Massachusetts Institute of Technology
Department of Electrical Engineering and Computer Science

6.826 – Principles of Computer Systems

Handout 49 November 24, 1993

Problem Set #11

Due date: December 3, 1993

(Note: the due date is a Friday, not a Wednesday.)

This problem deals with the specification given in Handout 47 for a strongly consistent highly available service. As mentioned in class, faster response time can be obtained in a primary copy implementation by responding to a client's request before the request has been committed to a majority of the backups. However, this performance improvement comes at the cost of reduced fault-tolerance: recent operations invoked by the client may be lost in a failure, even if the client has already received a response for them. Modify the second specification (`AMO2`) to capture the additional behaviors that are possible when the primary responds to the client before committing the request to the backups.