

Theory Assignment 4: Early Stopping Consensus

Algorithm for Crash Failures

Distributed Computing: Spring 2020

Deadline: 14th April 2020, 9:00 pm

Exercise 14.2 from the AM book. Modify Algorithm 14.1 to design an early-stopping algorithm for consensus under failstop failures, that terminates within $f' + 1$ rounds, where f' , the actual number of stop-failures, is less than f . Prove the correctness of your algorithm.

(Hint: A process can be required to send a message in each round, even if the value was sent in the earlier round. Processes should also track the other processes that failed, which is detectable by identifying the processes from which no message was received.)