BU CLA CS 530: Analysis of Algorithms

Spring 1999

Problem Set 4

Due Thursday Feburary 11, by 5:00 pm, in my mailbox in the main office of the CS department. Late submissions not accepted.

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1. (a) Exercise 13 in Handout 2.
   (b) Exercise 14 in Handout 2.
   (Make a new copy of Handout 2.)

2. Given n files of length $m_1, m_2, \ldots, m_n$, the *optimal tape-storage problem* is to find which order is the best to store them on the tape, assuming that each retrieval starts with the tape rewound, each retrieval takes time equal to the length of the preceding files in the tape plus the length of the retrieved file, and that files are retrieved in the reverse order in which they are stored (corresponding to a LIFO discipline). The greedy algorithm puts the files on the tape in order of increasing sizes. Prove that this is the best order.

3. Exercise 17.2-2, page 336, in [CLR].

4. Exercise 25.2-4, page 531 in [CLR].

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