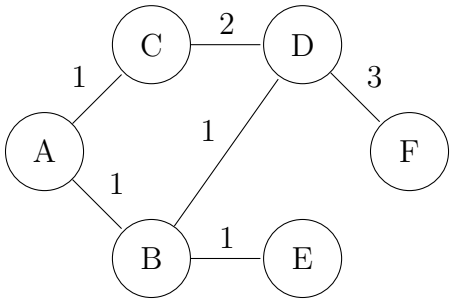
Foundations of Information Systems

Winter Semester 2024–25, Exercise 11

For discussion on Wednesday, January 22, 2024

1. Compute the shortest path from node A to every other node in the network, explicitly, using Dijkstra's algorithm. State the routing table for node A.



2. Repeat Problem 1, but using distance-vector routing. Draw, for each router, a table of the form

Destination	**Next Hop**	**Cost**
A		
B		
C		
D		
E		
F		

   which you should update in steps until it no longer changes.

3. In distance-vector routing, a malicious router could advertise a larger or smaller cost of sending packets to one or more destinations than it actually occurs. What could it gain? What does this mean for the network at large?

4. Consider a network using link state routing. When one node of the network broadcasts its link state packet, find an upper bound on how many times it is transmitted in terms of the parameters of the network.