

Sample Final

1. How does the working-set model relate process scheduling and memory management?
2. What is an access control matrix?
3. Three procedures, A, B, and C, are to be linked together into one process and loaded into memory. The length of each procedure is 600 words. Consider the following memory management schemes:
 - (a) Paging: page size is 1000 words, page tables occupy 1 page each.
 - (b) Segmentation: segment table size is 1000 words.
 - (c) Paged segmentation: page size is 1000 words, page tables occupy 1 page each, segment table size is 1000 words.

Assume that all procedures and all tables are in memory. For each of the three systems, what is the total occupied memory space (i.e., the space that cannot be used by another process)? This includes the space occupied by the procedures and the various tables, as well as space wasted due to the fixed page size.

4. Describe three ways that disk space may be allocated for a file.
5. Recall that the link count field in a Linux inode in secondary storage contains the number of directory entries pointing to the inode, something that could be determined by looking at the directories themselves. Why is this field used?
6. Consider a computer system with three users: Alice, Bob, and Cyndy. Alice owns the file *alicerc*, and Bob and Cyndy can read it. Cyndy can read and write the file *bobrc*, which Bob owns, but Alice can only read it. Only Cyndy can read and write the file *cyndyrc*, which she owns. Assume that the owner of each of these files can execute it.
 - (a) Create the corresponding access control matrix.
 - (b) Cyndy gives Alice permission to read *cyndyrc*, and Alice removes Bob's ability to read *alicerc*. Show the new access control matrix.