

Distributed Systems – TD3 : Wave algorithms

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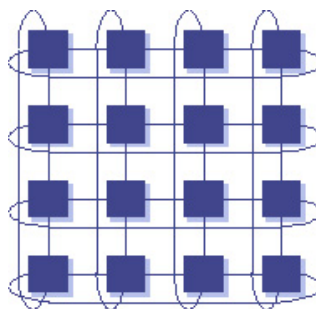
Chang's Echo Algorithm



1. Implement **Chang's Echo Algorithm** using **MPI**. The *network topology* and *initiator* are read out of an input file. The input format is at your choice.
2. Test your implementation using several network topologies. Specially focus your attention on those topologies containing cycles. For the same topology, try different *initiators*.
3. Augment this implementation in such a way that, when the algorithm finishes, the initiator prints the covering tree for the given topology.

More on MPI – virtual topologies

Cartesian topologies



Exercise 1

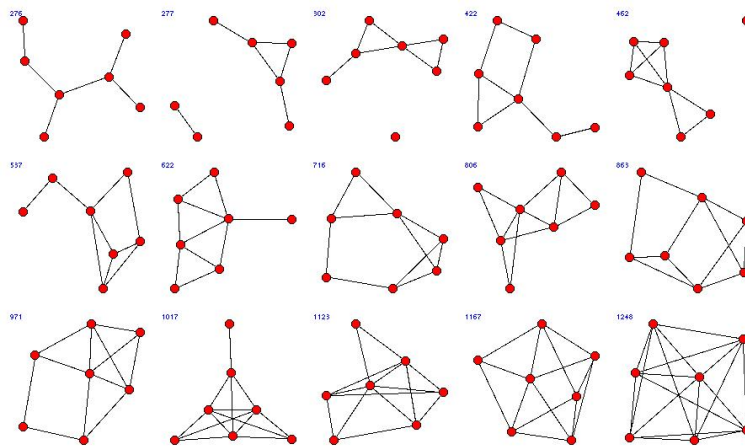
Write a program where we create a virtual grid of processes.

Exercise 2

Create communicators for the lines and for the columns. Create two tokens which circulate these communicators.

Exercise 3

Write a program which computes the sums on rows and columns for the previous exercise's communicators.

Graph topologies**Exercise 1**

Write a program which creates the a graph communicator topology.

Exercise 2

Rewrite Chang's Echo Algorithm using graph communicator topology.