BU CLA CS 530: Analysis of Algorithms

Spring 1996

Problem Set 6

Due Thursday 96.02.29, at 11:00 am, in class. Late submissions not accepted.

---

1. Exercise 3 in Handout 2.

2. Solve the recurrence: $f(n) = \lceil \sqrt{n} \rceil f(\lceil \sqrt{n} \rceil) + c \cdot n$, where n ranges over the natural numbers and c is a positive constant. *Hint*: First, let $g(n) = f(n)/n$ and transform the recurrence accordingly. Then, let $h(n) = g \cdots$, transform the recurrence once more, and solve.

3. (Reducing the edge-connectivity problem to a max-flow problem.)
   Exercise 27.2-9, page 600, in [CLR].

4. (Reducing the s,t-connectivity problem to a max-flow problem.)
   Design an efficient algorithm for the s,t-connectivity problem: Given a directed graph $G = (V, E)$ and distinct vertices $s, t \in V$, and $k \geqslant 1$, decide whether there exist k edge-disjoint paths from s to t. (The vertex-disjoint version of this problem is NP-complete.)

Created: 96.02.21
Modified: 96.02.26