

Theory of Computation

Final Exam : 4 December 2008

1. Explain what Las-Vegas and Monte-Carlo algorithms are and the differences between them. Describe one example of each of the two types.
2. Describe the definition of the competitive ratio of a deterministic online algorithm A . Describe that of a randomized online algorithm B .
3. Suppose that there are 2 servers on a line. Explain how the Chrobak-Larmore algorithm works for this special case. Prove that the algorithm is 2-competitive.
4. Let A_2 be any deterministic one-way trading algorithm. Show that there exists a randomized one-way trading algorithm A_1 such that $E[C_{A_1}(\sigma)] = C_{A_2}(\sigma)$ for all sequences σ , where C_{A_i} is the return of algorithm A_i .
5. Describe the two rules of the threat-based policy for one-way trading.
6. Describe the problem definition in the paper of your team project. Describe the result of the paper.