

Make sure to study the review sheets for exams #1 and #2. Material from these two study sheets may appear on the final.

1. Explain the difference between segmentation and paging. Give an example of a page table and a segment table, and point out the difference between them. Give a few sample addresses and show how they are translated in the two different schemes.
2. Discuss the problems with dynamic translation of 64-bit addresses.
3. Discuss the differences between using a single virtual address space for all processes, and multiple address spaces, one for each process. How can memory be shared between processes if each process has its own address space?
4. Give the details of the three page replacement algorithms: First In First Out (FIFO), Least Recently Used (LRU) and Optimal (OPT). Demonstrate the algorithms on the reference string assuming you have 3 page frames:
1,4,2,3,1,4,1,5,2,3,5,1,2,3,4,5,1,2,3,4
5. Assume you are given a hard disk containing a number of important files. The hard disk is from an unknown operating system. What would you expect to find on the hard disk? Assuming that your task is to read the hard disk and save the files to a Microsoft Windows disk, what information would you need to obtain to do this? You may assume that you have a hex-dump of the entire disk, but NO other information.
6. Explain the structure of a directory. What information would you expect to find there?
7. Explain the three different file organizations: Linked List, Indexed, and Multiple Contiguous Blocks. Which is best?
8. Describe the improvements that NTFS gives over the three file organizations listed above.
9. What functions must an operating system provide to support sequential character-by-character reading of files?
10. What is a driver, and why is it needed?
11. Suppose you are designing a remote file access system that will allow a PC to access files on a new operating system through a local area network. What services are provided by the hardware, and what services must be implemented in software?
12. What is middleware? Give an example of middleware.