Exercise for the lecture

Distributed Systems

Summer 2014

Sheet 3

EXERCISE 1:

You are running a set of three numbered processes $p_i, i \in \{1; 2; 3\}$. They use Paxos to exchange values consistently over a network. Each of the processes can fail for some time, but will return eventually, never more than one process will fail at the same time. Each of the processes will take the role as client, proposer, acceptor and learner, while always the process with the smallest value of i will be the proposer. Provide an execution of the following setups and count the number of messages and round-trip times.

1. p_1 wants to publish a value and no failures occur.

2. p_1 uses and optimized version , where it only communicates with a quorum for acceptance. Again no failures occur!

3. Another iteration of 2. optimized by using Multi-Paxos (System is already in a steady state).

4. p_3 wants to publish a value and a failure occurs at the worst possible time. Maximise the number of messages!

Can you hold up the execution for an indefinite time?