



# Operating System

*Revision 1*



1. In memory hierarchy, the top layers have higher speed, **larger** capacity, and greater cost per bit than the lower ones. T/**F**
2. Program doesn't need to be brought to memory & placed within a process for it to be run. T/**F**
3. The process may be moved between disk and memory during its execution. **T**/F
4. In a **multi**-programming system, RAM is divided into two parts one part for the operating system and one part for the program currently being executed. T/**F**
6. In a multiprogramming system, the user part of RAM must be subdivided to accommodate multiple processes. **T**/F
7. **The task of subdivision is carried out dynamically by the operating system and is known as \_\_\_\_\_.**  
a) **memory** management    b) CPU management    c) a and b    d) none
8. Effective memory management is vital in a multiprogramming system. **T**/F
9. **The part of the operating system that manages (part of) the memory hierarchy is called the \_\_\_\_\_.**  
a) **memory** manager    b) CPU scheduler    c) dispatcher    d) none
10. Memory manager keeps track of which parts of memory are in use. **T**/F
11. CPU scheduling allocates memory to processes when they need it. T/**F**
12. When a process is scheduled, the base register is loaded with the address of the start of its partition, and the limit register is loaded with the length of the partition. **T**/F
13. In \_\_\_\_\_ time binding, \_\_\_\_\_ code must be generated.  
a) **Load, Relocatable**    b) Compile, Relocatable    c) Load, absolute  
d) Compile, absolute
14. Logical and physical addresses are the different in **compile-time and load-time** address-binding schemes. T/**F**
15. Logical and physical addresses are differs at execution-time address-binding scheme. **T**/F
16. **Logical address space is defined as the set of all logical addresses generated by a program.**    A) **true**    B) False
17. **Logical** addresses corresponding to **physical** addresses generated by a program is referred to as the physical address space.  
A) true    B) **False**
18. In \_\_\_\_\_ scheme, the value in the relocation register is added to every address generated by a user process at the time it is sent to memory.

- a) TLB                      b) MMU                      c) Limit                      d) none

19. The user program deals with logical addresses; it never sees the real physical addresses.

- A) true                      B) False

20. A disadvantage of relocation using base and limit registers is the need to perform an addition and a comparison on every memory reference.

- A) true                      B) False

21. In MMU, comparisons can be done fast, but additions are slow due to carry propagation time unless special addition circuits are used.

- A) true                      B) False

22. Swapping is a solution to the problem of limited size of RAM.

- A) true                      B) False

23. \_\_\_\_\_ is a mechanism in which a process can be swapped temporarily out of memory to a backing store, and then brought back into memory for continued execution.

- a) Fragmentation                      b) Compaction                      c) Swapping                      d) none

24. Backing store doesn't need to be fast disk but should be large enough to accommodate copies of all memory images for all users.

- A) true                      B) False

25. Let's assume that the user process is 400 MB in size and the backing store is a standard hard disk with a transfer rate of 200 MB per second. The total swap time is \_\_\_\_\_

- a) 2000 ms                      b) 6000 ms                      c) 4000 ms                      d) none

26. Instead of using swapping, Apple's iOS asks applications to voluntarily relinquish allocated memory.

- A) true                      B) False

27. Compaction refers to shuffle the memory contents so as to place all free memory together in one large block.

- A) true                      B) False

28. If the process size is 3.5 KB and frame size= 2 KB, what is the amount of internal fragmentation?

- a) 1                      b) 0.5                      c) 2                      d) none

29. If the process size is 2.25 KB and frame size= 2 KB, what is the amount of internal fragmentation?

- a) 1.75                      b) 1.5                      c) 2                      d) none

30. If the process size is 2.01 KB and frame size = 2 KB, what is the amount of internal fragmentation?

- a) 1.75                      b) 1.45                      c) 1.99                      d) none

31. If a process is 209KB, compute internal fragmentation for frame size = 0.5 KB, 1 KB, 2 KB, 4 KB, and 8 KB.

Frame size	0.5	1	2	4	8
No of frames	418	209	105	53	27
Internal fragmentation	0	0	1	3	7

32. Maximum internal fragmentation is less than frame size.

- A) true                      B) False

33. Reduce frame size to reduce internal fragmentation.

- A) true                      B) False

34. Compaction is a possible solution for internal fragmentation.

- A) true                      B) False

35. Swapping is widely adopted technique in mobile operating systems.

- A) true                      B) False

36. \_\_\_\_\_ is responsible for run-time mapping from virtual to physical addresses.

- a) TLB                      b) KLT                      c) CPU                      d) MMU

37. Allowing the logical address space of the process to be noncontiguous is a possible solution for the \_\_\_\_\_ problem.

- a) Paging                      b) internal fragmentation                      c) external fragmentation                      d) Swapping

38. Memory compaction is a possible solution for the \_\_\_\_\_.

- a) Paging                      b) internal fragmentation                      c) external fragmentation                      d) Swapping

39. The \_\_\_\_\_ register specifies the range of physical addresses allocated to the process.

- a) Base                      b) Relocation                      c) Limit                      d) Page-table base

40. \_\_\_\_\_ occurs when there is enough total memory space to satisfy a request but the available spaces are not contiguous.

- a) Paging                      b) internal fragmentation                      c) external fragmentation                      d) Swapping

41. The \_\_\_\_\_ register holds the smallest legal physical memory address of the process.

- a) Base                      b) Page-table length                      c) Limit                      d) Page-table base

42. \_\_\_\_\_ is a mechanism in which a process can be moved temporarily out of memory to a backing store and then brought back into memory for continued execution.
- a) **Swapping**      b) Lazy swapping      c) Fragmentation      d) Segmentation
43. \_\_\_\_\_ is a phenomenon in which storage space is used inefficiently.
- a) Paging      b) Segmentation      c) **Fragmentation**      d) Swapping
44. Which of the following is correct?
- a) The base register holds the last legal physical memory address of the process.  
b) The limit register holds the last legal physical memory address of the process.  
c) The limit register holds the smallest legal physical memory address of the process.  
d) **The limit register specifies the range of physical address allocated to the process.**
45. \_\_\_\_\_ occurs when allocated memory may be slightly larger than requested memory.
- a) Paging      b) Segmentation      c) **Fragmentation**      d) Swapping
46. \_\_\_\_\_ time address binding allows the process to be moved during its execution from one memory segment to another.
- a) **Execution**      b) Compile      c) Load      d) Relocatable
47. \_\_\_\_\_ time address binding will generate \_\_\_\_\_ code
- a) **Compile, absolute**      b) Compile, Relocatable  
c) Load, absolute      d) Compile, absolute
48. The removal of process from active contention of CPU and reintroduce them into memory later is known as \_\_\_\_\_.
- A. interrupt.      B. **swapping.**      C. signal.      D. thread.
49. Boundary registers \_\_\_\_\_.
- A. are available in temporary program variable storage.  
B. are only necessary with fixed partitions.  
C. **track the beginning and ending the program.**  
D. track page boundaries.
50. The technique of \_\_\_\_\_ involves moving all occupied areas of storage to one end or the other of main storage.
- A. storage compaction.      B. **storage swapping.**      C. storage placement.  
D. storage replacement
51. Swapping \_\_\_\_\_.
- A. works best with many small partitions.

B. allows many programs to use memory simultaneously.

**C. allows each program in turn to use the memory.**

D. none

52. The OS may manipulate the contents of an MMU. **T/F**

53. **Where does the swap space reside ?**

(a) RAM

(b) **Disk**

(c) ROM

(d) On-chip cache

54. **Copying a process from memory to disk to allow space for other processes is called \_\_\_\_**

A. Demand paging

B. Deadlock

C. Page fault

D. **Swapping**

55. **Which of the following statements are true ?**

(a) External Fragmentation exists when there is enough total memory space to satisfy a request but the available space is contiguous.

(b) Memory Fragmentation can be internal as well as external.

(c) One solution to external Fragmentation is compaction.

A)(a) and (b) only

B)(a) and (c) only

**C)(b) and (c) only**

D)(a), (b) and (c)

56. **What is compaction?**

A)A technique for overcoming internal fragmentation

B)A paging technique

**C)A technique for overcoming external fragmentation**

D)A technique for overcoming fatal error

57. **Moving Process from main memory to disk is called :**

A)Caching

B)Termination

C)**Swapping**

D)Interruption

58. In a single contiguous memory management approach, if the logical address of a variable is L and the beginning of the application program is A, what is the formula for binding the logical address to the physical address?

**L + A**

59. If, in a fixed partition memory management system, the current value of the base register is 42993 and the current value of the bounds register is 2031, compute the physical addresses that correspond to the following logical addresses:

a. 104

43097

b. 1755

44748

c. 3041

Address out of bounds of partition.

**60. What is Address Binding?**

- a) going to an address in memory
- b) locating an address with the help of another address
- c) binding two addresses together to form a new address in a different memory space
- d) a mapping from one address space to another

**61. Binding of instructions and data to memory addresses can be done at \_\_\_\_\_**

- a) Compile time
- b) Load time
- c) Execution time
- d) All of the mentioned

**62. If the process can be moved during its execution from one memory segment to another, then binding must be \_\_\_\_\_**

- a) delayed until run time
- b) preponed to compile time
- c) preponed to load time
- d) none of the mentioned

**63. The \_\_\_\_\_ swaps processes in and out of the memory.**

- a) Memory manager
- b) CPU
- c) CPU manager
- d) User

**64. If binding is done at assembly or load time, then the process \_\_\_\_\_ be moved to different locations after being swapped out and in again.**

- a) can
- b) must
- c) can never
- d) may

**65. In a system that does not support swapping \_\_\_\_\_**

- a) the compiler normally binds symbolic addresses (variables) to relocatable addresses
- b) the compiler normally binds symbolic addresses to physical addresses
- c) the loader binds relocatable addresses to physical addresses
- d) binding of symbolic addresses to physical addresses normally takes place during execution

**66. The address generated by the CPU is referred to as \_\_\_\_\_**

- a) Physical address
- b) Logical address
- c) Neither physical nor logical
- d) None of the mentioned

**67. The address loaded into the memory address register of the memory is referred to as \_\_\_\_\_**

- a) Physical address
- b) Logical address
- c) Neither physical nor logical
- d) None of the mentioned

68. The run time mapping from virtual to physical addresses is done by a hardware device called the \_\_\_\_\_

- a) Virtual to physical mapper                      b) Memory management unit  
c) Memory mapping unit                                d) None of the mentioned

69. The base register is also known as the \_\_\_\_\_

- a) basic register      b) regular register      c) relocation register  
d) delocation register

70. The size of a process is limited to the size of \_\_\_\_\_

- a) physical memory   b) external storage   c) secondary storage   d) none

71. If execution time binding is being used, then a process \_\_\_\_\_ be swapped to a different memory space.

- a) has to be      b) can never      c) must      d) may

**72. Swapping requires a \_\_\_\_\_**

- a) motherboard  
store

**73. The backing store is generally a \_\_\_\_\_**

- a) fast disk
- b) disk large enough to accommodate copies of all memory images for all users
- c) disk to provide direct access to the memory images
- d) all of the mentioned

74. The \_\_\_\_\_ time in a swap out of a running process and swap in of a new process into the memory is very high.

- a) context – switch      b) waiting      c) execution      d) all

75. The major part of swap time is \_\_\_\_\_ time.

- a) waiting  
mentioned
- b) transfer
- c) execution
- d) none of the

**76. Swapping \_\_\_\_\_ be done when a process has pending I/O, or has to execute I/O operations only into operating system buffers.**

- a) must                      b) can                      c) must never                      d) maybe

## 77.Swap space is allocated

- a) as a chunk of disk  
b) separate from a file system  
c) into a file system  
d) all of the mentioned

**78. Swap space exist in \_\_\_\_\_**



Primary memory

Secondary memory

CPU

None of mentioned

**79. Swapping \_\_\_\_\_**

- a) Works best with many small partitions.
- b) Allow many programs to use memory simultaneously.
- c) Allow each program in turn to use the memory.

**80. Program always deals with \_\_\_\_\_**

- a) logical address
- b) absolute address
- c) physical address
- d) relative address

**81. What is compaction?**

- a) a technique for overcoming internal fragmentation
- b) a paging technique
- c) a technique for overcoming external fragmentation
- d) a technique for overcoming fatal error

**82. The relocation register helps in \_\_\_\_\_**

- a) providing more address space to processes
- b) a different address space to processes
- c) to protect the address spaces of processes
- d) none of the mentioned

**83. The operating system and the other processes are protected from being modified by an already running process because \_\_\_\_\_**

- a) they are in different memory spaces
- b) they are in different logical addresses
- c) they have a protection algorithm
- d) every address generated by the CPU is being checked against the relocation and limit registers

**84. In internal fragmentation, memory is internal to a partition and \_\_\_\_\_**

- a) is being used
- b) is not being used
- c) is always used
- d) none of the mentioned

**85. A solution to the problem of external fragmentation is \_\_\_\_\_**

- a) compaction
- b) larger memory space
- c) smaller memory space
- d) none of the mentioned

**86. Another solution to the problem of external fragmentation problem is to \_\_\_\_\_**

a) permit the logical address space of a process to be noncontiguous

b) permit smaller processes to be allocated memory at last

c) permit larger processes to be allocated memory at last

d) all of the mentioned

**87. When there is enough memory to fit a process in memory, but the space is not contiguous we need**

A. Internal Fragmentation

B. Virtual Fragmentation

C. External Fragmentation

D. None of them

**88. In memory systems, boundary registers**

A. are used for temporary program variable storage

B. are only necessary with fixed partitions

C. track page boundaries

D. track the beginning and ending of programs

E. None of the above

**89. CPU can access which type of memory directly?**

a. random-access memory

b. magnetic disk

c. magnetic tape

d.

None

**90. External fragmentation exists when?**

a) enough total memory exists to satisfy a request but it is not contiguous

b) the total memory is insufficient to satisfy a request

c) a request cannot be satisfied even when the total memory is free

d) none of the mentioned

**91. The CPU sends the \_\_\_\_\_ of each data or instruction used in the process to the MMU.**

a) Physical address

b) logical address

c) effective address

d) None

**92. The MMU uses the memory allocation information stored in the table to compute the corresponding \_\_\_\_\_**

a) Physical address

b) logical address

c) effective address

d) None

**93. Memory fragmentation can be defined as**

a) The existence of usable area in the memory of computer system

b) The existence of unusable area in the memory of computer system

c) The existence of unreachable area in the memory of computer system

d) None of the above

**94. External fragmentation occurs when a**

a) memory area remain unused because it is too large to be allocated

b) memory area remain unused because it is too small to be allocated

c) More memory is allocated than requested by the process

d) less memory is allocated than requested by the process

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**96. Memory fragmentation results in Better Utilization of memory. T/F**

**97. Logical Address space can be larger than physical address space. T/F**

**98. The run-time mapping from virtual to physical addresses is done by a hardware device called**

a. Process Management Unit

b. CPU Management Unit

c. Memory Management Unit

d. Event Management Unit

**99. The total transfer time is \_\_\_\_\_ to the amount of memory swapped**

a. directly proportional

b. indirectly proportional

c. equal

d. None of the above