

COSC 6360--Operating Systems
QUALIFYING EXAMINATION
Graduate Part
FINAL EXAMINATION
May 4, 2001

THIS EXAM IS CLOSED BOOK. YOU CAN HAVE TWO SHEETS (I.E., FOUR PAGES) OF NOTES. YOUR QUALIFYING EXAMINATION SCORE WILL BE BASED ON YOUR SCORE ON THE TWO FIRST TWO QUESTIONS OF THE EXAMINATION.

1. *FILE SYSTEMS: Disk drives are becoming bigger and bigger all the time but are not becoming much faster. What would you do to improve the speed of disk accesses on your disk drives? You can add any extra devices to your computer and organize your disk drives as you want. You can list many ideas as you want but should develop one of two of them in more detail. I will take into consideration the originality of your answers. (20 points)*
2. *CACHING: Leases are tickets given to clients caching a given file. They guarantee that the server will not grant access to any other client without notifying the client. This guarantee exists until the lease expires. What are the advantages and disadvantages of long-duration leases over short duration leases? Your answer should consider parameters such as server workload, server response time and fault-tolerance. (20 points)*
3. How does Sprite implement the backing storage for its virtual memory? (5 points) What is the major advantage is this approach? (5 points) What is its major disadvantage over more solutions? (5 points)
4. Which mechanism does Amoeba use to allow the owner of a capability to downgrade it? (10 points for a detailed explanation)
5. What is the motivation for distributing each video over all the cubs of the Tiger videosever? (5 points)
6. Which part of a Kerberos system should be protected at any cost? Why? (10 points)
7. Why are RAID levels 2 and 4 *never used*? (2×5 points)
8. When you travel home you have access to your sibling's computer. It is not connected to the Internet so you are always bringing with you a few floppies or a CD-ROM from your PC at the university? What is the *maximum tolerable time and date difference* between the two computers? Briefly explain your answer. (10 points) *Hint: you can safely neglect the time zone effects.*