TD ALGORES

MIS-DS-Matching

Exercise 1 : Centralized MIS-DS-Matching

1. Recall the definition of a MIS, a DS and a (Maximal) Matching.

    1. Recall the centralized implementations of MIS, DS and Maximal Matching and discuss their complexity.

Exercise 2 : Distributed MIS-DS-Matching

1. Recall the distrbuted implementation of MIS seen in class. Compute its complexity (time + messages). Is this algorithm working for ring topologies ?

2. Propose a distributed MIS algorithm for trees (different from the one seen in class). Evaluate the complexity of your algorithm.

3. Propose a solution for constructing connected dominating sets given a MIS.

4. Propose a solution for Maximal Matching different from the one seen in class and compute its complexity.

5. Execute both algorithms on the topology below.

Exercise 3 : Edge coloring

1. Propose a distributed algorithm for solving the edge coloring problem (no two adjacent edges in a graph have the same color). Compute its complexity !

2. Discuss practical applications of this problem !

3. Execute the algorithm on the topology below.