

University of Texas at Dallas—Department of Computer Science
CS 6380.001 Distributed Computing—Fall 2019
Project 2 –part 1- Description

Extend the simulator you developed in Project 1 to simulate asynchronous networks. The message transmission time for each link for each message is to be randomly chosen using a uniform distribution in the range 1 to 10 “time units.” All links are bidirectional and FIFO. (FIFO: If I send two messages m1 and then m2 to you, then you receive m1 first and then m2.)

Implement the Asynchronous FloodMax algorithm for leader election. Compute the total number of messages sent for the run and output the result.

The requirements in this paragraph are for Project 2, Part 2. You can ignore this paragraph Project 2, part 1: Extend the FloodMax algorithm to have a simple synchronizer: In every “round,” if a process has no message to send to a neighbor, it will send a “dummy” message to a neighbor. With this modification, compute the total number of messages sent, excluding the “dummy” messages and output the result.

A round at a process consists of receiving a message from each neighbor (message of FloodMax or dummy), processing all of the received messages, and sending a message of FloodMax (if that algorithm requires) or a dummy message on each outgoing link. Note that a message sent on a link can take any amount of “time” in the range 1 to 10 “time units.”

Your program will read in the following information in this order from an input file called connectivity.txt:

The first line has a single integer and it represents the total number of processes in the system.

The second line has an array of n ids, one for each process.

Lines 3 to n+2 represent the connectivity matrix as a set of n 0's and 1.s: Line 3+i represents the neighbors of process i: the jth component of this line is a 1 if i and j are neighbors and is 0 if i and j are not neighbors.

Upload one tar file containing your source code, a README file that tells us how to compile and run, the sample input file (input.dat) and the result of running your program (script file output) on your sample input file.

Due date: Nov 05, 2019 11:55 pm.