

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 tree structured page tables. Give an example of page translation using three levels of page tables. Discuss the problems with 64-bit addresses.
3. 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 2 1 3 1 4 1 2 3 5 1 2 3 4 1 5 1 2 1 3 1 4 1
4. Explain Belady's Anomaly and what it means for certain page replacement algorithms.
5. What is a stack algorithm? What conditions must an algorithm meet to be a stack algorithm? Explain the subset property.
6. Explain how network requests, such as a request for an HTML page, are recognized and processed.
7. What is protection? Explain some protection mechanisms that exist in the Linux operating system.
8. What are some of the security threats that exist for today's systems? Discuss specifically boot-sector viruses and buffer overflow attacks.
9. How can I use a public key system to authenticate messages from a specific user?
10. How can I use a public key system to transmit secure information from a web page to the web server?
12. What is a network sniffer?
13. Describe how we can use timestamps for global ordering, even though clocks may not be synchronized.
14. Explain how mutual exclusion can be enforced in a distributed system.
15. Describe the two-phase commit protocol.
16. Describe the bully algorithm for selecting a coordinator in a distributed system.
17. For real time systems, describe preemptive priority-based scheduling, Preemptive kernels, and minimized latency. Describe the priority inversion problem.
18. Describe rate-monotonic scheduling and Earliest-deadline-first scheduling.