

Algorithm Design
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Solution of Exercise C-11.12

Perform one more iteration of the distance vector algorithm and test if there have been any distances that change because of this computation. If a router's distant vector changes, then it can broadcast to all the other router's that their D labels are wrong (with this message combining with others if there are several wrong labels). This algorithm has message complexity $O(nm)$ for the exchange of n distant vectors of size $O(n)$ over m edges, plus $O(m)$ additional messages for a flooding error message. Thus, the total message complexity is $O(nm)$.