CS 373: Combinatorial Algorithms, Fall 2000
Homework 4 (due October 26, 2000 at midnight)

Name:		
Net ID:	Alias:	U ³⁄₄ 1

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Net ID:	Alias:	U ³⁄₄ 1

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Homeworks may be done in teams of up to three people. Each team turns in just one solution, and every memeber of a team gets the same grad. Since 1-unit graduate students are required to solve problems that are worth extra credit for other students, **1-unit grad students may not be on the same team as 3/4-unit grad students or undergraduates.**

Neatly print your name(s), NetID(s), and the alias(es) you used for Homework 0 in the boxes above. Please also tell us whether you are an undergraduate, 3/4-unit grad student, or 1-unit grad student by circling U, ³⁄₄, or 1, respectively. Staple this sheet to the top of your homework.

RequiredProblems

1. (10 points) A certain algorithms professor once claimed that the height of an n-node Fibonacci heap is of height $O(\log n)$. Disprove his claim by showing that for a positive integer n, a sequence of Fibonacci heap operations that creates a Fibonacci heap consisting of just one tree that is a (downward) linear chain of n nodes.

2. (20 points) *Fibonacci strings* are defined as follows:

$$F_1 = b$$
$$F_2 = a$$
$$F_n = F_{n-1}F_{n-2} \quad \text{for all } n > 2$$

where the recursive rule uses concatenation of strings, so $F_3 = ab$, $F_4 = aba$, and so on. Note that the length of F_n is the nth Fibonacci number.