

Advanced Distributed Algorithms and Data Structures

SS 2019

Homework Assignment 2

Problem 1:

Install the NetSimLan Environment in your computer and implement and test the tree broadcasting approach on slides 34 and 35 in Chapter 2 in it.

Problem 2:

- (a) Show that introduction, delegation, and fusion preserve strong connectivity.
- (b) Prove the statement on slide 14 in Chapter 3: If the nodes operate in synchronous rounds and in each round every node introduces all of its neighbors and itself to all of its neighbors, then just $O(\log n)$ rounds are needed (where n is the number of nodes) till the clique is reached.

Problem 3:

Prove the statement on slide 45: safe fusion preserves weak and strong connectivity in a relay graph.

Problem 4:

Describe in detail how to transform G into G_1 on slide 55 and G_2 into G' on slide 57.