Date:

OS ASSIGN

Submitted by: Ali Asjad
(SP22-BCS-055)

(1)

LOGICAL ADDRESS VS PHYSICAL ADDRESS

- LOGICAL ADDRESS:

Crenerated by CPU during program execution. This address is part of abstract address space used by program.

Physical ADDRESS:

The actual location in the computer memory hardware where data or instructions reside. The Memory Management Unit translates logical address to Physical Address

(b)

Page Table:

Used in Paging memory management scheme, it maps logical addresses to Physical Addresses

by dividing memory into fixed sized pages.

Segment Table:

Used in segmentation memory management scheme, it maps segments (variable-sized blocks) to physical addresses. Each entry in segment table holds the base address and length of segment.

First-Fit Placement:

Allocates the first available memory block that is large enough to accommodate the requested size. It is fast but can lead to fragmentation.

Best Fit Placement:

Searches for smallest available memory block that is large enough. This can reduce wasted space but might be slower & can lead to fragmentation over time.

(d)

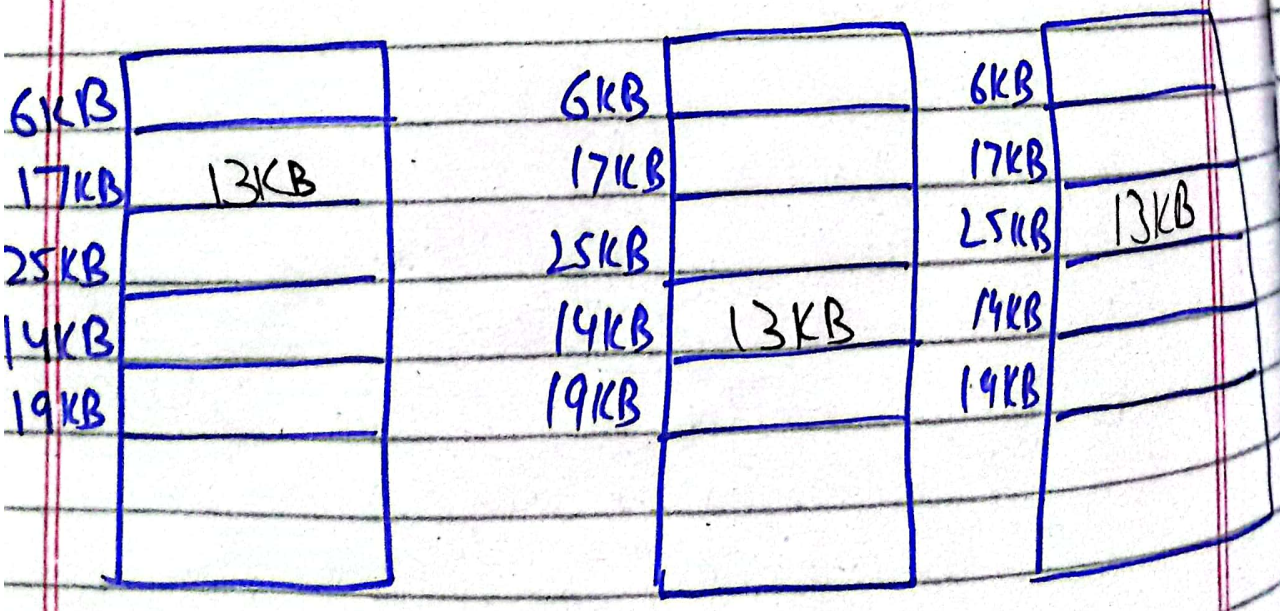
CONTIGUOUS STORAGE ALLOCATION:

Assigns a single continuous block of memory to process. This method is simple and has low overhead but can lead to external fragmentation.

NON-CONTIGUOUS STORAGE ALLOCATION:

Allows process to be allocated in several separate memory blocks. This can make more efficient use of memory and reduce fragmentation but requires more complex management.

Q#2

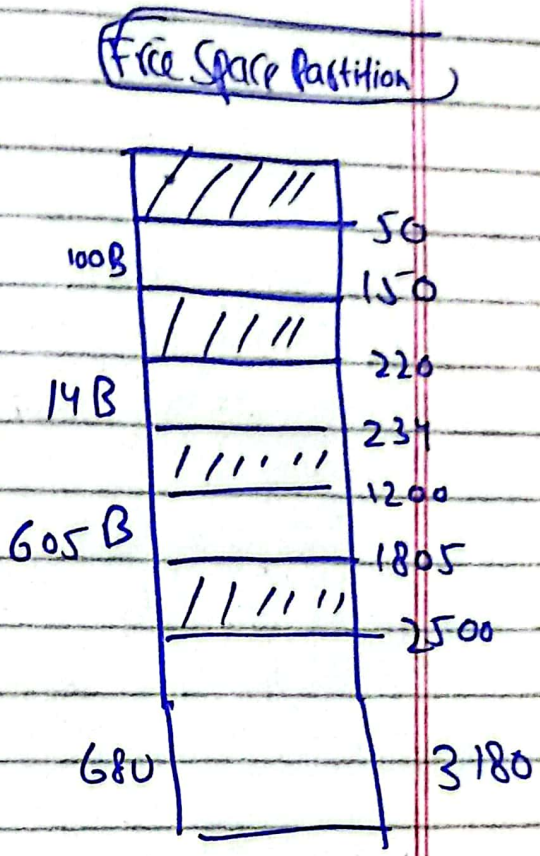


First-Fit Best-Fit Worst-Fit

Q#3

Segment Table

- S0: 1200 - 1799
  S1: Not Allocated
  S2: Not Allocated
  S3: Not Allocated
  S4: Not Allocated



(2)

External Fragmentation Calculation

- 605 (1200-1805)
- 100 (50-150)
  14 bytes (200-234)
  680 (2500-3180)

Sum of free space: 605+100+14+680
= 1399 bytes.

Total Size of Non Allocated Segments.

- S1 = 14KB
  S2 = 100KB
  S3 = 580KB
  S4 = 96KB

Size of non-allocated segment
Sizes = 14KB + 100KB + 580KB + 96KB
Internal Fragmentation = 790KB

So any 80 is allocated and it fits perfectly into partition without leaving any internal fragmentation.

(4)

Logical Address	corresponds to	Physical Address
0.580		1200 + 580 = 1780
1.17		no
2.66		no
3.82		no
4.20		no