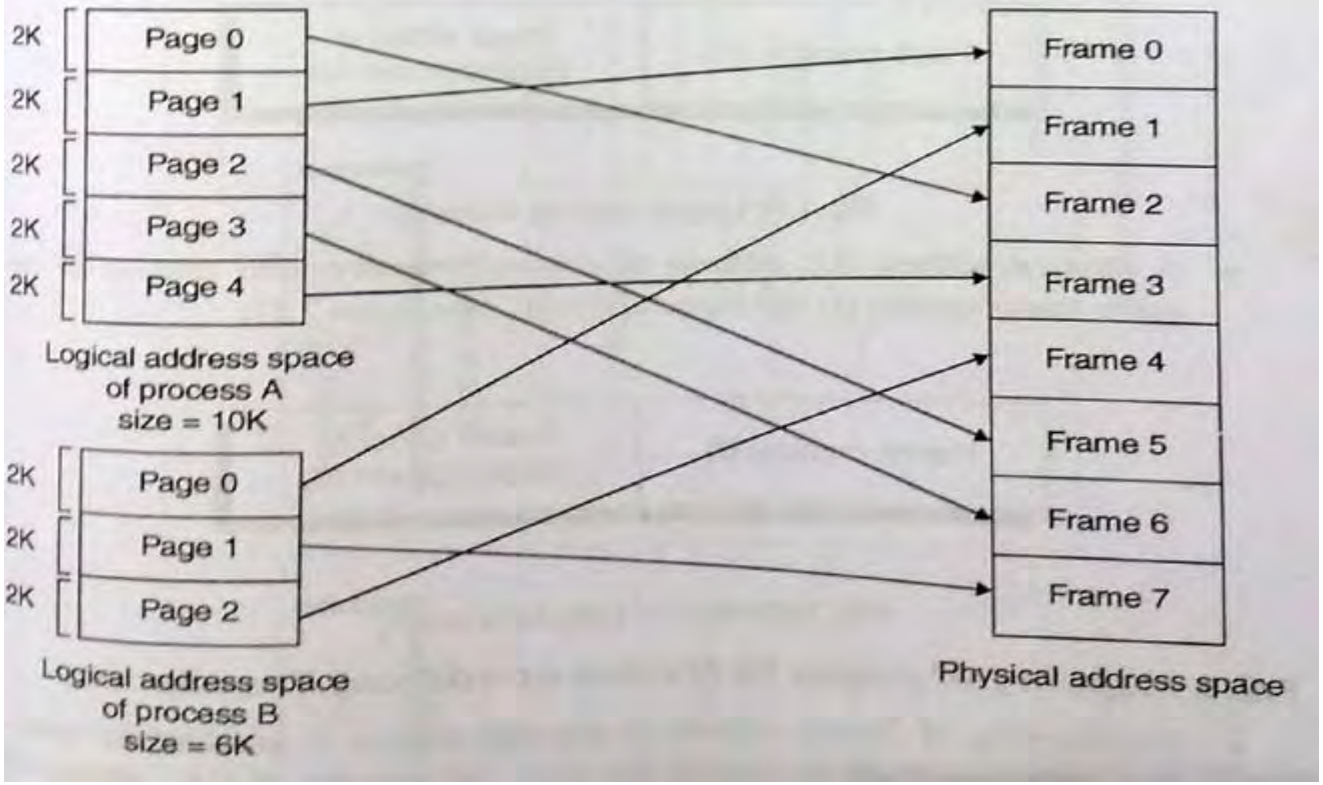
Worst Fit



(c) Worst fit

Pageing

- Paging is the memory management scheme in which the physical memory allocated to a process is non contiguous.



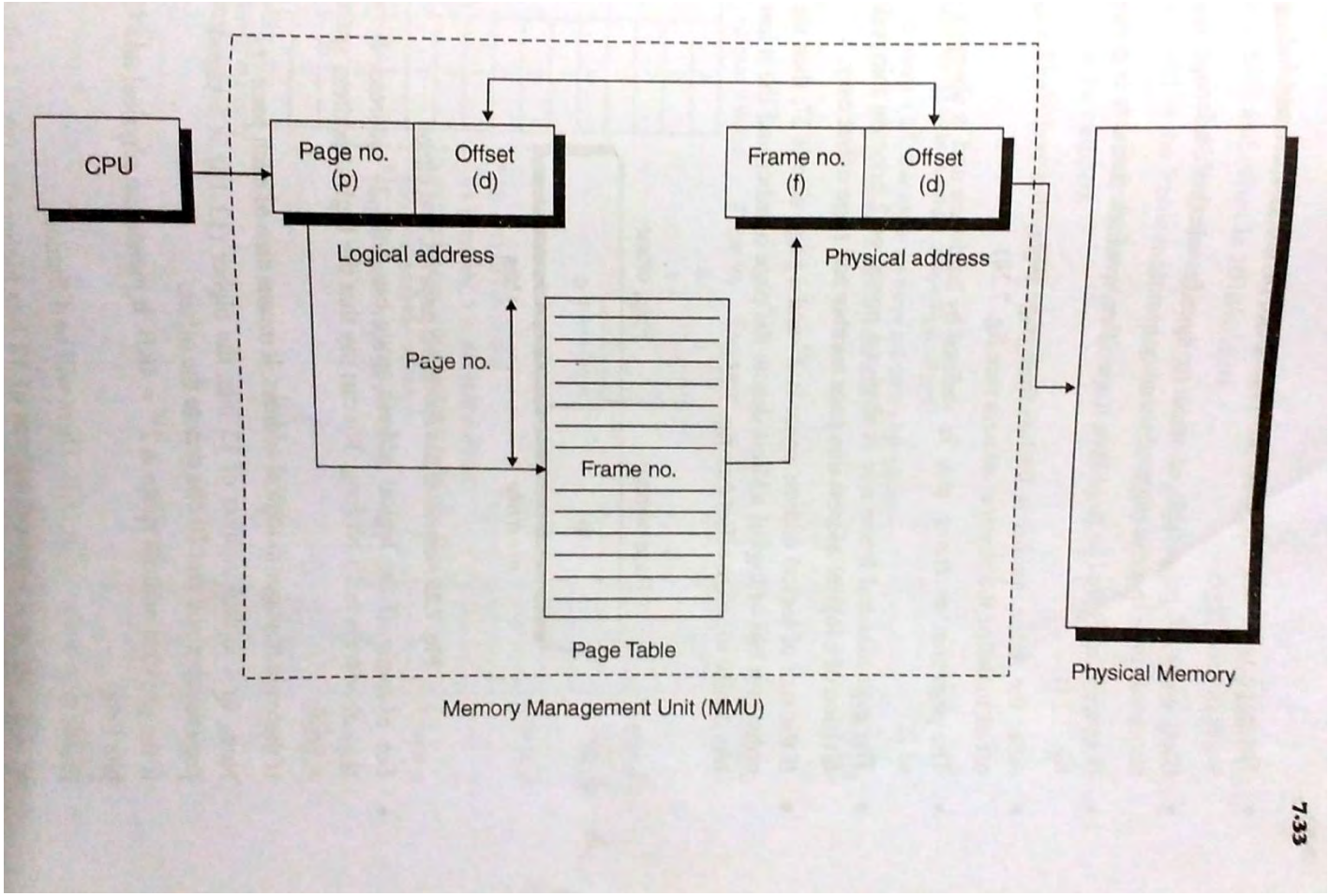
Page number (p)	Page offset or Displacement (d)

Fig. 7.22 Logical address in paging

- A physical address (i.e. address of physical memory) also consists of two parts: frame number (f) and frame offset (d). (see figure 7.23)

Frame number (f)	Frame offset or Displacement (d)

Mapping of Pages to Frames(Address Translation)



7.33

Implementation of page Table

- 1. Using registers.
  2. Using PTBR(Page table Base Register).
  3. Using Associative Memory or Translation Look-aside Buffer(TLB)