

Ans 1.

(a)

Logical Address

Basic

generated by CPU

Physical Address

location in a memory unit

Address space

Logical Address Space is set of all logical address generated by CPU in reference to a program.

Physical Address is set of all physical addresses mapped to the corresponding logical addresses.

Visibility

User can view the logical address of a program

User can never view address of a Physical Program.

Generation

Generated by the CPU

Computed by MMU

Access

The user can use the logical address to access the physical address.

The user can indirectly access physical address but not directly.

(b) Given partitions = 100K, 500K, 200K; 300K, 600K

Places = 212K, 417K, 112K, 426K.

Ans	412	600Kb	112	600	212	600
		300Kb	212	300	112	300
426	112	2000Kb	112	200		200
will wait	212	500Kb	417	500	417	500
		100Kb		100		100

First fit Best fit Worst fit

Ans 2:

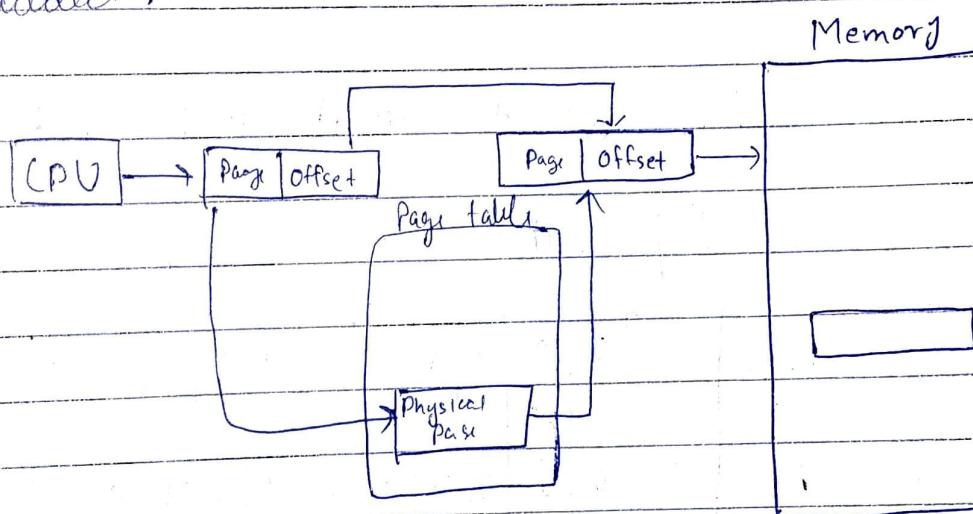
(a) 3 major activities are.

- Keeping track of which parts of memory are currently being used & by whom.
- Decided which processes are to be loaded into memory when memory space becomes available.
- Allocating & deallocating memory space as needed.

(b) TLB → is a piece of very fast, associative memory, capable of searching many areas of memory simultaneously.

This means that many tables entries can be searched at the same time for a logical-page entry.

The TLB fills up with present searches when a search is not successful, the entries are added.



(c) A page fault occurs when a program attempts to access a block of memory that is not stored in the physical memory, or RAM. The fault notifies the operating system that it must locate the data in virtual memory.

The operating system verifies the memory access, alerting the program if it is invalid... Upon completion of I/O, the page table and page table are updated & the instruction is restarted.

Ans 3.

Given;

page reference string 6, 7, 0, 1, 2, 1, 2, 3, 4, 2, 1, 5, 6, 7,

2, 3, 7, 6, 3, 2, 1, 2, 3, 6.

Let's first do it with FIFO.

1] FIFO.

Pags	6	7	0	2	1	2	3	4	2	1	5	6	2	1	2	3	7	6	3	2	1	2	3	6
f ₁	6	6	6	2	2	2	2	4	4	4	5	5	5	1	1	1	1	6	6	6	6	6	6	3
f ₂		7	7	7	1	1	1	1	2	2	2	6	6	6	6	3	3	3	3	3	3	1	1	1
f ₃			0	0	0	0	3	3	3	1	1	1	2	2	2	2	7	7	7	2	2	2	1	6
	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

FIFO Page fault = 20

2

LRU

Program Str ⁿ	6	7	0	2	1	2	3	4	2	1	S	6	2	1	3	7	6	3	2	1	2	3	6
F ₁	6	6	6	2	2	2	2	2	2	2	6	6	6	3	3	3	3	3	3	3	3	3	3
F ₂	7	7	7	1	1	1	4	4	4	S	S	S	1	1	1	6	6	6	1	1	1	6	
F ₃			0	0	0	3	3	3	1	1	1	2	2	2	7	7	7	2	2	2	2	2	2
	X	X	X	X	X	V	X	X	V	X	X	X	X	X	X	X	X	V	X	X	V	V	X

LRU Page fault = 18

Optimal

Per	6	7	0	2	1	2	3	4	2	1	S	6	2	1	3	7	6	3	2	1	2	3	6
F ₁	6	6	6	6	6	6	3	4	4	4	S	6	6	6	6	6	6	6	6	6	6	6	6
F ₂	7	7	7	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3
F ₃			0	2	2	2	2	2	2	2	2	2	2	2	2	7	7	7	2	2	2	2	2
	X	X	X	X	V	X	X	V	X	X	V	X	X	V	X	X	V	X	V	X	V	V	X

Page faults = 14

Optimal is the best choice having minimum page faults

Ans 4. (a) The FCFS schedule is 143, 86, 1470, 918, 1774, 948, 1509, 1022, 1750, 130.
The total seek distance is 7081.

(b) The SSTF schedule is 143, 130, 86, 193, 948, 1022, 1470, 1509, 1750, 1774.
The total seek distance is 1745.

(c) The SCAN schedule 143, 913, 948, 1022, 1470, 1509, 1750 ; 4999, 130, 86.
The total seek distance is 9769.

d) The LOOK schedule is 143, 913, 948, 1022, 1470, 1509, 1750, 1774, 130, 86.
The total seek distance is 3319.

e) The C-Scan schedule is 143, 913, 948, 1022, 1470, 1509, 1750, 1774, 4999, 86, 130
The total seek distance is 9813.

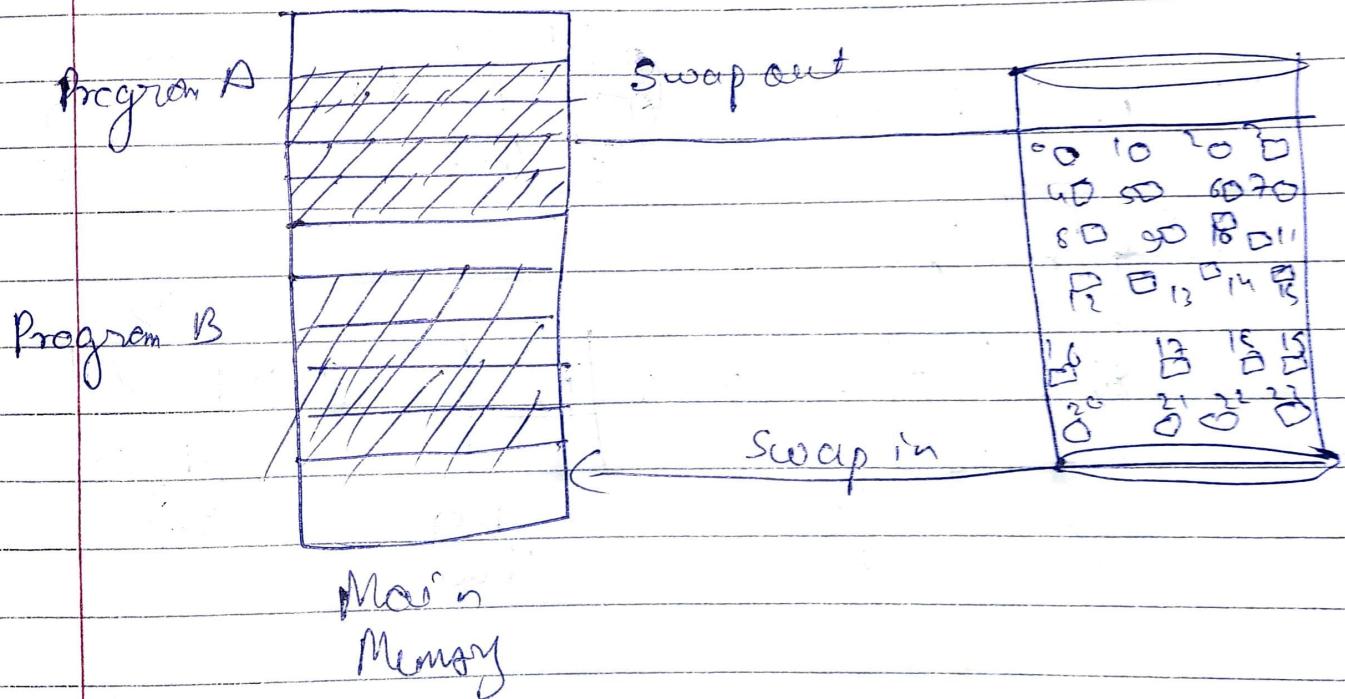
f) The C-Look schedule is 143, 913, 948, 1022, 1470, 1509, 1750, 1774, 86, 130.

The total seek distance is 3363.

Aus S (a) Paging

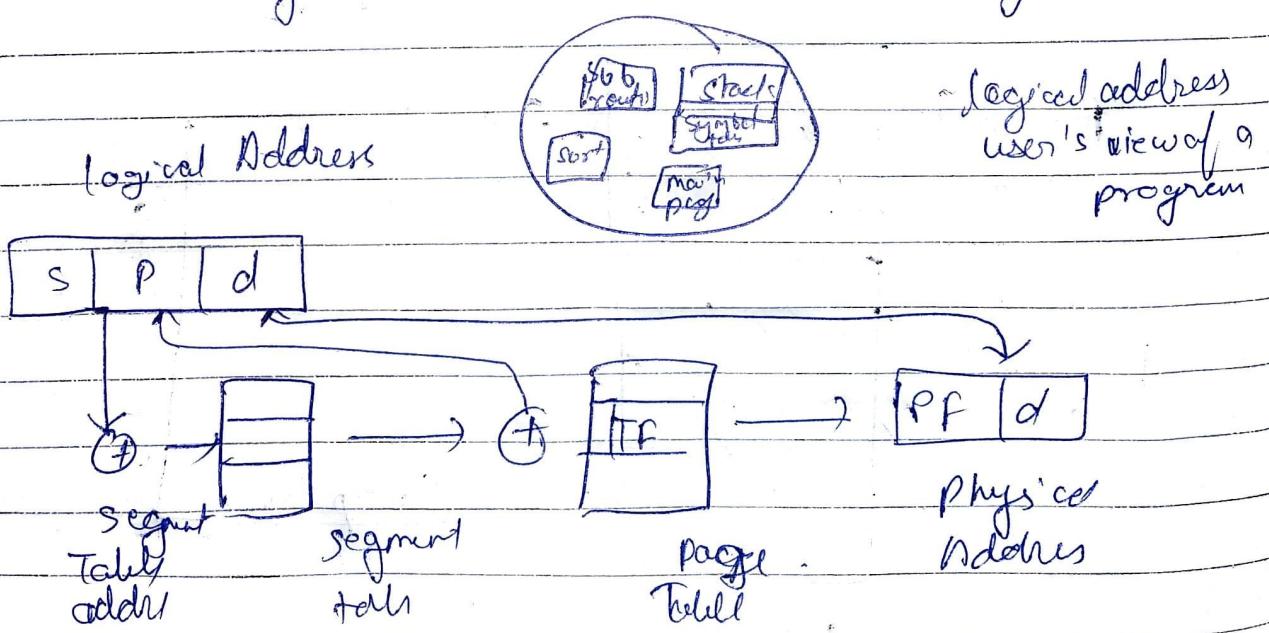
In computer OS, paging is a memory management scheme by which a computer stores data & retrieves data from secondary storage for use in main memory.

- In this scheme, the OS retrieves data from secondary storage in some blocks called pages.



(b) Segmentation

- In segmented Paging, the main memory is divided into variable size segments which are further divided into fixed size pages.
- Each segment has a page table which means every program has multiple page tables.
- The logical address is represented as Segment Number, page no., page offset.
- Pages are smaller than segments.



Segmentation with Paging