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Verteilte Algorithmen

Sommersemester 2002 30. April 2002

Serie 2

Aufgabe 1 (6 Punkte)

Bearbeiten Sie Übung 4.6 aus [Lyn96]:

Consider the optimized version of SynchBFS described in Section 4.2.2, which prevents processes from sending search messages to processes from which they have previously received such messages.

(a) Give code for this algorithm.

(b) Prove the correctness of your algorithm by relating it to SynchBFS, using the same sort of simulation strategy used in the proof of correctness for OptFloodMax (i.e., in the proof of Theorem 4.2).

Aufgabe 2 (4 Punkte)

Bearbeiten Sie Übung 4.18 aus [Lyn96]:

Show that the version of SynchGHS that uses edge identifiers in place of edge weights (described near the end of Section 4.4) in fact produces an MST.

Aufgabe 3 (4 Punkte)

Bearbeiten Sie Übung 4.20 aus [Lyn96]:

Give code for the convergecast algorithm outlined at the end of Section 4.4, which elects a leader given an arbitrary spanning tree of an undirected graph network.

Literatur

[Lyn96] Nancy Lynch. *Distributed Algorithms.* Morgan Kaufmann Publishers, 1996.

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