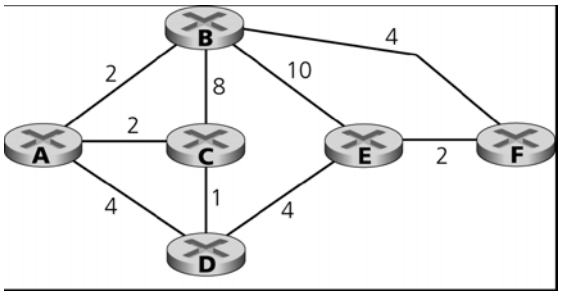
Worksheet 12

1. Compare and contrast link-state and distance-vector routing algorithms.

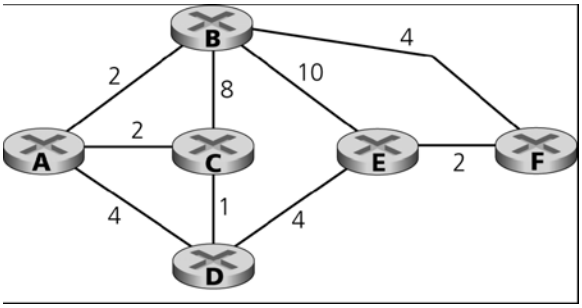
2. Is it possible that every autonomous system use the same intra-AS routing algorithm? Why or why not?

3. Consider the network shown below. Show the operation of Dijkstra's (link-state) algorithm for computing the least cost path from D to all destinations. What is the shortest path from D to B, and what is the cost of this path?



4. Consider the count-to-infinity problem in the distance vector routing. Will the count-to-infinity problem occur if we decrease the cost of a link? Why? How about if we connect two nodes which do not have a link?

5. Consider the network shown below.



a. What are A, B, C, D, E, and F's distance vectors? Note: you do not have to run the distance vector algorithm; you should be able to compute distance vectors by inspection. Recall that a node's distance vector is the vector of the least cost paths from itself to each of the other nodes in the network.
b. Now consider node C. From which other nodes does C receive distance vectors?
c. Consider node C again. Through which neighbor will C route its packets destined to E? Explain how you arrived at your answer, given the distance vectors that C has received from its neighbors.
d. Consider node E. From which other nodes does E receive distance vectors?
e. Consider node E again. Through which neighbor will E route its packets destined to B. Explain how you arrived at your answer, given the distance vectors that E has received from its neighbors.