

Problem Set 3, Part b

Due: Thursday, October 22, 2008

Reading:

Chapter 16.

Reading for next week:

Chapter 18, Lamport's "Time, Clocks,..." paper. Chapter 19

Problems:

1. Exercise 15.42.
2. Exercise 16.13.
3. Exercise 16.14.
4. For k a multiple of 5, consider a new problem that we call the *k-pseudo-session problem*. This is a modification of the k -session problem that allows a limited amount of leeway in the way events at different processes are ordered. Namely, define a *pseudo-session* to be any sequence of *flash* events containing at least 5 $flash_i$ events for every i . The *k-pseudo-session problem* requires that the algorithm should perform at least $\frac{k}{5}$ disjoint pseudo-sessions, in any fair execution.
 - (a) What is the best upper bound you can give for the worst-case time of the last *flash* event in any execution? Describe an algorithm that demonstrates this bound.
 - (b) What is the best lower bound you can give for the worst-case time of the last *flash* event in any execution?

(Note: Formally, the measure we consider is $T(A)$, as defined on p. 557 of the textbook.)

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6.852J / 18.437J Distributed Algorithms

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