



Chapter 9

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1. Which of the following is a benefit of allowing a program that is only partially in memory to execute? Programs can be written to use more memory than is available in physical memory. | CPU utilization and throughput is increased. | Less I/O is needed to load or swap each user program into memory.
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2. In systems that support virtual memory- _____. physical memory is separated from logical memory
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3. The vfork() system call in UNIX _____. allows the child process to use the address space of the parent
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4. Suppose we have the following page accesses: 1 2 3 4 2 3 4 1 2 1 1 3 1 4 and that there are three frames within our system. Using the FIFO replacement algorithm- what is the number of page faults for the given reference string? 8
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5. Suppose we have the following page accesses: 1 2 3 4 2 3 4 1 2 1 1 3 1 4 and that there are three frames within our system. Using the FIFO replacement algorithm- what will be the final configuration of the three frames following the execution of the given reference string? 3, 4, 2
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6. Suppose we have the following page accesses: 1 2 3 4 2 3 4 1 2 1 1 3 1 4 and that there are three frames within our system. Using the LRU replacement algorithm- what is the number of page faults for the given reference string? 8
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7. Given the reference string of page accesses: 1 2 3 4 2 3 4 1 2 1 1 3 1 4 and a system with three page frames- what is 3, 1, 4



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the final configuration of the three frames after the LRU algorithm is applied?

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8. **Belady's anomaly states that ____.** for some page replacement algorithms, the page-fault rate may increase as the number of allocated frames increases
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9. **Optimal page replacement ____.** is used mostly for comparison with other page-replacement schemes.³
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10. **In the enhanced second chance algorithm- which of the following ordered pairs represents a page that would be the best choice for replacement?** (0,0)
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11. **The ____ allocation algorithm allocates available memory to each process according to its size.** proportional
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12. **The ____ is the number of entries in the TLB multiplied by the page size.** TLB reach 1
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13. **_____ allows the parent and child processes to initially share the same pages- but when either process modifies a page- a copy of the shared page is created.** copy-on-write
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14. **_____ is the algorithm implemented on most systems. A) FIFO B) Least frequently used C) Most frequently used D) LRU** Thrashing
D Feedback: 9.4 1 _____ occurs when a process spends more time paging than executing.
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15. **Windows uses a local page replacement policy ____.** when a process exceeds its working set maximum
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| 16. Which of the following statements is false with regard to Solaris memory management? | The speed at which pages are examined (the scanrate) is constant. |
| 17. What size segment will be allocated for a 39 KB request on a system using the Buddy system for kernel memory allocation? | 64 KB |
| 18. Which of the following statements is false with regard to allocating kernel memory? | Because the kernel requests memory of varying sizes, some of which may be quite small, the system does not have to be concerned about wasting memory. |
| 19. The _____ is an approximation of a program's locality. | working set |
| 20. _____ allows a portion of a virtual address space to be logically associated with a file. | Memory-mapping |
| 21. Systems in which memory access times vary significantly are known as _____. | non-uniform memory access |
| 22. Which of the following is considered a benefit when using the slab allocator? | There is no memory fragmentation. |
| 23. In general- virtual memory decreases the degree of multiprogramming in a system. | False |
| 24. Stack algorithms can never exhibit Belady's anomaly. | True |
| 25. If the page-fault rate is too high- the process may have too many frames. | False |
| 26. The buddy system for allocating kernel memory is very likely to cause fragmentation within the allocated segments. | True |



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27. **On a system with demand-paging- a process will experience a high page fault rate when the process begins execution.** True
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28. **On systems that provide it- vfork() should always be used instead of fork().** False
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29. **Only a fraction of a process's working set needs to be stored in the TLB.** False
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30. **Solaris uses both a local and global page replacement policy.** False
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31. **Windows uses both a local and global page replacement policy.** False
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32. **A page fault must be preceded by a TLB miss.** True
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33. **Non-uniform memory access has little effect on the performance of a virtual memory system.** False
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34. **In Linux- a slab may only be either full or empty.** False
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