Concurrent Algorithms December 11, 2018

Exercise 9

Problem 1. Consider the RDMA model with memory failures, in which all processes can send messages and access the memory of all other processes. In class, we showed an algorithm that solves consensus in this model using a majority of Processes+Memory.

Show that there is no algorithm that can solve consensus with a majority of the memory or a majority of the processes.

Problem 2. Show that with responsive memory failures (in which an access to a failed memory always replies NACK within a finite amount of time) it is possible to solve consensus with $n-1$ memory failures and $n-1$ process failures.