ECE 526 (Spring 2013) Distributed Algorithms
Homework 3 Due: 9:30 a.m., March 14, 2013 (Thursday)

Please type your answers (e.g., using Latex, or Word).

See the policy of 48-hour extension described in the course handout.

Algorithm numbers below are from the textbook (second edition).

1. Consider Algorithm 26 for simulating multi-valued register from binary registers (single reader, single writer case). Show a counter-example to prove that a modified version of Algorithm 26, with lines 5 and 6 deleted, is not correct.

2. Consider Algorithm 28 for simulating multi-reader multi-writer register from multi-reader single-writer registers, modified as follows: lines 10 and 11 are deleted, and replaced by the line below:

   $lts := TS[w]$

   Show a counter-example to prove that the modified version of Algorithm 28 is not correct.

3. State true or false with a brief explanation: If a certain problem does not have a wait-free solution using *single-reader single-writer registers* in an asynchronous system with crash failures, then the problem does not have a solution using *atomic snapshot objects*, and vice-versa.