

Theory of Network Communication

Fall 2003

Assignment 10

Problem 21 (10 points):

Think of a way of how to handle concurrent insertions and deletions of nodes in an unsupervised doubly linked cycle. Explain your strategy and incorporate it into your implementation of the doubly linked cycle for problem 20. Demonstrate your strategy by first creating a doubly linked cycle of size 10, then simulating concurrent requests of 5 peers with consecutive names to leave the system, and then simulating concurrent requests of 5 peers with consecutive names to join the system.

Your method should be robust enough so that it also works in an asynchronous environment! That is, you should not just try to exploit the quasi-synchronous behavior of the Spheres simulation environment to realize the correct execution of concurrent operations.

Problem 22 (10 points):

Write a C++ program in the new Spheres environment that implements the JOIN, LEAVE, and SEARCH operations for the skip graph. Test your system by starting with a single peer, increasing the system one by one to 10 peers, and then shrinking it down one by one to 5 peers.

Here, it suffices to just implement the operations for the isolated case.

This assignment is due December 3.