

SelfE_Memory Management

1. Which memory's management is discussed under "memory management" topic ?
 - a. Disk
 - b. RAM
 - c. ROM
2. If a system has 4 GB main memory then how many address bits are needed to address all its bytes uniquely.
 - a. 16
 - b. 32
 - c. 64
 - d. None of the above
3. If Base register contains 10448 and the limit register contains 2350 for a process, then which of the following memory addresses will be treated as illegal requests ?
 - a. 10500
 - b. 12790
 - c. 13000
 - d. None of the options
4. Which of the following address binding scheme restrict the process to be kept in the same memory region till completion where it was loaded initially
 - a. Compile time binding
 - b. Load time binding
 - c. Run time binding
 - d. All the above
5. When the actual memory address is different from the address generated by CPU, it is termed as ____
 - a. Physical address
 - b. Virtual address
 - c. Relative address
 - d. Temporary address
6. The responsibility of converting logical address into physical address is under ____
 - a. OS
 - b. Kernel
 - c. MMU
 - d. CPU
7. Under ____ loading, a routine is loaded only in it is invoked during execution of a process.

8. In dynamic linking, the library function call is made in the form of a ____ which is replaced by the address of the function loaded in memory during execution.
9. When there is no sufficient memory to load a process that has to be executed, the dispatcher carries out ____ to create the space needed and this is possible only in ____ address binding\
10. Identify the limitation of contiguous memory allocation
 - a. Process size will be limited by the size of the partition
 - b. Leads to internal fragmentation
 - c. Number of processes that can be loaded simultaneously is less
 - d. All of the above
11. Identify the drawback of dynamic partitioning
 - a. Internal fragmentation
 - b. External fragmentation
 - c. Both fragmentation possible
 - d. None of the options
12. Name the registers that can be used for enforcing memory protection to ensure that no user process manipulated other processes or OS.

Ans: Base and Limit

13. If the memory currently consist of the following partitions then find out the total size of external fragments(1 KB) that gets created in each of the memory allocation schemes – First fit and best fit

Size: 6 KB Process: Nil	Size: 3 KB Process:P 3	Size: 10 KB Process: Nil	Size: 4 KB Process: P1	Size 8 KB Process: Nil	Size: 7 KB Process: P2	Size 6KB Process: Nil
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Processes: P5- 5 KB, P6: 7 KB, P7: 3 KB

14. ____ is a solution to get rid of external fragmentation by integrating all the free memory together into one single free block.
15. Under paging, partitions of processes is called ____ and partitions of memory is called ____
16. Choose the benefit of paging
 - a. Logical memory space can be larger than physical memory space
 - b. More number of processes can be loaded exceeding actual memory size
 - c. No need to allocate contiguous memory to a process
 - d. All of the above
17. Logical address comprise of ____ and offset, physical address consist of ____ and offset
 - a. Page no , Frame no

- b. Frame no, Page no
 - c. Base, Limit
 - d. Process no, Segment no
18. A ___ is used to map the page number with its frame number.
19. ___ is the fastest memory that is used to store the page table so that its entries can be accessed quickly?
20. Consider a physical memory of 1 MB which is divided into frames of 4 KB. Size of logical memory is 4 MB. Compute the size of logical address, number of bits for page no and number of bits for offset.
21. Paging has no ___ fragmentation but can have small amount of ___ fragmentation
- a. Internal, External
 - b. External, Internal
22. Consider that the page size is 4 KB. Then compute the amount of fragmentation while loading the following processes: P1 – 16 KB, P2 – 11 KB, P3- 14 KB, P4 – 1 KB
23. In order to find out which frames are free and which are occupied, OS maintains a ___ table.
24. Expand TLB.
- a. Traditional Lookaside Buffer
 - b. Transaction Lookaside Buffer
 - c. Translation Lookaside Buffer
25. In order to differentiate the pages of different processes, the ___ value is stored in TLB with each entry.
26. For a TLB hit ratio of 80 %, calculate the effective access time assuming that the memory access time is 150 milliseconds and TLB access time is 15 milliseconds
- a. 185
 - b. 195
 - c. 205
 - d. 175
27. Calculate the physical address where 'p' can be found from the following:

0	a
1	b
2	c
3	d
4	e
5	f
6	g
7	h
8	i
9	j
10	k
11	l
12	m
13	n
14	o
15	p

logical memory

0	5
1	6
2	1
3	2

page table

28. Identify the characteristic of TLB?
- TLB is an associative memory and so the searched item is compared with all keys simultaneously
 - It is made of SRAM which is faster than DRAM
 - It is used to hold the frequently accessed pages
 - Initially there will be more TLB miss, but over a long period there will be more TLB hits
 - All of the above
29. Which value is used to prevent access to addresses within the internal fragmentation of a process ?
30. Code that can be shared by multiple processes and can be executed simultaneously without any chance of processing getting the impact of execution by other processes is said to be ____
31. Under ____ paging, the page table is split into multiple levels and only the first level table needs to be kept in the memory.
32. Consider again the system with a 32-bit logical address space and a page size of 4 KB. A logical address is divided into a page number consisting of 20 bits and a page offset consisting of 12 bits. If the page number is divided into 10 bits for first level page table and 10 bits for second level table then how many second level table can exist and how many entries each table can have ?.
33. To overcome the problem of collisions in hashed page table scheme, a ____ is used to store
34. In an inverted page table, the total size of page table will be equal to the ____
- Number pages in logical memory
 - Number of frames in main memory
 - Number pages in a process
 - Number of processes currently running
35. Each inverted page-table entry is a pair of ____ and ____
36. Identify the incorrect difference between paging and segmentation
- Pages are of equal size but segments are of different sizes

- b. Paging has internal fragmentation but segmentation don't have
 - c. Creating pages requires programmer's support but segmentation can be created by OS itself.
 - d. Logical address in paging is made of page no and offset, but logical address in segmentation is made of segment no and offset
37. ___ bit helps in identifying pages that can be replaced simply by erasing from memory without the overhead of writing back into the disk.
38. Consider the following segment table and identify the illegal address that will be trapped by the OS

<u>Segment</u>	<u>Base</u>	<u>Length</u>
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

- a. 0, 430 (segment no, offset)
 - b. 1, 10
 - c. 2, 500
 - d. 3, 400
39. What is NOT the benefit of virtual memory?
- a. Size of logical memory can be much larger than physical memory
 - b. Programmers can write programs without bothering about actual size of available memory
 - c. Execution time of programs drastically reduced
 - d. Secondary memory is utilized to create virtual memory
 - e. All are correct
40. The virtual address space of process will include blank spaces or holes to allow the expansion or stack or heap at run time. These holes are also called
- a. External fragmentation
 - b. Internal fragmentation
 - c. Sparse
 - d. Blank spots
41. Loading pages into memory only when they are requested by CPU is called ____
42. When a page is not yet loaded in memory, it is indicated by ___ bit in the page table and it causes a ____
43. In the following code, the array manipulation is an example of ___ locality and execution of loop is an example of ___ locality
- ```
for(i = 0; i < 20; i++)
 for(j = 0; j < 10; j++)
```

$a[i] = a[i]*j;$

44. When increasing the number of frames cause increase in number of page faults, such an unusual phenomenon is termed as \_\_\_\_
45. Choose the algorithm that suffers from the above phenomenon
- a. LRU
  - b. FIFO
  - c. Optimal
  - d. All of them
46. Compute the number of page faults under the LFU ( least frequently used) page replacement algorithms on a memory with three frames for the following reference string
- 1 1 2 3 2 4 5 1
47. Second chance algorithm for page replacement is a variation of \_\_\_\_
48. Which allocation scheme cause more thrashing ?
- a. Local allocation
  - b. Global allocation
49. Under which allocation scheme, the number of frames allocated to a process will remain unchanged.
- a. Local allocation
  - b. Global allocation
50. The \_\_\_\_\_ model finds out the number of unique pages in a locality, and maintains those many frames for the process. Hence all the required pages can be in the main memory for a certain locality. This prevents thrashing and reduces page faults. As the locality changes, the number of frames allocated is also made to change.