Operating Systems PhD Qual

Spring, 2003

Do all problems.

1. At the end of a long section on virtual memory page replacement algorithms, Tanenbaum gives his opinion that Aging and WSClock are the two best. Justify his opinion. That is, why may Again and WSClock be considered superior to similar algorithms?

2. (a) Give an example of a race condition.

   (b) Pick either the semaphore or the monitor and explain how it can be used to control race conditions.

3. Explain the buffer overflow attack – how does it operate and what is its danger?

4. Explain the principal advantage and principal disadvantage of caching updated file system blocks in memory. What technique(s) can be used to lessen the disadvantage?