CS 4/53201

Exam #2

Operating Systems

Wednesday 7 November 2001

- 1. One common networking topology is the ring.
 - a. What are the advantages of the ring topology? (4 points)

b. What are the disadvantages of the ring topology? (4 points)

2. In the 7-layer networking protocol, what are the responsibilities of the transport layer? (10 points)

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- 3. For each of the following CPU scheduling algorithms, (i) when does the algorithm run (be specific think in terms of transitions in the 5-state process model), and (ii) what criteria is used to pick the next thread to run?
 - a. FCFS (10 points)

b. Shortest Remaining Time (SRT) (10 points)

4. Between FCFS, Shortest Job First (SJF), and Priority Scheduling, which of these CPU scheduling algorithms is the most fair with respect to scheduling processes with long CPU bursts, in the sense that it gives those long processes some CPU time? Explain your answer. (10 points)

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5. In preventing deadlock, how can the hold and wait condition be avoided? How effective is this technique? (10 points)

6. The Banker's algorithm can be used to avoid deadlock for multiple resource instances, yet it isn't used in practice. Why not? (7 points)

7. What is external fragmentation, and which memory management techniques have this problem? (10 points)

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8. When segmentation is used, how is a process prevented from accessing memory locations outside its segments? Be specific. (15 points)

9. What advantages do paging (not including demand paging) have over segmentation? (10 points)